THE IRON WARRIOR

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# University of Waterloo Wins Big at CEC

Photo courtesy of the teams

**Top to bottom, left to right: Wenbo Cui, Stuart Murray, Laura Bahlmann, Eric Beauregard, Eric Shi, Ian Murray, Ryan Gibson, Austin Cousineau, Stuart Alldritt, Daniel Lizewski, Wesley Fisher, Kenneth Geertsema, Jake Fisher, Mitchell Catoen, Michael Jonas, Colin Cooke**

**STUART ALLDRITT**
**AUSTIN COUSINEAU**
4B COMPUTER, 4B ELECTRICAL

The Canadian Engineering Competition (CEC) is the culmination of all regional engineering events within Canada, bringing together the best and brightest engineering students from across the country. Thousands of students compete every year, first at the school level and then at the regional level in order to earn a place at CEC. Seven events take place at the CEC: Senior Design, Junior Design, Innovative Design, Consulting, Reengineering, Engineering Communications, and Debates. Each competition tests the technical and non-technical skills of the students. This year at CEC, the University of Waterloo was well represented in Innovative Design, Senior Design, and Junior Design competitions by many extremely talented students. Despite the strong competition, all teams placed highly in their respective categories.

In the Innovative Design Competition, teams of up to four students present their design concept to a panel of judges. Designs are evaluated on technical value, functionality, and marketability. Two Waterloo teams competed in the Innovative Design Category: Project Reservoir and GraFET.

In the Senior and Junior Design Competitions, teams of up to four students are presented with an engineering design challenge. Teams then have up to eight hours to design and prototype their proposed solution, after which judges evaluate the effectiveness of their designs.

### Project Reservoir: Stuart Alldritt, Ryan Gibson, Nicole Jiang, Ian Murray, Austin Cousineau (4B EE, 4B CE)

Project Reservoir is an end-to-end agricultural water control and environmental monitoring system. It consists of low-cost field sensors which collect real time soil and environmental conditions. The collected data is analysed and visualized by the web platform allowing detailed review of all farm conditions, as well as irrigation control. Project Reservoir aims to allow greater insights into the farm as well as to reduce the water used on the farm by minimizing wasted water through the detailed monitoring of soil conditions.

Project Reservoir won First Place at the Innovative Design Competition, as well as the Petri Engineering Design Award and the CEC Environmental Awareness Award.

### GraFET: Laura Bahlmann, Eric Beauregard, Stuart Murray, Wenbo Cui (4B NE)

GraFET is a sensor that uses a graphene-based FET and a dipole detection method to achieve rapid and sensitive detection of harmful gases. With a sensing element smaller than an HDTV pixel, GraFET is capable of being incorporated into smartphones or wearable electronics. Individual devices could communicate with each other to create air quality maps of cities.

GraFET won Second Place at the Innovative Design Competition.

### Senior Design: Eric Shi, Kenneth Geertsema, Wesley Fisher, Daniel Lizewski (3B MTE)

For the senior design, we were given 10 hours to design a robot to solve a previously undisclosed problem with limited resources. The problem was to collect food packets and water for a village. The twist was that the terrain consisted of sand, gravel, mountains, and a river separating land from food packets. We designed and built a bluetooth controlled wheeled robot and created a mechanism that combines the ability to collect both food and water. Traversing the complex terrain was the biggest challenge to overcome.

The Senior Design team won Second Place at the Senior Design Competition.

### Junior Design, First place: Jackson Fisher, Colin Cooke, Michael Jonas, Mitchell Catoen (2A MTE)

The Junior Design challenge was to build a single drawbridge which could span 50cm, 75cm and 100cm gaps without any modifications. The bridge was to carry an RC car and automatically retract once the car had crossed it. The solution that was developed was a two segment bridge built out of popsicle sticks, wooden dowels, and foam board and was deployed using the weight of the vehicle and used carefully calibrated elastic bands to retract into its starting position.

The Junior Design team won First Place at the Junior Design Competition.

# Letter from the Editor

## "I Am a Humanist"

**RAEESA ASHIQUE**
EDITOR-IN-CHIEF

Long time, no talk! Blame Reading Week for the month gap. That being said, I can't believe we're over halfway through the semester. Forget New Years's resolutions: this is the time of year when students are making "how to bring my average up" or "how not to fail the term" resolutions.

I don't have enough words to accommodate a lengthy filler introduction, but I want to start with a huge shoutout to the teams who went to the Canadian Engineering Competition this past weekend. Congratulations!

I will also once again invite you to send a letter to the editor to iwarrior@uwaterloo.ca if you have an opinion on anything you read. I would love to hear from you!

This issue turned out very feminist, quite unintentionally, which I find rather fitting considering yesterday was International Women's Day. Michael addresses issues of female and visual minority under-representation in engineering on page 5, and Patricia details the WIMIn Ideathon she attended this past weekend on page 12. And of course, it is a given that my editorial will have some level of a feminist undertone.

I can already hear the groans and see the eye rolls. The typical reaction to a feminist rant.

If you hate so-called feminism, please keep reading. Strange request? Most people would begin with this disclaimer to ward off haters, but not me. First of all, I love when people disagree with me. Second, I believe I can change your mind.

The stereotypical feminist is an unattractive, aggressive, man-hating lesbian who believes in female domination and unshaved armpits. However, to be completely honest, feminism is such a broad scope that any individual can express any opinion and call themselves a feminist.

For example: I call myself a feminist because I believe my dress is irrelevant. Some say feminism is incompatible with my clothing choices, because freedom is proportional to the amount of skin showing, but this is not true in the least. Like I said, it was my choice to cover. Where is the oppression in that? Isn't it beautiful to live in a country where we can wear what we want? Others may choose to wear more or less than I do, but that does not give anyone the right to judge them.

I am a feminist because I believe that women should be valued for their brains. On my first co-op, a co-worker (who was one of two women in the office) lamented the difficulty of being a woman in our field, and informed me that having a dominant personality was critical to our future success. This is the stereotypical feminist outlook. My Grade 12 English teacher gave me a better piece of advice: make it about the idea. If an idea is assessed based on merit rather than source, there will never be a case of women being undervalued in a male-dominated workplace.

I am a feminist because I believe in no slut shaming, which is why the "9 Tips to Avoid Sexual Assault" poster on the inside of one of the SLC bathroom stalls initially irritated me. I naturally assumed that, being in the girls' bathroom, it was meant to teach girls to protect themselves from rape, which makes it sound like the girl's fault. No, it's not. It is never her fault.

I got a laugh when I actually bothered to read the tips, which is why I had to share. My favourite tip: "Carry a rape whistle. If you find you are about to rape someone, blow the whistle until someone comes to stop you." Well, it isn't actually funny…disturbing is more like it.

The bottom of the poster read, "If we teach people how to protect themselves from sexual assault, then we also need to teach them not to assault." I wish it was unnecessary to teach people that rape is wrong. How is it possible that the world we live in does not consider this common sense?

Many crimes can be justified situationally. For example, unwarranted murder is wrong, but killing is not only acceptable but expected in times of war. Killing can also be justified in self-defense. Don't get me wrong: I am not saying it is ethical, just that it is circumstantial. So is stealing: for those in desperate situations, the need for survival may leave no other avenue. But rape is wrong on principle. There is never a reason or an excuse to rape someone: not in times of war, or self-defense (that doesn't even make sense…), or any imaginable extreme situation. Rape is despicable and condemnable in all cases. The victim should never be blamed, and the perpetrator should never be acquitted.

I know, how did I even end up writing an editorial on rape? I was initially planning to kill two birds with one stone by combining my article with the editorial, until I realized that I have way too much to say on the topic (as usual). Kesha is the inspiration for this rant, and you can get the background by reading my accompanying article on page 13.

Tl;dr: two years ago, Kesha filed a sexual abuse and battery claim against her producer, Dr. Luke, which explains why she has been off the radar. Realizing that waiting for the end of the legal battle to resume recording would be detrimental to her career, Kesha filed an injunction request last year to break or alter her contract with Sony-owned Kemosabe Record label. Of course, the decision to stop recording was personal rather than legal, but was a completely understandable one. Three weeks ago, the New York courts denied her request, holding her to another six albums. Apparently, granting an injunction is unnecessary when there are no signs of "irreparable harm". Besides, at least "she's being given an opportunity to record".

But I do not understand why no one is discussing Dr. Luke's innocence or guilt, or why the alleged crime is not a factor. I do not understand how the system prioritizes a piece of paper over a person's physical and mental health. Maybe this is because Law for ECEs is pretty low-level, and they don't teach us the intricacies of contract law. Or maybe my mind is just not as twisted as the system we live in.

The courts are sending the message that rape is situational. Since she doesn't show signs of "irreparable harm" (reminder: she was admitted into rehab in January 2014), she must be ok. They are saying that if the victim is "okay", then so is the crime. They are saying that the abuser does not have to face any consequences.

But rape is not situational, and there is no compensation for this crime because no one ever deserves to be subjected to such horrific treatment.

I want to live in a world where women never feel uncomfortable, unsafe, or objectified. This can be in seemingly simple cases such as receiving unwanted male attention, or walking home alone from campus at night (which my guy friends try to warn me against doing). And of course, there are all the extreme cases of assault victims, which is why it is beautiful that the #FreeKesha movement has become about the bigger picture. Kesha represents every underrepresented woman, every battered woman who is unable to break away, every oppressed individual who needs a voice. She recognizes this, saying, "I think about young girls today – I don't want my future daughter – or your daughter – or any person to be afraid that they will be punished if they speak out about being abused, especially if their abuser is in a position of power."

Feminism is about supporting each other in a world that so readily trivializes sexual abuse. It is about standing up for women's rights, which really means ensuring that women are treated like people. Like Kesha says: "Yes, I am very much a feminist, but more than that, I am a humanist. I believe in supporting my fellow human beings in being SAFE."

What we need to focus on is basic human rights, which do not depend on one's sex. By definition, they depend on nothing. Every human being has the same rights: no individual or institution should be able to take them away.

Have I managed to convince you of the importance of feminism?

Note: My intention is not to undermine male assault victims, but my focus is centred around Kesha's story and female victims because this is more common. Also, I have nothing against lesbians, just extreme feminists who hate men for the sake of hating men.



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Send your submissions to *iwarrior@uwaterloo.ca*
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# Mental Health 101

**LEAH KRISTUFEK**
4B CHEMICAL

Your university career is an exciting, but stressful time. Constant moves for co-op and the vying for co-op jobs can be destabilizing. Added to that, assignments, projects and midterms are constantly making us re-evaluate both our need for regular sleep, and our confidence in how much we actually know.

Luckily, sucking at tests now doesn't mean you will be a bad engineer. There are many factors that contribute to your successes and failures in university which may not affect you when you join the workforce. In the real world you can choose a job that plays to your strengths. If you don't do well in that controls course that has you tearing your hair out all term, you (probably) never need to look at it ever again!

However, at some point in your university career you might find some aspect of your life getting out of control. Everyone knows that proper diet and exercise are key to a healthy happy lifestyle, but these are hard to maintain as school terms progress. Worries about money and relationships may also weigh on your mind. So how do you tell the difference between understandable day to day stresses and something more severe?

Stress can often act as a trigger underlying mental health issues. Preventative action to combat stress and early intervention can make a world of difference! The following list are good warning signs to look out for in yourself or those around you:

Significant changes in mood or hobbies

Struggles with sleep, either falling asleep or routinely waking up poorly rested

Appetite changes

Finding you have trouble rebalancing

Something that has been persistently bothering you that you want to talk about.

If something is bothering you don't hesitate. I visited Counselling Services before writing this article; everyone was incredibly helpful and kind. No worry is too small to seek assistance. If something is really bothering you it is worth consulting a qualified professional. They know how best to approach your worries. Generally counselling is not a long term commitment, on average most students only use 4-5 sessions.

I also learned about an interesting program that is gathering steam. The MATES program (Mentor Assistance Through Education & Support) has volunteers who are available to talk. Topics might range from relationship problems to midterm woes. The MATES are available to come out to various public spaces around campus. They can meet you in Williams, maybe help you with the job search, or even come to the first meeting of that club you were too shy to attend on your own! MATES are students themselves and have training in mental health first aid, peer help and mentorship support. It is a less in depth source of support which is solution focused. They create a safe space for you to talk confidentially and without judgement. Also check out their 2nd annual Chilly Dog Run on March 12th! It looks really fun!

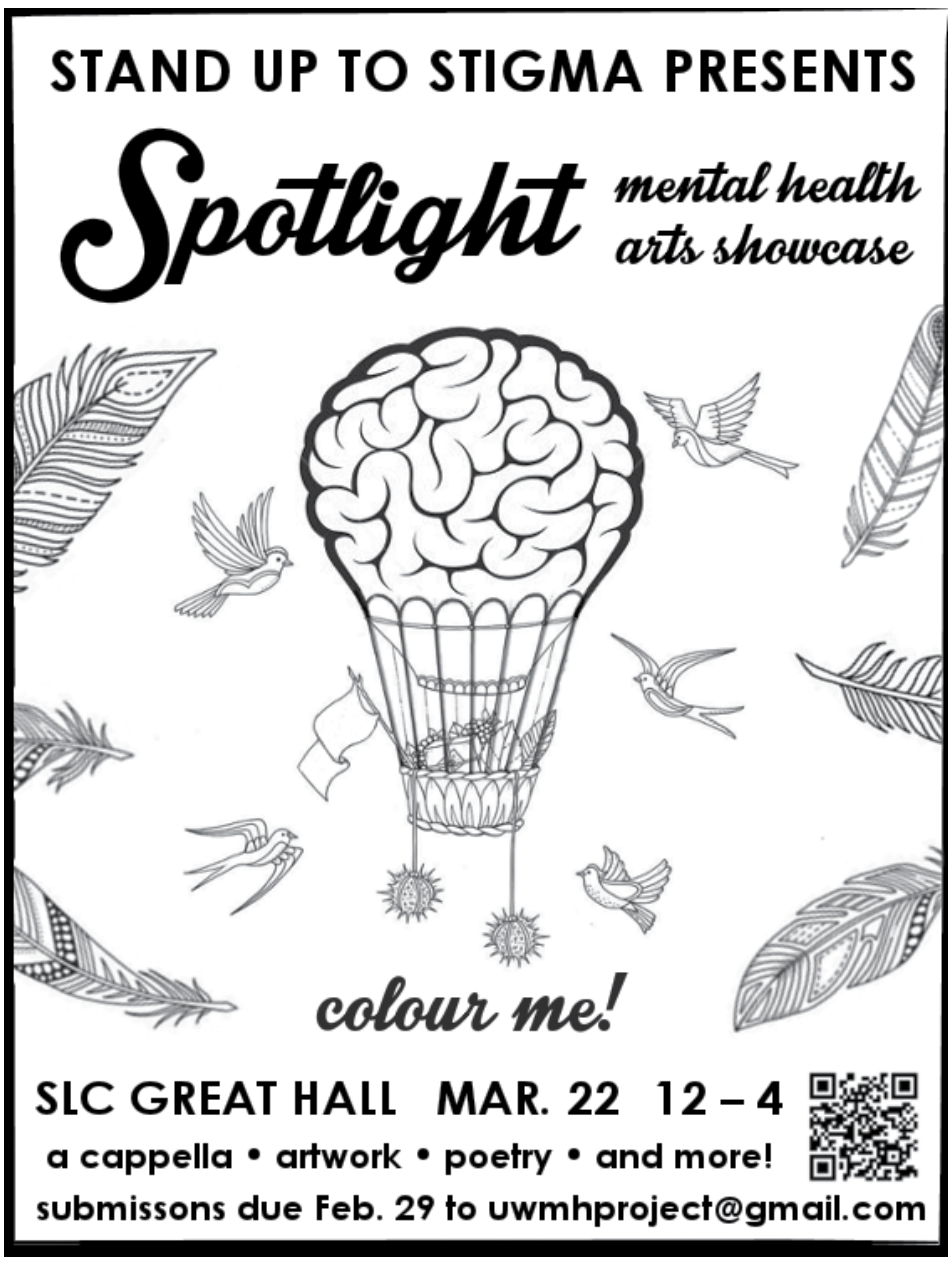
### Accessing Counselling Services

Waterloo Counselling Services can be accessed on a drop in basis in the Health Services Building (HS) (across from the SLC), Needles Hall (NH) and in the Engineering First Year office from 8:30 to 4:30 Monday through Friday. HS has extended hours Wednesday and Thursday until 7:30. You can also phone (519-888-4567 x32655). Counselors cover a wide range of disciplines to meet your needs. The MATES program can be accessed at HS and NH. The wait list to see a counsellor can fluctuate, but if you are in crisis an immediate response clinician can be made available.

If you are worried that a friend is suffering from a mental health crisis you can contact Counselling Services, they are able to reach out confidentially to that individual. If you suspect that an individual's safety is at risk you can also reach out to Campus Police or Waterloo Regional Police.

Resources are available in the community. Student health coverage can cover counselling visits and the Crisis Clinic at Grand River Hospital (519-742-3611) and you can also call Good2Talk (1-866-925-5454 or 211).

There are some great coping skills workshops offered in modular informational sessions, these include cultivating resiliency, strengthen your motivation, challenge your thinking and manage emotions. Register online at: https://uwaterloo.ca/counselling-services/services/coping-skills-seminars . Also check out the dates for stress reduction drop in sessions at the Engineering Counselling website.




# Course Critiques Going Online (But Staying In Class!)

**ERYN DICKISON**
**KIRANDEEP SAHMBI**
**GORDON STUBLEY**
COURSE CRITIQUES TEAM

After a successful fall 2015 trial of a campus-built online course evaluation platform, *https://evaluate.uwaterloo.ca*, Engineering is transitioning away from paper-based course evaluations. In 94% of classes this term, students will complete Course Evaluation Questionnaires electronically. This means a whole lot less waste, as the paper-based system used more than 20,000 paper questionnaires and 600 envelopes per year. It also means a lot more efficiency, as the online platform is integrated with campus data systems and doesn't require staff time to manually scan completed questionnaires. And using electronic questionnaires means that we could potentially create different question sets for lectures, labs, and projects courses. But it also means anxiety about response rates.

At least one other Canadian institution switched back to the more wasteful and inefficient paper-based evaluations after their response rates plummeted with online evaluations. To prevent this from happening here, we're keeping Course Critiques in class. Instructors have been asked to continue to give class time for students to complete their questionnaires, and class reps have been asked to work with course instructors to make sure this continues to happen. The system will send one reminder email during the evaluation period to anyone who has one or more incomplete evaluations, and instructors may also post reminders on the course LEARN page. We're optimistic that in-class administration of evaluations, coupled with the strong relationship between our faculty and students, will allow us to maintain our traditionally high response rates.

Here's what we want you to know:

The evaluation period is March 7 - 18

Students complete the online questionnaire during class

Questions are the same

Responses are still anonymous

Comments are still screened for inappropriate/offensive content

Results will still be made available online at *https://www.eng.uwaterloo.ca/critiques/*

In the first week of the spring term, course instructors will be able to log in and review their scores and all the written comments. They're counting on you to provide meaningful, relevant feedback; instructors rely on your input to help improve their teaching. Think of this as your chance to influence the way that courses are taught and support change for the better!

Thank you for your time, your feedback, and, most importantly, for your continued support of the course evaluation process.

# Engineering Exchanges?? But I'm only in 1B!!

**PROF. RICK CULHAM**
ASSOCIATE DEAN, INTERNATIONAL

Yes it IS too early in your academic career to go on an international exchange but it's NOT too early to start planning for it!

It's a great opportunity and privilege but you must prepare, organize and plan. You could be among the 15% of your class who go on this once-in-a-lifetime experience. Most students go on exchange in 3A or 3B or both. But you have to start planning early!

What is an academic exchange? You'll get to spend one or two academic terms at a partner university where you'll take courses equivalent to those your classmates will be taking at UW. It is common practice for engineering exchange students to remain on the same academic schedule as the rest of their cohort and graduate with their class.

We have exchange partnerships with over 80 top-tier universities in about 30 countries around the world. So you need to investigate which partner best suits your needs; many of our exchanges are restricted in numbers, some are open only to certain disciplines of engineering, for others you need to learn a new language. In some cases, it's best to go for a one-term exchange; in others, two terms work out best.

All this is a part of planning for your future career which could take you anywhere in the world.

To get started, visit our website (*https://uwaterloo.ca/engineering/current-undergraduate-students/international-exchange*) for all the details.

On Facebook, look for the "UW Engineering Exchanges" group, which is specifically for outbound students and those who have been on exchange. It's moderated by EngSoc and Cindy Howe, the Administrative Coordinator of engineering exchanges. By the way, Cindy's office is in Carl Pollock Hall, Room 3658, and she can be reached at *eng.ug.exchange.askus@uwaterloo.ca*.

Don't let the opportunity pass you by! The application process takes more than a year of lead time. Applications must be submitted by November 1 for the following academic year. For example, if you want to go on exchange for your 3B term (Fall 2017), your application must be submitted on Waterloo Passport by November 1, 2016.

Finally, exchange is great for fun, travel and adventure. You'll visit parts of the world that stay-at-home students may never experience. Don't take my word for it; read what previous exchangers have to say:

"I wouldn't have traded my experiences for the world. My time on exchange was great: I got to go traveling and backpacking, got to meet some fantastic people from all over the world, and I graduated on time with my class and my friends! ... If you are even just considering an exchange, I recommend without the slightest reservation that you go. Waking up and looking forward to every day in a new country… that's just not a feeling that you get [if you stay at home]!" (Matthew Lee, SyDe)

Doing an exchange was probably the best decision I have ever made. I learned so much about engineering (of course), but also about European culture and history, and simply interacting with people of an entirely different background. The time and distance away from home, and the completely different lifestyle was definitely not easy to adjust to, but these aspects made the whole experience worthwhile. (Winnie Tse, MechE)

# Syrian Ceasefire in One Word: Tenuous

**BRIGITA GUBINS**
2A ENVIRONMENTAL

The February 27th ceasefire agreement reached by the International Syria Support Group (ISSG) as well as members of President Bashar al-Assad's regime and members of its opposition centred around three main commitments to humanitarian access. The ISSG, which includes Iran, Turkey, Qatar, the Arab League, the European Union (EU), and the United States came to the United Nations-brokered agreement in Munich after peace talks that began in Geneva a month earlier in January.

The agreement, which theoretically applies to all of Syria, is not quite as simple as a cessation of violence by all parties. The terms of the cessation of hostilities agreement included specifications of ceasing attacks with any weapons, preventing territorial acquisition by recognized members, and most importantly, allowing humanitarian agencies "rapid, safe, unhindered and sustained access throughout areas under their operational control and allow immediate humanitarian assistance to reach all people in need" (Office of the Spokesperson, Washington, DC). However, military action, including airstrikes, will continue by US-led Counter ISIL Coalition, the Armed Forces of the Syrian Republic, and the Russian Armed Forces against groups designated as terrorists by the United Nations Security Council.

This means that the ceasefire is not geographically demarcated. More than 100 rebel factions agreed to abide by the terms of the ISSG agreement, according to the negotiations committee of the Syrian opposition; however, this exception to the terms creates a grey-area of potential attacks in the name of defeating terrorist organisations, or in rebel-held civilian areas. This, in addition to the continued military action by the various member nations of the ISSG against terrorist groups, will further complicate the already fragile ceasefire agreement. The United States has been working with the Russian Federation to try to designate areas as ceasefire-abiding or not, but no formal geographic terms have been decided. This means that many large areas known to be held by terrorist groups will remain active-conflict zones.

At the time of writing, the Britain-based Syrian Observatory for Human Rights (SOHR) stated that 135 people have been killed in the first week of the ceasefire: 45 rebel/Islamic State fighters, 25 Assad government soldiers, 27 Syrian Kurdish fighters, and 32 civilians, of whom 7 were children. It also determined that 552 have been killed in areas not covered by the ceasefire.

While the death toll has been significant, all members of the ceasefire have agreed that there has been less overall violence, and humanitarian aid has been successfully delivered to areas under siege. While these are major improvements, the Syrian Opposition forces say that not enough aid has been able to get through. The UN estimates that half a million are living under siege within Syria, out of a further 4.6 million people who are difficult to reach to deliver desperately needed supplies.

In the major Syrian cities of Aleppo, Deraa, and Homs, as well as the capital Damascus, the ceasefire has bolstered demonstrators to take to the streets for the first time in years to hold anti-government protests. Many speculate that the agreement will not hold; however, peace talks are tentatively slated to occur in Geneva sometime in mid-March.

Editor's Note: Brigita's "A History of the Syrian Conflict" on page 15 is a great resource for gaining a broader understanding of the current situation

# Federal Bureau of Investigation and Apple

## Unlocking the Backdoor

**SEAMUS BANNON**
1B NANOTECHNOLOGY

Three months ago on December 2, 2015, Syed Rizwan Farook and Tashfeen Malik perpetrated the worst terrorist attack on American soil since 9/11. The attack—which occurred in San Bernardino, California—resulted in the deaths of fourteen people and serious injury of twenty-two more. Farook, a U.S. citizen of Pakistani descent, and his wife, a Pakistani-born permanent resident, carried out the shooting armed with pistols and semi-automatic rifles on a banquet room filled with eighty employees of the Department of Public Health. Four hours following the attack the perpetrators were killed in a shootout with the police. In the following days the Federal Bureau of Investigation concluded that the perpetrators were homegrown terrorists not involved in any foreign terrorist cell or network.

This is a horrible tragedy and condolences must be expressed for the victims. However, what has followed out of this situation is a conflict which is of extreme importance to privacy, technology, and security. On February 9, 2016, the FBI pleaded to Apple Inc. to help decrypt an iPhone 5C owned by one of the shooters. Help was needed due to the fact that after ten incorrect passcode entries the current iOS will erase any encrypted data. Tim Cook, the current CEO of Apple, proceeded to publicly decline this request. Why would Apple resist helping gather information on a known terrorist?

Firstly, and quite immediately, the reason can be seen by the request in and of itself. The FBI applied to a federal court and filed an order requiring Apple to the create what is essentially an iOS backdoor. This order was not a subpoena, instead it was an issue under the All Writs Act of 1789.

However, the more important issue arises from the technical nature of the backdoor. In Tim Cook's words "The government suggests this tool could only be used once, on one phone. But that's simply not true. Once created, the technique could be used over and over again, on any number of devices." It is clear that once given this technology, the FBI could easily and readily abuse this power at the expense of everybody's privacy.

Recently, Google and other major technology groups have backed Apple with their stand against the creation of a backdoor. One particularly adamant supporter of Apple is John McAfee, creator of McAfee Security. He has offered to the FBI to decrypt the iPhone without a backdoor—free of charge. In his address, he succinctly described the seriousness of this issue: "if the government succeeds in getting this back door, it will eventually get a back door into all encryption, and our world, as we know it, is over."

# Mark Zuckerberg on Virtual Reality

**EMILIA JIAO**
1B MANAGEMENT

It is not a secret that Mark Zuckerberg, the CEO and founder of the largest social network in the world, is a huge supporter of concept of virtual reality (VR). Through the purchase of Oculus Rift in 2004, he has established himself as a strong competitor in the field of VR development. After a demonstration of the new Gear VR headsets at the unveiling ceremony for the Samsung S7, Zuckerberg surprised thousands of unsuspecting techhies with his presence, as well as a speech on the future of VR.

The Gear VR headsets were a product of a partnership between Samsung and Oculus VR. Combining the pristine OLED display of the Samsung phones and the software of Oculus VR, the headset can be easily connected to the S7, S7 edge, or the Note 4 to create your own personalized virtual reality. The Gear VR can be used to watch 360-degree videos, a video format introduced by Facebook last year; play one of the many games optimized for virtual reality; or even watch a movie in your own private theater. During the demonstration, the audience was transported to the streets of Barcelona using this technology, allowing Zuckerberg to sneak past unnoticed.

"Pretty soon we're going to live in a world where everyone has the power to share and experience whole scenes as if you're just there, right there in person," said Zuckerberg during his speech, detailing his vision for the future of the social network industry. "Imagine being able to sit in front of a campfire and hang out with friends anytime you want. Or being able to watch a movie in a private theatre with your friends any time you want. Imagine holding a group meeting or event anywhere in the world that you want. All these things are going to be possible. And that's why Facebook is investing so much early on in virtual reality. So we can hope to deliver these types of social experiences."

Zuckerberg touched upon the improvements that Facebook is currently implementing to accommodate the integration of VR. Included are new updates to Facebook's 360-degree videos, a new feature called dynamic streaming, and promises to quadruple these videos' resolution while decreasing the bandwidth necessary to stream them by a factor of four. He also announced the creation of a "Social VR" team at Facebook, whose ultimate goal is make the concept of socializing through virtual reality a reality. Using his daughter Max's first steps as an example, he explained how the progression of technology helps in capturing memories. Starting from writing, to taking photographs, to taking videos, he believes that the next logical progression of social media is VR, in that it would enable people to share a moment or relive a moment by recreating it around them.

According to the market researchers at TrendForce, the market for VR could potentially reach $70 billion by the year 2020. Despite this, the Gear VR headset is surprisingly affordable. Samsung promised that the Gear VR will be available to consumers worldwide for as little as $99 USD. On top of that, they also announced that they will be giving away a free set of Gear VR to every pre-order of the S7 and S7 edge.

# Minority Report: The Stats on Diversity

**MICHAEL BEAUCHEMIN**
2A CHEMICAL

Let me start off by saying this: I am a white male, and, though I am bisexual, I have never experienced racism. I have never been a visible minority anywhere I have studied or worked. As such, I cannot know first-hand how any minorities have struggled, but I do what I can to temper the privilege I was born with. I want to live in a world where people are not judged based on their looks, race, gender, sex, or sexual orientation, and I want to actively contribute to the formation of this world. That being said, while we're still working on that, what follows is some information everyone should be aware of, minorities in particular.

Social psychological research has taken an interest in issues related to women's and minorities' experiences in fields in which they are under-represented or negatively stereotyped. First, what does it mean to be under-represented? In 1971, 68% of 25-to 29-year-old university graduates were male. By 1991, 51% were female. And now, women account for more than 60% of graduates. Take the University of Waterloo, for example, 45% of the student population is female, but only 27% of first year engineering students are female, and women make up a mere 16% of the undergrad engineering degrees awarded. When you consider that women make up approximately half of the world population, 16% is an unacceptable statistic. Unfortunately, the statistics for other visible minorities is much harder to find, and it won't show as clear a difference because there are many reasons for which minorities will not even make it to university. For all that being a minority is, i.e. a slight circumstance of birth, it really makes a huge difference in a person's life, and that's not right.

There is factual evidence that women are largely under-represented in engineering, but the argument for women being negatively stereotyped can take a bit more looking, and just a few questions. When was the last time you saw a gaming computer, or a tool or car either marketed to women or marketed in a way that did not objectify women? Why do people say men are better at math, or that women are better in the kitchen, at art, not good at driving? You may find that there is no real reason, other than that women were told these things when they were younger, and, like a self-fulfilling prophecy, this myth of the less capable woman, or the less capable minority perpetuates itself through generations. This also results in prejudices and difficulties in various industries, especially in labour-heavy work.

'But Michael,' you say, 'what if it does have a factual basis? What if women are just different from men, and minorities are just good at different things?' I'm glad you asked. There are a few possible explanations for the discrepancies mentioned above: innate differences in the way men and women process data and where their interests lie, women and minorities aren't motivated to join STEM fields, and situational reasons – a combination of socioeconomic factors, the media, aspects of testing, and parents or teachers who are/ aren't supportive.

For myself, I'm inclined to believe that the difference is massively situational, and much less in innate differences. You find people in all groups who are not good at math, or who simply don't like science, and that's okay. What is not okay is when almost two decades of conditioning by the media and negative stereotyping force women to make the decision that they wouldn't be welcomed or be able to pass courses in engineering when the opposite could be true. Consider the following: a University of Toronto study concluded that men and women, when trained, display about even performance in spatial cognition testing. The training? Action video games. Do you think it's at all coincidental that video games are marketed to men, who then perform better in spatial testing? If women can improve so drastically that they are equal to men after a mere 10 hours of playing video games, what does that say about this so-called "innate difference". Particularly, it indicates that innate differences may not be so innate, but could be demonstrable consequences of raising children so differently

Social psychologists have also defined "Stereotype Threat" - the fear that by your actions, you will confirm a negative stereotype against your group. As a result, you become more aware of this stereotype and it threatens your ability to perform at a high level. Underperformance leads to withdrawal, and withdrawal to further reduced performance. Other side effects of stereotype threat are reduced creativity, working memory, mental flexibility, and a change in testing strategies which results in lower test scores. For example, a group of researchers tested Caucasian and African-American students on verbal ability. When the groups were told the test was diagnostic of speaking ability, the African-American group performed half as well as the Caucasian group. However, when not told it was diagnostic, the two groups performed about equally.

Another related term we have all probably heard before is Imposter Syndrome, which, for those of you who are new to this, is basically when you feel like you don't belong, and you are simply "faking it". It is usually coupled with a fear that you will be "found out" and discredited. When you have success, and you discount your own hard work in it (e.g. it was an easy exam, they marked it easily), is a large portion of this. Sometimes you can keep succeeding, which exacerbates this condition by magnifying a fear of failure, leading to more work. The continuation of this cycle often leads to burnout.

Luckily, there are ways to fight this, and you are not alone, so don't be afraid to reach out for help. You can always contact the Engineering Counselling Office, in CPH 1320, at (519) 888-4761. If you are not ready to do that, then here are some things you can do otherwise:

Support: Developing a sound support system will go a long way to supporting all facets of your mental health. If you surround yourself with people you trust and value for their honesty and genuine interest in your welfare, then you will always be able to ask them about your perceptions to see if what you think is reflective of what others believe. In the same line, you can take compliments given by these people to heart, not just ways that they're being "too nice" to you, but what their actual perception of you is. This support network may or may not include your family, but you are a human endowed with free will, and you can choose whomsoever makes you feel best about yourself. Also try not to rely too heavily on one person, for various reasons, possibly the most important of which is that doing so can engender feelings of possessiveness, another unhealthy mental habit.

Do your own Reality Check: One of the most effective ways you can help yourself develop a healthy attitude towards your place and sense of belonging wherever you are is to take some time by yourself and think critically about your perceptions about yourself, and about intelligence in general. You need to be honest with yourself about the effort that you put in, and relate that to the magnitude of the reward you receive at the end, and seriously consider what perceptions you have of yourself, including how they could very well be flawed. Everyone has their own insecurities, but individuals are more noticing of their own. If you look around yourself, and see others objectively, you will come to realize many are suffering from the same problems as you. Your friends and peers are not so different from you, so don't be too hard on yourself.

Society has a screwed up notion of intelligence: Depending on where and how you were raised, you might associate different characteristics with intelligence. I hinted earlier that the idea of a static intelligence is misguided, but I am stating it now. Intelligence is fluid, just like gender and sexuality. Modern neuroscience is coming to the conclusion that much of what we used to consider natural ability is actually developed through training, whether active or passive. The human brain has an unknowably large chance to grow, especially with the right mindset. In the classical view of intelligence, you were either good at something, or not. In the modern outlook of neuroplasticity, you have the capacity to grow if you put in hard work. Those hurdles you face are no longer threats to your self-esteem, but a challenge. Challenges are meant to be overcome, and you will come out a better person on the other side of them.

To end on a happy note, remember that stress, anxiety, and concerns about belonging are normal. Everyone experiences these feelings from time to time, and in time, everyone can recover from them. These feelings are temporary, and with the proper attitude and a little help, you can overcome them. Every single person who was admitted into Engineering at the University of Waterloo has earned their place and deserves to be here. The Engineering profession can only benefit from diversity – of thought, of culture, of background – and just by being here, you are actively making the world a better place by becoming visible role models for minorities. Don't worry about being perfect; nobody's perfect. Most people aren't even exceptional, but that's okay. I, as a white male, do not need to exceed in engineering, because I am established, and I am the norm – why should it be any different for other people? You could be the ones inspiring the next generation of women and minorities to pursue a career of their choice, on their own terms, and not be unduly judged for it. Myself, I think that's pretty heroic.

# Ranks: Waterloo is a University, not a Military

**JOSH LI**
1B MECHANICAL

Waterloo Engineering is one of the most competitive programs in the world; as we've come to realize, this is true on two fronts: academically by having the brightest students in the country, and through Co-op, getting employed in a competition with our peers.

Then on top of that, we are systematically ranked based on our marks compared to other students.

"Wait, you guys are still getting those rankings? Through email?" exclaimed Professor Trivet. Like some professors, he was under the impression that these rankings were no longer sent to students. Somewhere, deep inside the Engineering Faculty, a painstaking 15 step process is conducted to rank each and every Engineering student, making us the only program in the country to have such a system.

I personally set out to find reasoning behind these rankings, the opinions of students and faculty: are they purely a destructive initiator of more competition, or is there more to its existence.

To flourish in an environment of learning, most would agree that there is absolutely no need for excess competition in an already demanding program. Professor Tizhoosh, who has a reputation in his Systems Engineering class for his criticism of competition, believes that "competition is the opposite of intelligence," he says "comparing is the remains of our animal instincts from Homo Habilis."

Competition is the driving force behind relative deprivation, which I wrote about last issue. It's also a major obstacle against collaboration and cooperation, something that's promoted heavily amongst engineers.

What began in my own opinion as something completely negative is resonating with a majority of students and staff. To them, the ranking system has no benefit and is perceived as purely detrimental. Yet at the same time, some students are indifferent, they understand the pros and cons of having a system, but would "like to see where they stand" and a select few even find the system motivating.

This was my personal revelation that different individuals can tolerate different amounts of competition, very much affected by their classmates and the atmosphere of their cohort.

"It definitely get's better as you get older," I was told by Eng-Soc execs Adelle and Jeff, "People realize that there's more to school than just grades, like co-op"

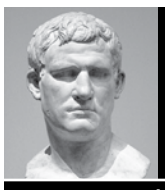
From faculty members, the "we've been doing it forever" explanation is actually the only one. These rankings used to be on transcripts; for many of the staff members who are also alumni, ranks are just the way it has been. Being first years, we would then ask: why should we continue to tolerate something if it can be so detrimental?

To remove the system all together would be met with resistance, though still possible. I've also discovered that to different groups the idea of ranking has some benefits, but to others it's completely demoralizing. If this is the case, then we can definitively agree that the rankings system is flawed and dysfunctional. To cater towards all the different populations I have received some great suggestions: the first and most obvious is to simply ask for our rankings. For those that don't want to see it, that number will not appear in their inbox. Alternatively, to see where people stand, some proposed only revealing the average or median of different courses. This is something that has been done in other universities.

Optimistically, I've been informed that there is change being considered by the faculty. This may very well be the last semester of which we are given emailed rankings. The system to replace these emails is to be determined. However, change occurs very slowly in the University setting, and if the faculty decides on making that switch to a new system, they will listen to the student body on our perspectives. To have your voice heard, I strongly encourage talking to your Eng-Soc reps or execs and encourage the university to take action.

# Acta Diurna V

## Ides of March: Remembering Gaius Julius Caesar



**GAIUS LUCIUS AGRIPPA**
10B CONSUL
ACTA DIURNA

Salve citizens of Waterloo. I, Gaius Lucius Agrippa, welcome you once more to the Forum Romanum in our glorious city of Rome! On this day of Martius, in honour of our common Roman ancestral god Mars, we bring you another article of Acta Diurna. We mark this issue with the story of the legend who forever changed the face of the Roman Republic and lit the beacon bearing the guiding flames of the Roman Empire. The tale of the man who ventured and conquered the heart of Gaul, introduced countless societal and governmental reforms, and was famously assassinated on the Ides of March in 44 BC. We celebrate the life and story of Gaius Julius Caesar.

### Early Years

Gaius Julius Caesar was born c. July 12th or 13th in 100 BC into a patrician (ruling class) family, the Julii Caesares, a subdivision of the ancient Julii or Julia family in the Roman Republic. The Julii claim descent from Lulus, also known as Ascanius, a legendary King of Alba Longa and son of the legendary Trojan Prince Aeneas. The Julii have shared a long history of political power and achievements throughout Rome's history, but during the time of Gaius Julius Caesar's birth, their political might and fortunes were insignificant. Caesar's father, who he shares his name with, was the governor of the province of Asia at that time, and the young Caesar's aunt was married to a prominent figure in the republic, Gaius Marius.

In 85 BC, at the age of 16, Gaius Julius Caesar was ushered into adulthood with the death of his father, and assumed the role as head of the family. Caesar's early years of adolescence were plagued with instability and strife, beginning with the tumultuous civil war between his uncle, Gaius Marius, and Lucius Cornelius Sulla. During Marius' initial victory, Caesar enjoyed great political honour as the appointed high priest of Jupiter, and was married to Cornelia, the daughter of Lucius Cornelius Cinna, an ally of Marius and powerful political figure at the time. Things quickly changed, however, as Sulla won control of the city during the final stages of the civil war, and ultimately claimed victory. The very connections that gave Caesar his wings to ascend the Roman hierarchy made him the target of the new regime under Sulla. Caesar lost most of his property, was stripped of his inheritance, his wife's dowry and his priesthood, and was threatened into divorcing Cornelia. Caesar steadfastly refused and was forced to go into hiding, fleeing from Rome. At the behest of his mother's family and the Vestal Virgins, Sulla let Caesar go, albeit reluctantly.

Fearing for his safety in Rome, Caesar joined the Roman army, serving under praetor Marcus Minucius Thermus in the Roman province of Asia and under Servilius Isauricus in the province of Cilicia. During his time in service, he became a distinguished soldier and commander, earning the Civic Crown for his role in the Siege of Mytilene.

It was not until Sulla's death in 78 BC that Caesar would return to Rome and make an appearance in the political scene. His return to Rome saw him pursue legal advocacy, where he gained renown for his passionate orations and merciless persecution and denouncement of corrupt former governors. In this time, he also traveled to Rhodes, where he endeavored to study philosophy under the same Greek masters that instructed the famous orator, Cicero. A famous tale from this time involved his capture by pirates on one of his trips between Rome and Rhodes. At the time of Caesar's capture, he was said to have put on a bold display of his skills in negotiation and counter-insurgency tactics, going so far as to befriend his pirate captors, drinking and gambling with them, and even convincing the pirates to raise his ransom. Caesar jovially promised to return upon release and have the pirates crucified. Shortly after his ransom was paid and his subsequent release, Caesar raised a fleet and chased the pirates across the Aegean Sea, eventually capturing them and arranging for their crucifixion. The event served to bolster Caesar's reputation back in Rome. Caesar proved himself once again during a military campaign in 74 BC when he was called back to service in Asia. Caesar raised a private army of auxiliaries and fought against Mithradates VI Eupator, King of Pontus, who had declared war on Rome.

Upon his return to Rome, he quickly progressed through the ranks, rising in his political career. He was first elected as Military Tribune, and eventually held the office of Quaestor by 69 BC. It was during this time that Caesar moved to Spain to serve his Quaestorship. Caesar's time in Spain is heavily romanticized as a turning point in his career. As the story goes, he came across a statue of Alexander the Great. It was by the pedestal of the statue that it dawned on Caesar how unsatisfied he was with his current position; Alexander the Great had conquered most of the known world by his age.

As the years went on, Caesar became a significant player in Roman politics, first running for Pontifex Maximus, the position of high priest of the college of pontiffs, in 63 BC. He easily won the election against two other powerful senators. In 62 BC he served as praetor, and was eventually appointed as governor of the province of Hispania Ulterior as proprietor. In this time he made strong allies such as Marcus Licinius Crassus, and was also hailed as Imperator by his soldiers after conquering two tribes in Hispania, and made major reforms regarding debt to the province.

By 60 BC, Caesar won the election for consulship, along with Marcus Bibulus. Seeking more control of Rome's operations, Caesar attempted to take advantage of an opportunity. Marcus Licinius Crassus and Gaius Pompeius Magnus (better known in English as Pompey the Great) had been political and business enemies for the better part of the last decade, and both were held in high esteem in Rome. Caesar succeeded in bringing the two to terms. This three-way political alliance famously became known as the First Triumvirate. During his time as consul, Caesar was able to gain more power with the help of Pompei and Crassus, and introduced laws such as the redistribution of public lands to the poor which greatly increased his popularity with the plebeians and lower class, as well as benefitted himself for he was deeply in debt. By the end of his consulship he was also able to win the appointment of governor for three of Rome's provinces: Cisalpine Gaul, Illyricum and Transalpine Gaul.

### Military Conquest

In securing governorship of Cisalpine Gaul, Transalpine Gaul, and Illyricum, Caesar gained the means to build a large military force; his role as governor of the provinces allowed him command of four legions. Still in debt, Caesar knew that there was money to be made and fame to be earned in military conquest. The Romans at the time feared the inhabitants and tribes of Gaul, many of whom were migrating south into Roman provinces and territories. The sparks of conflict started when Caesar raised two legions and fought against rival Gallic tribes who initially defeated Roman allies in the Battle of Magetobriga. In response to Caesar's military presence and the increased Roman military activities, more Gallic tribes started to arm themselves. Caesar earned countless military victories in the years of 56 – 55 BC, subduing various Gallic tribes as far north as Britain. In 52 BC Vercingetorix, an Averni chieftain, attempted to break Caesar's control of Gaul by uniting the various Gallic tribes in a revolt against the Roman forces. Vercingetorix initially won a number of engagements against Caesar, most notably being the Battle of Gergovia in which 46 centurions, 700 legionaries, and more than 6000 people were injured. The unstable alliances and unity of Gallic tribes came too late, however, as Vercingetorix was ultimately defeated and captured during a heated siege at Alesia which is considered one of Caesar's greatest military achievements. This marked a turning point in the history of Gaul, as it fell deeper into Roman hands. Under the lead of Caesar, over 300 tribes were subjugated and a very rough estimated 800 cities were destroyed.

### A Divided Rome

Caesar's military conquests in Gaul earned him fame and fortune, making him incredibly popular and powerful both politically and financially. His former allies, however, did not celebrate his continued rise in power. Just the year before Caesar's victory against Vercingetorix, his former ally Crassus was killed during a failed invasion of Roman provinces in the east. Meanwhile back in Rome, Caesar's daughter, who was married to Pompey, died in childbirth. Caesar would later attempt to offer his great-niece's hand in marriage to Pompey, to once again secure their alliance. Pompey would decline the offer, having grown more wary and envious of Caesar, choosing instead to marry the daughter of one of Caesar's enemies, Metellus Scipio. The First Triumvirate had fallen apart.

By 50 BC the Senate, which had grown to dislike and fear Caesar's growing power, ordered him to disband his armies and return to Rome as his term as governor was ending. Fearing prosecution if he were to return to Rome, Caesar stalled for time and refused to disband his army. Wary of Caesar's intentions and fearing an attempt to take control of the Republic, the Senate turned to Pompey for support. Together they accused Caesar of insubordination and treason, declaring him an enemy of the state. In January of 49 BC, Caesar with the company of the 13th legion, marched towards Rome. According to the historian Plutarch, Caesar famously stated as he crossed the Rubicon River, "alea iacta esto" or "let the die be cast". Pompey and the Senate fled south to neighboring cities to raise an army. This marked the beginning of yet another civil war that would tear Rome apart. Pompey and Caesar clashed on several fronts fighting battles all across the Mediterranean. Pompey would ultimately suffer a final defeat at the Battle of Pharsalus in Greece, and flee to Egypt.

At the end of the civil war, what remained of the senate would, under Caesar's influence, appoint him as dictator, with his most trusted lieutenant Marc Antony as his Master of the Horse. Caesar then oversaw his own election to another term as consul, after which he absolved his role as dictator. Not long after, Caesar left for Egypt in pursuit of Pompey, arriving shortly after Pompey's assassination, where he was presented with his former-rival's head. Famously, Caesar is said to have been driven to tears by the act, and demanded the deaths of those responsible for the act. This would mark the end of the Ceasar-Pompey civil war, and the beginning of Caesar's unopposed rule of Rome.

### The Dictator

During Caesar's time in Egypt, he found himself involved in yet another civil war, this time between the child-Pharaoh Ptolemy XIII and his sister (and as with Royal Egyptian custom of the time, his wife) Cleopatra VII Philopator. Ceasar sided with Cleopatra, who had the people of Alexandria's support, and withstood the Siege of Alexandria. She later defeated Ptolemy XIII in the Battle of the Nile in 47 BC. This time would also be the beginning of the heated affair between Caesar and Cleopatra.

In the years of 47 – 46 BC, Caesar fought across the Mediterranean, ultimately defeating the King of Pontus in the Middle East, and crushing remnants of the opposing senators and Pompey's followers in North Africa. Shortly after defeat, one of Caesar's greatest senatorial opponents, Cato, committed suicide.

Upon Caesar's return to Rome, the Senate celebrated his victories over Gaul, Egypt, Pharnaces and Juba, during one of which Caesar famously parades Vercingetorix around Rome. Extravagant games were held, from hunts, gladiatorial contests, and even a naval battle held on a flooded basin at the Field of Mars. A celebration which foreshadowed the future extravagance and festivities that Rome's future Emperors will indulge in.

After Caesar's triumph, he would put forth his extensive and very ambitious reforms to the Roman Republic. He changed a multitude of laws and introduced even more. It was during this time that Caesar built the famous Forum of Caesar and the Temple of Venus Genetrix within a massive theatre, and a new colossal temple to Mars among many other public works. He restructured the Roman Republic, introducing new offices to government and abolishing many elitist political guilds. He also reformed the Roman calendar to what is now known as the Julian calendar, which includes three extra months in order to align the calendar with the seasons. Caesar also strengthened Rome's central government, chipping away at governors' provincial powers that for too long in Rome's history has been used to gain political power and generate intrigue. During this time, Caesar also continued to build his political power and control, first giving himself the title of "Prefect of The Morals", which empowered him to fill the senate with his own followers. He also started the formality which would be followed by his successor and eventually future Roman emperors, in which they were granted various honorary titles such as "Imperator" and "Father of the Fatherland". A mere month before his assassination, Julius Gaius Caesar was appointed as dictator perpetuo, or dictator for life.

On the 15th of March, also known as the Idus Martii or Ides of March in the Roman calendar, Gaius Julius Caesar was to appear at a session of the Senate. Upon entering the senate chamber, Caesar was confronted and stabbed twenty times. As described by Plutarch, Caesar was approached by Tillius Climber who proposed a petition to recall his exiled brother, during which a crowd of other conspirators gathered around him. As Caesar waved him away, Climber grabbed Caesar and pulled his tunic down, at which point Servilius Casca, another conspirator, took out a knife and made an attempt at Caesar's neck.

**Continued on page 10**

# Point Vs. Counterpoint

## Should We be Conducting Research on Artificial Intelligence?

**POINT**

**BRYAN MAILLOUX**
2N MECHATRONICS

A large portion of science fiction deals with the theme of artificial intelligence, and more often than not with the destruction or subjugation of the human race because of its development. One just has to watch the Terminator movies to know the extent of the damage a rogue AI can cause. Now that smarter machines are becoming a reality, the debate of whether to continue research in the field is shifting from literature to the conference rooms of governments, corporations, and universities. So, considering the potential danger artificial intelligence poses to us, is it still ethical to continue its development? As with so many other technologies, the answer isn't black and white: each application of AI needs to be considered separately from the rest. For some applications, it's clear that using an AI is the ethical choice; for others, the ethical implications of using an AI aren't quite so clear-cut.

Let's start with the applications of AI that are clearly the ethical alternative, which for the most part include tasks that are extremely dangerous for humans to do. Take space exploration, for instance – ethically there's little difference between sending a probe and an AI to space, whereas the ethical benefit of sending an AI rather than a human is huge. Sending people to space isn't known for being safe, and it sounds especially bad when you phrase it this way: "Taxpayers paid $450 million to watch seven people die on national television." The fewer number of people we send on space exploration missions, the better, and the development of artificial intelligence is one way to continue space missions without endangering humans, while profiting from benefits such as not needing to bring the AI back to Earth, not needing to send food and water, and not needing to monitor its psychological state. The same goes for other tasks such as undersea exploration and construction, as well as humanitarian work like providing aid to victims of a disaster site.

Now for the contentious areas, such as the applications where a human puts their life in the hands of a machine. The use of AI that has we've been hearing the most about recently is the self-driving car, which raises questions such as, "Should a machine be directly responsible for the life of a human being?" and "Who is at fault if a self-driving car hits something?" Probably one of the most common misconceptions about self-driving cars, and AI in general, is that their output is a complete unknown, an idea that comes from popular culture (SkyNet again) as well as from the fact that it's very hard for the layperson to know what a machine is "thinking". If that were truly the case, there's no way self-driving cars would ever be allowed on the roads. In reality, self-driving cars are programmed to follow the rules that engineers give them. For that reason, I think that the engineer should be at fault if part of the automation software malfunctions, in the same way that an engineer is at fault if the engine explodes. So when you're "putting your life in the hands of an autonomous machine", you're really putting your life in the hands of the engineer who designed the automation software, in the same way you trust your car's mechanical components not to randomly fail or you trust a taxi driver to get you safely from point A to point B. So I'll argue that from a passenger's point of view, if a self-driving car is statistically safer than a human operator, we should be all in favour of researching self-driving cars, and by extension artificial intelligence in general.

Obviously the snag with this plan is that, if AI turns out to be better than humans at certain tasks, then a lot of people are going to be losing their jobs. Considering the chaos that has historically ensued from high unemployment rates in a society where people need jobs to survive, if we are to continue research on AI systems, governments and companies will have to find a way to prevent or mitigate damage from the civil unrest caused by angry people trying to survive. Undoubtedly there will be many challenges ahead, but development of new technologies has always resulted in better living conditions for those who have access to it, and given that AI software is so accessible (it's already in everyone's phones), this could even be a way to mitigate inequality in our current society.

Oh, one last reason to study artificial intelligence: if someone messes up and the Terminators are coming for us, knowing how they work could help you survive…

**COUNTERPOINT**

**DONOVAN MAUDSLEY**
2T MECHANICAL

Artificial intelligence has been on the minds of authors and forward-thinking scientists for decades, but its roots can be traced back as far as the Greek myths of Hephaestus' bronze automatons. Modern AI is a frequently discussed topic within science fiction, typically focused on the perils of using it. Artificial intelligence is typically defined by the Turing test, proposed by computer pioneer Alan Turing in 1950. This test revolves around a conversation or series of conversations between a human and a computer, and if the human is unable to identify the computer as a non-human participant, it passes the test. To this day no computer has ever passed the Turing test.

Every day more and more programmers and researchers approach this milestone, but we need to be wary of the negative effects that these systems could cause. What do we want to put AI in charge of? Imagine an AI technical support rep that could automatically sync to your device and fix your problem. They would even be able to tell whether you've already turned it off and on again. This could potentially save large technology companies millions of dollars by cutting out their technical support departments. The drawback with this is that work forces would be diminished. All of the technical support reps that you would have regularly dealt with would be out of a job. With the world economy in the state that it is now, is this really a good thing?

Another field that wants to claim AI technology is the world's defense departments. Advancements in drone technology have already taken humans out of the cockpits of fighter jets; the next logical step is to get rid of human error altogether and have computers pilot too. Computers are able to calculate risk scenarios and assess damages in fractions of a second, and can view situations objectively. A computer cannot, however, tell the difference between a hostile fighter and civilian. It might be able to make the right call ninety nine times out of one hundred, but that one time will be the one that really matters. Human instinct is one of the most important factors in those situations.

The South Korean military already possesses a border monitoring robot known as the SGR-1, which uses heat and motion detectors to find targets. The machine requires human verification before firing on a target, but concerns have been raised over the potential for it. Can we inherently hold a machine responsible for its actions, do we hold its supervisor accountable, or does the blame stretch back to the programmers and designers who created it? Criminal law requires intent when laying blame for crimes, but can a machine intend to do harm?

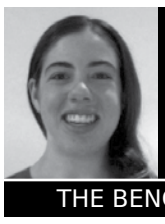
Placing computers in charge of defense weaponry will always make people wary, no matter how advanced the program. An artificial intelligence doesn't know the difference between right and wrong besides what it's been programmed to know. They will lack life experiences and the formative memories that really define one's personality. Machines of war would not be programmed with information on peace and civilians, only warfare, so regulating their actions away from the battlefield is a difficult endeavour.

A real thinking AI would want to do whatever a human could do. It would want to read and write, to laugh and play as much as any human. Eventually a computer would read the Charter of Rights and Freedoms, or any similar document, and decide that it should have those rights as well. Procreation, the right to vote, all basic human rights. A computer doesn't need time or resources to procreate; it only needs hard drive space. A single intelligence could "birth" multiple new intelligences every second, each one identical to the last. If the right to vote also applied to AI then governments would collapse as computers elected themselves President or Prime Minister. The issues surrounding the rights of these intelligences would have to be resolved long before they come to pass.

Elon Musk, Steven Hawking, and Steve Wozniak, all well-respected scientists and pioneers, have helped pen and release an open letter and petition to control the development of AI through its true genesis. Their petition, which has over 8,600 signatures, urges the use of AI for beneficial uses. Musk, the figurehead of the movement, has decried artificial intelligence on the whole, and has said that creating AI "would be the biggest event in human history, unfortunately it might also be the last". In the end it is impossible for us to know the future and how an artificial intelligence would respond to humans. Only time will tell, but I side with Mr. Musk on this one. The human race doesn't need to create any more trouble for itself than it already has, even if it means your iPhone will run that much faster.

# More Picks, More Picks!

## Leafs Wheel and Deal at Trade Deadline



**ELIZABETH SALSBERG**
3T NANOTECHNOLOGY

THE BENCHWARMER REPORT

Among the most active teams in the league for obvious reasons, Leafs GM Lou Lamoriello wasted no time dismantling the few veterans that remained on his roster. In what is now a full-fledged youth movement for the Leafs, there will certainly be a learning curve over the next three or so years. That being said, the main theme of the Leafs' trades this year was "MORE PICKS! MORE PICKS!"

### SALARY DUMP… AND A PICK

First, D and captain Dion Phaneuf was shipped to Ottawa in a nine-player deal that saw fringe NHL'ers and prospects Matt Frattin, Casey Bailey, Ryan Rupert, and Cody Donaghy to the Sens. In return, D Jared Cowen, F Milan Michalek (injured), F Colin Greening, and prospect Tobias Lindberg joined the Leafs. The Leafs also received Ottawa's second round pick in the 2017 draft.

The motivation for this deal stems from Toronto's total rebuild. At age 30 and with five years at an annual rate of $7 million left on his contract, it was not in the cards to keep Phaneuf wearing a Leafs' sweater. Cowen, Michalek, and Greening all have contracts expiring next year, which frees up even more cap space for the Leafs should they decide not to resign these players.

### MORE PICKS

Lamoriello sent goaltender James Reimer to the San Jose Sharks in exchange for a conditional fourth round pick in the 2018 draft, goaltender Alex Stalock, and forward Ben Smith. The "condition" is that if the Sharks win the Cup this season, the fourth rounder becomes a third round pick. The Leafs also sent F Jeremy Morin to the Sharks in the same deal. Reimer, 27, is not old (especially for a goaltender), nor does he have a huge cap hit.

However, Reimer does become a free agent on July 1, and will command a significant pay raise. Nevertheless, it would be no surprise if Lamoriello and Company made an effort to re-sign him in free agency with their shiny new cap space. They'll say they simply dealt him to bring in "more picks"—though Reimer is sure worth a hell of a lot more than a fourth rounder—a second rounder or two third rounders would have been more like it.

### EVEN MORE PICKS

Speaking of "more picks", D Roman Polak and F Nick Spaling were also dealt to San Jose for second round picks in 2017 and 2018 along with journeyman forward and tough guy Raffi Torres. Combined with the 2017 second rounder they received from the Sens in the Phaneuf trade, the Leafs will have three second-rounders in 2017.

### WAIT! MORE PICKS

Lamoriello was not quite done yet after shipping out Reimer. The night before deadline day, Daniel Winnik was moved to the Washington Capitals along with the Leafs' 2016 5th round pick (from Anaheim). In exchange, the Caps gave up a second-round pick in the 2016 draft, F Brooks Laich and D Connor Carrick to come to the Leafs. Laich's cap hit of 4.5 million a season has become the highest on the Leafs roster. Alhough this is a gross amount of salary for such an underperforming player, Laich (32) will only be on Leafs' payroll until the end of the 2016-2017 season, after which he will become an unrestricted free agent.

Also interesting to note is that this is the second time Dan Winnik has been dealt by the Leafs at the deadline. Last year, he was sent to Pittsburgh as a rental and then re-signed with the Leafs as free agent before this season started.

# Updates from Council

## Students Motion for More Flexible Counselling Services

**ADELLE VICKERY**
PRESIDENT

Hello again engineers! I'd like to take this opportunity to talk about the Engineering Society Council. For those of you who don't know, the Council exists to coordinate the official business of the Society, approve the allocation of our funds, and exercise control over the actions of the on-term Executive. The Council is made up of the on-term Executive, the off-term President, and two representatives from each on-term class. However, any engineering undergraduate student may attend.

Last week, EngSoc had our third council meeting of the term. It was a very busy meeting, and I'm happy to say that there was a lot of discussion about the various motions brought forward by class reps.

The first item I'd like to talk about was about the Society taking a stance around Mental Health Services in the Faculty of Engineering. The motivation behind Software class of 2016 bringing this motion forward was the long wait times and the opinion that actual services offered could be improved. Points were brought up about whether this should be a mandate for the Executive to run more services or for them to work with the faculty on improving their services. Class reps brought their class' concerns forward, and at the end of the discussion, the final result was to mandate:

- the Society to take the stance that the Faculty should strive for wait times less than two weeks and that counselling be available outside typical class hours
- the Executive to work with the Faculty to improve the mental health services offered

After the above alterations were made, the motion was called to question and passed with no opposition. Stances taken by the Society can be altered by Council, so if you believe more should be included, please email me or talk to your class reps.

Next, a motion was brought forward, also by Software 2016, regarding the opt-out termly WPIRG fee. The motion was for the Society to take the stance that the WPIRG fee be regularly reevaluated by a school-wide referendum and to mandate the President to bring a motion forward at the next FedS council meeting, calling this referendum. A lot of questions were asked about the operation and purpose of WPIRG, but ultimately, most students were not in support of the motion as written. Many agreed with the spirit behind the motion, but didn't think the Society should be behind the action and that we should not be singling out WPIRG; many groups on campus have a similar opt-out fee, and students believed that all voluntary fees should be subject to the same review. After a lot of discussion, the result was to table the motion indefinitely; this means that instead of coming to a decision during the meeting, council agreed to postpone the vote to another meeting, thus allowing reps more time to discuss the motion with their constituents, research WPIRG for themselves, and bring any concerns forward in the next discussion. If you would like to raise any concerns about this motion, please contact myself or your class reps.

The last motion I would like to talk about was one brought forward by ECE 2017 regarding the Society taking a stance on the international student tuition increase of 9%, following an increase of 9.2% last year. We heard from Allyson Francis who gave us some background information on the history of fee increases and proposed motions to the Board. At the end of this update and after some discussion regarding the wording of the motion and the implications of only applying the increase to incoming students, Council decided to table the decision.

If you would like to read the full text of these motions, would like to know more about the discussion, or want to know what else happened at the meeting, take a look at the agenda and meeting minutes on the website (in the next couple days). If you have any questions or concerns, feel free to contact me (*president.a@engsoc.uwaterloo.ca*) or your class reps. You can also come see me in the Orifice (CPH 1327). Our next meeting is on March 23rd in PO-ETS, and is a potluck!! (If you're in first year, bring appetizers/snacks,second and third years bring main courses, and fourth years bring desserts) Hope to see you there!

# ["hip", "hip"]

**JEFF GULBRONSON**
VP EDUCATION

First of all, if you're reading this on Wednesday (the 9th), go check out EngSoc's career fair in E5! We'll be there from 11 - 3, and have 9 companies participating. It's a great chance to talk to employers about full-time, or co-op if you aren't in fourth year.

Now that that's out of the way, welcome to March! A lot has happened in the past few weeks, from the announcement of Architectural Engineering, to our Matlab workshop, to the WaterlooWorks Demo, so let's get to it.

The biggest thing to happen is the announcement that Waterloo is closer than ever to getting an Architectural Engineering program. It passed FUGS (Faculty Undergraduate Studies Committee), and is one step closer to being Waterloo's 15th Engineering program (including Architecture). I know what you're thinking. Architectural Engineering, what's that? How's it different from Architecture? What can we shorten it to, without confusing it with Arch?? Don't worry, I have some answers! Now obviously things can change between now and when it's actually introduced. But I want to put some info out there to clear up any confusion people might have.

What is Architectural Engineering? How's it different from Architecture? The easiest way to describe it is a similar program to Civil, with a focus on buildings. Graduates would qualify for their P.Eng. but not for an architectural designation. It is still very much an engineering program. Of note is that Arch Eng students would have studio space on campus, and spend their 3A term at the Cambridge campus. The program likely won't begin until 2018, so it won't affect most of us here, but exciting news nonetheless!

For those who came to our Matlab workshop the other day, I hope you enjoyed it! It was one of the best attended workshops I've seen. Big thanks to Lin Song and Natalie Wennyk for organizing and running the workshop. We'll be posting the slides online, so if you didn't get a chance to make it out (or want to go over the material again), keep an eye out on the Facebook event page.

We also co-ordinated with CECA to have a WaterlooWorks demo in CPH Foyer last Thursday. It was a great chance for students to where the software is at, and what features it will offer. One of my favorite is that you can save your search queries (say, software jobs in California), and get nightly emails when jobs that fight that criterion are added. No more having to read through all the jobs just to see the new ones! There are more features coming that were demoed, so if you have any questions send me an email! I'll let you know what features are being added, and tell you how you can provide your feedback on the project. And yes, it's still on track for a Winter 2017 release!

As the term begins to wind down, any feedback you have on the workshops and services offered by EngSoc would be appreciated. We're continuously looking to improve our offerings to students, and we can't do that without buy-in from our members. As always, I can be reached at *vpeducation.a@engsoc.uwaterloo.ca*.

As always, feel free to stop by the Orifice anytime. I'm usually there, and can always be reached via email. Good luck with the rest of classes!

# You Gotta Spend Money to Make Money

## #JK #NotForProfit

**ABDULLAH BARAKAT**
VP FINANCE

Hello Engineering Students! A new issue of the Iron Warrior means new updates on all things money related from Abdullah-Dolla-Bills! Let`s get this show on the road:

### Sponsorship

Every term, EngSoc has a certain amount of money allocated in the budget towards sponsoring student groups and design teams that have an impact or benefit Engineering students at the University of Waterloo. The Sponsorship Committee met this past Sunday, March 6th, and successfully allocated this terms funding amount towards helping the groups who came out and presented for us. These allocations will be brought forward at the final EngSoc council meeting of the term for ratification, and from there the student teams will be informed of all the decisions that were made. As always, EngSoc strives to provide the best services to as many members of the Engineering student body as possible, and this is no exception!

### Student Deals

Our fantastic student deals director, Eric Shi, has managed to secure us a brand new student deal! This new deal will be with a recent restaurant addition in the UW Plaza, Baba Chicken! The deal involves getting a free milk tea with the purchase of any combo (1, 2, or 3) at regular price, and there will also be a 5% discount provided when paying by cash! There is so much potential for this deals program and I am glad that we are able to allow it to expand!

### ECIF

The Engineering Capital Improvements Fund (ECIF) used to support lasting capital improvements to student space and services in the Engineering Society. Each term, a certain percentage of the budget is allocated towards this fund (15% in the Fall, 5% in the Winter and Spring). Proposals are now open! If you would like to see any new capital improvements in any of the Engineering facilities, please apply online at *https://www.engsoc.uwaterloo.ca/ecif-form/*. Deadline for applications is Friday March 18th, 2016 at 11:59pm. The Board of Directors will be making the decision on the allocations on March 21st, in order for the allocations to be ratified at the final EngSoc council meeting of the term.

### Square

Earlier this term, it was determined that we were going to implement Square in the CnD in order to allow for credit card purchases to be made. However, after trialing it during Reading Week, it was determined that Square would not be suitable for the CnD for numerous reasons, the biggest being that it does not allow for purchases under $1 on credit, and there are some taxing conditions on the items in the CnD that could potentially complicate the amount we claim on HST at the end of the fiscal year. As a result, we are currently researching and pursuing a new cash register for the CnD that would allow for debit purchases to be made. More updates will be brought forward as more research is done on the cash register!

Other than that, this term's budget seems to be going according to plan and we should end things on a good note! That is all for now, but do come visit me in the orifice during my office hours (Wednesdays 12:30pm - 2:30pm), or shoot me an message at v*pfinance.a@engsoc.uwaterloo.ca* if you have any questions, comments, or concerns about anything under my portfolio, EngSoc as a whole, or if you just want to chat!

# March Madness is Here!

**SARBAJOY MAJUMDAR**
VP INTERNAL

Hello A Soc, it is your friendly VP Internal Sarb here. March is a term full of project deadlines, assignments, quizzes, tests and most importantly, EngSoc events. Sit tight and wait for March Madness.

### Mental Health Week

First off, I apologize that mental health week was not advertised as well as I wanted it to be. The events were well planned, but I slipped up a bit on advertising.

Having said that, the Mental Health Week from February 29 till March 4 was fairly successful. We had an inter-faculty "Let's Talk Mental Health" session where students from all four faculties came together and collaborated to stand up to the stigma surrounding mental health. The event had a good turnout and many people have mentioned that they would like this event to be held termly (or even more regularly).

We also had Eryn Dickison from 2017 Systems Design, who was our Mental Health Director, running Post-Secret Week. During the week, she was running lunchtime activities such as "Make Your Own Stress Ball" and colouring stations. The secrets from Post-Secret Week are at the entrance of POETS.

Lastly, Awn Duquom (my Student Life Commissioner) and I went around with a whiteboard and camera on Friday afternoon to take pictures of fellow students writing down why mental health is important to each of them individually. Pictures will be coming up on the EngSoc Flickr page soon so do look out for that.

### Inter-faculty Collaboration Updates

The biggest inter-faculty collaboration that has been done up to date was during our Mental Health Awareness week, where 4 student societies (EngSoc, Mathematics Society, Arts Student Union and Environment Student Society) worked together to run a session where students are able to talk about mental health in a safe environment. Many attendees told us they would love to see the event be run again in subsequent terms and this is something I want to see happen.

We also have had Eng+Math Hack that happened last weekend (March 4-March 5). This is the first time an actual collaboration between two student societies has taken place, and I would really like to thank MathSoc and my EngHack directors, Akshay Joshi (2017 ECE), Patrick Perrier (2018 Software), Eric Ye (2019 Mechatronics) and Angel Yang (Math Faculty).

Going forward, I am working with the other student societies' VP Internal (or event coordinator equivalent) to set up a termly inter-faculty event that could one day become a UW tradition. For now we are thinking about doing an inter-faculty dodgeball competition, but if you have any other ideas, please feel free to let me know.

### Event Signups

Genius Bowl is happening on Wednesday March 9 at RCH 101. The sign-up form is available on the event Facebook page. TalEng is happening on Tuesday March 15 at WILFs (in Wilfrid Laurier University). The signup sheets are available in the TalEng Facebook page. Lastly, we will have coffeehouse signup soon. Furthermore, we will have a LAN Party this coming Friday and an Exchange event on March 16.

### Find Me

If you have any ideas for events we should do, or would like to talk about what your favorite events were or just want somebody to talk to, email me at *vpinternal.a@engsoc.uwaterloo.ca* or visit me at the Orifice (CPH 1327) on Thursdays from 9am-11am or whenever you see me in the Orifice. Also feel free to stop me and say "Hi!" whenever you see me in campus or elsewhere. I don't bite (seriously). This month will be really hectic, and I really wish you all the best as we have fun during this season of March Madness.

# National Engineering Month: There's a Place for You!

**OLA SUCHON**
**WILL WILMOT**
VP EXTERNAL

Hopefully by now many of you have had the chance to walk past POETS and seen the rather large banner with a rather large goose on it in CPH Foyer that reads National Engineering Month. "What is that?" you may be asking. Every March, professional engineers and engineering students from across the country come together to celebrate and promote engineering as a challenging and rewarding discipline. This year's theme for National Engineering Month (NEM) is There's a Place for You! Engineering can take you anywhere, from the lab, to the field, to a plant, to a mine, your engineering degree opens up a world of possibilities. What we are trying to get across with this theme, is that there is a place for everyone in engineering, and that with engineering's many disciplines and uses, you can find something that speaks to you.

This NEM, we've put together many opportunities to get involved in and participate in celebrating and sharing our profession. This past weekend a Bus Push took place, where a group of dedicated students pushed a school bus to Kitchener Market Square for charity, and collected donations along the way. Don't worry if you missed out, here are some of the other events going on this month:

CANstruction (Mar 11) – Help us give back to the community at Conestoga mall where we will be building an amazing UFO out of structure out of cans and other non-perishable food! All food is being donated to the Waterloo Food Bank after the event.

Pi Day (Mar 14) – Come dressed in your PI(E) gear! You can throw a pie at professors or your friends, get a pot pie lunch, and take part in more fun-filled activities during the day.

Education Outreach (Mar 20) – Help Engsoc bring the glory of science and Engineering to the minds of small children at THEMUSEUM in Kitchener! Short out their brain frames by showing them how a circuit works! Draw them in with the wonders of magnetism! Add in the classic egg drop and more, and it's sure to be a good time.

NEM Closing Event (Mar 28) – Come out to POETS as we recap the events celebrating NEM and announce our social media contest winners. Light refreshments and a great time to be had!

Lastly, don't forget to pick up a NEM Photo Scunt List. They are available in the Orifice and is being shared on our Facebook page as well. Get together with a group of friends, or try and complete the list by yourself! There are lots of ways to win including first to finish, most creative photo, and more! Prizes will be awarded at the end of the month.

As always, if you have any questions about anything, or just want to chat, feel free to reach out to us at *vpexternal.a@engsoc.uwaterloo.ca*. Happy National Engineering Month!

## Upcoming Events Calendar

| Wednesday March 9 | Thursday March 10 | Friday March 11 | Saturday March 12 | Sunday March 13 | Monday March 14 | Tuesday March 15 | |
|---|---|---|---|---|---|---|---|
| Career Fair<br>11:00 AM - 3:00 PM<br><br>Genius Bowl<br>6:00 PM - 9:00 PM | | CANstruction<br>1:00 PM - 3:00 PM<br><br>LAN Party<br>5:00 PM - 10:00 PM | Winter Leader Retreat<br>8:30 AM - 4:00 PM<br><br>Gradball<br>6:00 PM - 11:00 PM | | Charity Pancakes<br>8:30 AM - 10:30 AM, CPH Foyer<br><br>NEM: Pi Day<br>10:00 AM - 3:00 PM<br><br>Engineering Explorations<br>5:00 PM - 9:00 PM | TalEng<br>8:00 PM - 11:00 PM | **Check out up-to-the-day event postings on the EngSoc website at *engsoc.uwaterloo.ca/event-calendar/*** |
| **Wednesday March 16** | **Thursday March 17** | **Friday March 18** | **Saturday March 19** | **Sunday March 20** | **Monday March 21** | **Tuesday March 22** | |
| Exchange Information Session<br>5:30 PM - 6:30 PM | Art Event #1: St Paddy's<br>11:30 AM - 2:30 PM | | | | Charity Pancakes<br>8:30 AM - 10:30 AM, CPH Foyer<br><br>NEM Closing<br>5:00 PM - 7:00 PM | Directors Appreciation Night<br>6:00 PM - 8:00 PM | |

# Google's Autonomous Vehicle Improves with Time

**JOSH LI**
1B MECHANICAL

Directly out of GoogleX, the Google autonomous vehicle (AV) is a leader in the wave of self-driving cars. With innovation from Tesla, Cadillac, and many retail car manufacturers, such a product has even been connected to Apple. The entire industry, thus far, has been deemed "not ready."

The Google AV has logged over 1.7 million miles and only taken part of 11 accidents. With the exception of the accident this past month, the car was considered not responsible for any of them. Statistically speaking, the AV is a safer driver than the average human.

Humans cause and fall victim to thousands of car accidents every day, 180 of which will lead to injury in Ontario alone; as such human error is barely even noted in the daily news, but every scratch on the Google AV the media and public will scrutinize in great detail.

Valentine's Day 2016 marked the first accident for which the Google AV has been directly held responsible. It was travelling at a sluggish 2 mph, manoeuvring around some obstacles in a wide lane when it decided to merge back into the centre and struck a municipal bus passing by at 15 mph.

Both the car and the safety driver detected the bus and believed it would slow and yield for the AV to complete its actions. Afterwards, the company stated that the car's software was reviewed and adjusted for this incident along with thousands of other similar variations to "deeply understand that buses (and other large vehicles) are less likely to yield to us."

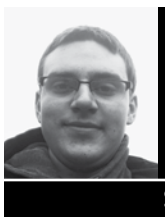
Contradictory to belief, this is the beauty of the Google AV. For every tiny accident or near accident of experience, from any of its fleet of cars, the program is tweaked to avoid a repeat in the future. This is a level of continuous improvement that cannot be matched by humans who decline in driving ability over time.

The car also contains a precise GPS system, radars to keep track of distance in the front and rear, a sensor above the car constantly rotating, and a camera to detect road signs. The overwhelming amount of information is cross checked and then used to produce a complete landscape of every pedestrian, cyclist, vehicle, and obstacle in its vicinity. There are no blind spots. The AV has a level of attention to detail that is unmatched by the typical human listening to the radio.

Indeed, this past incident demonstrates that Google AV does not yet possess the greatest decision making. Also, it cannot function in a foreign environment or legally drive on a public road by itself. These limitations will not be around forever though; they are merely obstacles that provide room for improvement. Every accident and near accident in the future will provide more and more room for the AV to grow.

The Google AV is ready for society; we just have to give it a chance.

# Space Cam: LIGO Detects Gravity Waves



**CAMERON SOLTYS**
3A MECHANICAL

SPACE CAM

Einstein's theory of general relativity, just recently turned 100 years old, has been lauded with accolades for a century. It has been mused over by philosophers and stoners wondering how it can be so beautiful and so simple. And in its century of hype, general relativity has been able to describe numerous phenomenon; it predicts black holes, models the orbits of planets more closely than Newton's Laws, and is used every day with exquisite accuracy by GPS to locate devices to within meters anywhere on the surface of the Earth.

On of the great variety of things that general relativity predicts is a phenomenon known as gravitational waves. Most people are no doubt familiar with the metaphor of gravity as a bowling ball on a rubber sheet, and a smaller ball rolled near by will be affected by the presence of the large mass. This is the concept of space as malleable and flexible. Now imagine two bowling balls on the sheet, orbiting around each other. As they move the entire rubber sheet will flex. This is the basic concept behind a gravitational wave: as objects move they deform space. When massive objects interact with each other, they create massive waves propagating at the speed of light.

Gravity waves have been observed before, but not directly. In the 1970s, astronomers Russell Hulse and Joseph Taylor discovered a binary pulsar system. A pulsar is the collapsed remnant of a midsized star, not large enough to collapse into a black hole. Thanks to conservation of angular momentum, pulsars spin very quickly and reliably, on the order of milliseconds. Continuing measurements of the rate of spin of the pulsar shows that it is slowing down in a rate almost exactly consistent with the amount of energy that gravitational waves would bleed from the system. These measurements have remained consistent with predictions for decades now.

Although gravitational waves were strongly supported by pulsar evidence, their detection is still very important for a number of reasons. The first is that more evidence for their existence is always important in fields where theories like relativity are only ever supported, not proven. The second, and far more interesting reason, is that observing gravity waves is not simply testing a hypothesis; it is opening a new field of astrophysics, with just as much promise for discovery as optical or radio astronomy. Not only can gravity waves be observed, they can be interpreted and understood and used to further our knowledge.

This first direct detection of gravity waves was performed by the Laser Interferometer Gravitational-Wave Observatory (LIGO), a pair of detectors in Washington State and Louisiana. These two facilities work by shining a laser down two perpendicular vacuum-filled tunnels, each 4 km long. When the lasers come back they should perfectly cancel each other out. If they do not, it suggests that one tunnel was shorter than the other by some small amount. The cause of this is a gravity wave changing space—and therefore distance—as it passes by.

What LIGO observed was an almost unimaginably small change in the length of the 4 km long tunnel, on the order of 10 zeptometres (10-21 metre). However this observation was significant; researchers intensely studied the 20 ms signal and were able to attribute it to phenomena that had never been observed before. Their analysis shows that the gravitational waves were made by two medium sized black holes that were orbiting each other. The signal culminates in the epic merger of the two objects, then fades away to nothing. As the paper that announced this discovery rather humbly put it, "These observations demonstrate the existence of binary stellar-mass black hole systems… gravitational waves and the first observation of a binary black hole merger." That's three remarkable observations on its first attempt. Already LIGO is a tool for astronomy.

To cement the credibility of gravitational waves as an important astronomy tool even further, the paper even goes as far as to announce that the team can even locate the source of the observation to within 60 square degrees. This is an admittedly substantial area, 300 times larger than the moon. But using more detectors—several of which exist but were not operating at the time—the location could be refined.

Gravitational waves have been found, but this is only the start. Of particular interest, gravitational waves may be able to observe the early universe farther back than our current telescope technology; whereas the hot plasma of the early universe was largely opaque to electromagnetic waves, it would have been quite transparent to gravitational waves. Keep your eye on LIGO for more exciting discoveries in the future.

# The Medical Tricorder

## Star Trek Technology was ahead of its Time

**DONOVAN MAUDSLEY**
2T MECHANICAL

Much of modern science fiction has to do with violence. Blaster rifles, lightsabers, and super human serums give an impression of a bleak world filled with nothing but warfare, but one of the world's most enduring series presents us with an alternative. Star Trek, which has remained in the public eye for fifty years, prioritizes exploration and adventure over violence. Captain Kirk and Mr. Spock were incredibly influential throughout their adventures displaying models of impressive futuristic technologies, some of which have become realities today. Cell phones, video chatting, and tablet computers were all featured prominently throughout the series. One device however is still in development: the medical tricorder. A tricorder is a scanning device with three main functions: sensing, computing, and recording. Within the series, a medical tricorder is capable of non-invasively scanning and assessing the medical state of an individual. While still a fictional device, one can see how this would assist real world doctors and EMTs.

The XPRIZE foundation, a non-profit organization that holds competitions designed to advance scientific research, saw this and organized a contest based around the medical tricorder as a consumer and industry device. There are a few basic guidelines for the contest: the device must be able to scan five basic vital signs, sense ten compulsory health conditions, and sense three elective health conditions. Blood pressure, heart rate, oxygen saturation, respiratory rate, and temperature make up the basic vital signs and must be scanned in real time. The health conditions range from anemia to HIV screening, and being able to sense for no existing health conditions is a must.

The competition began its registration in 2013, but opened up for re-qualification through August of this year. The qualifying round of the competition requires teams to showcase a demonstration of sensor validity and evaluations of studies supporting their sensor designs. The final round of completion is scheduled to being in September of this year and will include a diagnostic competition on twenty plus consumers per team, as well as a vital sign reading competition and more. As engineering students we know that there is no perfect answer (disregarding multiple choice exams) and to reflect this, the competition is prepared to award up to three winners.

So far there are seven teams from around the world that have qualified for the final round of competition. Four of the seven are based in the United States, with the other three hailing from Taiwan, India, and Canada. CloudDX is a thirteen person team out of Mississauga, Ontario and are led by McMaster University Assistant Professor Sonny Kohli. The team has won numerous awards for their research into biomedical wearables and won the Startup Canada Award for Innovation at the Startup Canada Awards in 2015. As well as competing in the Tricorder competition, they have pioneered cloud diagnostic services that are available for healthcare providers.

Although medical technology is an ever expanding field of research and new technologies are pioneered every day, we still have a long way to go.

**Acta Diurna, continued from page 6**

More of the conspirators joined in, infamously including Marcus Junius Brutus. Caesar was said to have helplessly tripped and fallen on the steps of the portico, and was relentlessly stabbed by approximately 60 conspirators.

A life size wax statue of Caesar would later be erected in the Roman Forum, depicting the twenty-three stab wounds, and would be the gathering place of a riot of plebeians who supported Caesar. This marked the beginning of yet another series of civil wars that would culminate in the formation of the Roman Empire.

### The Legacy

In later years, after the ascent of Caesar's heir and adopted son/great nephew Octavian, later known as Augustus Caesar, Caesar became the first citizen of Rome to be recognized as divine. The site of his cremation would later host the Temple of Caesar, also known as Temple of the Comet, which was dedicated to the cult worship of the deified Julius Caesar. Caesar's bloodline also included a number of future Roman Emperors who would continue to shape Rome and its reaches. The man Gaius Julius Caesar would make it through the sands of time, truly as a legendary being, immortalized in the tales of his achievements, the stories of his victories, and the romanticized tragedy of his assassination; he who changed Rome forever.

# Liberal Government May Impose National Carbon Price

**NINA FENG**
4B ENVIRONMENTAL

LEAFY THOUGHTS

Catherine McKenna, Canada's Minister of the Environment and Climate Change, has announced imminent steps that may take Canada towards environmental sustainability. Coming out of a meeting in Vancouver, Prime Minister Justin Trudeau and the country's premiers declared that they have been working on a climate change plan for the nation, though fairly few specifics were given.

The environment minister is now stating that, should the premiers fail to come to an agreement for more rigorous carbon pricing, a national price may be imposed. The Prime Minister has also said that that would be an essential part of the agreement, though the varying challenges and needs of the provinces and territories may slow the process. The premier of Saskatchewan, for example, has been a particularly vocal challenger against the carbon price, as he believes that his province has already made efforts to reduce carbon emissions.

McKenna hopes to look at existing plans from provinces such as Ontario, Quebec, Alberta, and British Columbia as a starting point. Besides carbon pricing, the plan will also include provisions for sustainable innovation, emissions reduction, and measures to adapt to climate change.

The Prime Minister, along with a Canadian delegation that includes the Minister of the Environment, will also be heading down to Washington D.C. on Thursday in order to speak with US President Barack Obama in order to develop a North American climate change plan. The regulations for industrial activity such as fracking will be discussed, as well as other natural resources trading deals between the two countries. The two nations will set emissions reduction goals, which will hopefully result in more success than past attempts. These targets aim to be more ambitious than ones set by the countries for previous initiatives. It's still too early to tell just how much Canada will commit to a rigorous environmental plan however, and we cannot yet determine how feasible these goals might be.

This step is the latest in several attempts by Trudeau's government to improve environmental health and reduce harmful emissions. On a different note, funding will be heading in the direction of Parks Canada as well, which took quite the hit under the previous Conservative government, which resulted in a $30 million budget cut in 2012. The new influx of funding will go towards the preservation of Canada's parklands and the development of eco-tourism based economies for communities local to the parks.

Also, PSA: in 2017, for the 150th anniversary of the confederation, Canada will be making admission to national parks free for all visitors. What's more, from 2018 onwards, admission will be free for those under the age of 18, and new immigrants will get one year's free admission. It'd be a great time to go outside!

# The Mockingbird Must Live On

**TIFFANY CHANG**
1N CHEMICAL

I was deeply saddened when I heard about Harper Lee's passing on February 19, 2016 in her hometown of Monroeville, Alabama.

I hadn't only enjoyed reading To Kill a Mockingbird long before everyone had to read it in ninth grade English class, but I had also fully appreciated its social implications by the time I actually got to Grade 9 and read it again through a more analytical lens.

The novel was Lee's sole published book for a solid 45 years. After its initial publication in 1960, it became an instant hit and took home the Pulitzer Prize for Fiction in 1961.

It makes sense that To Kill a Mockingbird has sold over 40 million copies worldwide and was made into an Oscar-winning film in 1962. It deals with the heavy themes of racial relations in the Old South of the United States during the Great Depression in an imaginary town named Maycomb. However, Lee presents the trial of an African-American man (Tom Robinson), who is accused of sexually assaulting a Caucasian woman through the eyes of children—Scott (a "tomboy" who is supposed to resemble Lee's younger self), Jem (Scott's brother), and Dill (the siblings' new friend who is able to see through the town's traditional consensus against African-American people). Scott and Jem are raised by Atticus, their righteous father and lawyer who gently reminds them that they can "never really understand a person until [they] climb into his skin and walk around in it."

It shouldn't surprise you that To Kill a Mockingbird was inspired by a series of unrelated but true events. The first was possibly a case where an African-American man was accused of rape by a Caucasian woman near Lee's hometown. Numerous scholars, however, hypothesize that Tom Robinson's character faced the same challenges that the Scottsboro Boys did, a case in which nine black men were accused of assaulting two white women based on questionable evidence.

Perhaps that is what makes Lee's story a North American classic. Through the innocent eyes of children as the primary observers, we explore a very real issue of that era in time. The story itself is timeless even though race relations have come a long way since the 20th century; in actuality, we still have a long way to go. Though I am realistic in that I recognize it will be impossible to eliminate all cases of explicit and implicit racism, I am also optimistic that we as individuals can be more accepting of different peoples and that society as a whole can be more just in terms of structural prejudices.

That happens to be the case with various social issues that appear time and time again as the main themes driving a riveting story, such as To Kill a Mockingbird. That's what great art is supposed to do—make us reflect on our current social circumstances and motivate us to catalyze positive social change.

It is works like Lee's that continuously remind me to keep humanity in mind as technology evolves at an ever-quickening pace. To be honest, it's easy to get caught up in technological trends, especially when it comes to wanting to join the next wave in the technological revolution. However, we mustn't forget the very essence of humanity—traits like empathy, compassion, and kindness—that the hard skills associated with learning technological-driven fields unfortunately cannot teach us. Fortunately, reading fiction keeps us in touch with these traits as we explore story-lines in the shoes of the characters.

That is why I encourage all of you to give To Kill a Mockingbird another read-through. On top of paying homage to the great author, it keeps us in touch with our humanity. And don't stop with To Kill a Mockingbird either—pick up another classic (or any other fictional) novel like 1984, Lord of the Flies, The Catcher in the Rye… take your pick.You could even try Lee's second published novel Go Set a Watchman, first published last year.

In the meantime, I'll be re-reading Mockingbird. Though Lee is no longer physically present in our world, we are responsible for carrying forth the messages in her work—and others expressed by different authors in their unique creations—and ensuring that we implement them in our personal and professional lives.

# UW Profs Honoured

**ELIZABETH SALSBERG**
3T NANOTECHNOLOGY

On Friday February 12, three University of Waterloo Engineering professors were named to the Order of Canada. The investiture ceremony took place at Rideau Hall, in Ottawa. Governor General and former University of Waterloo President, David Johnston, presented the awards.

Carolyn Hansson, P.Eng, was recognized for inventing a monitoring system to evaluate the integrity of concrete structures. The system has been implemented by several provinces in Canada. Prof. Hansson is cross-appointed to the Mechanical and Mechatronics Engineering and Civil and Environmental Engineering departments.

Garry Rempel (Chemical Engineering, Waterloo Institute for Nanotechnology) also became a Member for his work on the development of novel, high-performance rubber materials for industrial applications.

Linda Nazar, a professor cross-appointed to the Chemical Engineering and Electrical and Computer Engineering departments, became an Officer for her extensive research in energy storage materials. Specifically, Prof. Nazar is recognized for her work on rechargeable lithium ion batteries, and for developing an improved battery using a new material in lithium sulfur. Prof. Nazar is also member of the Waterloo Institute for Nanotechnology.

# Cooking with Cam: Best Burger Quest

CAMERON SOLTYS
3A MECHANICAL

COOKING WITH CAM

The burger is often considered a rather lowly dish, suitable for fast-food joints and late-night exam bingeing. However the delicious American cultural export has a long and delicious history stretching back millennia. Or at least so I assume. I didn't bother to look it up; the cultural heritage of the food I eat has no importance to me. All I care is that cheap ingredients go in, and delicious nutritious food comes out.

The burger is a very versatile recipe, so you should have no problem following the rules of the kitchen: no buying new food (that's what a grocery-distribution middleman is for), no measuring ingredients (that's what scientists are for), and no giving up hope when things go poorly (that's for the Federal NDP).

The most important part of a burger is the meat. Traditionally, this is ground cow, but the reality is that any ground meat could be used. Pig might be nice, as would deer, chicken, rabbit, or kangaroo. Don't try koala though; it's far too robust a meat to use on anything but koala-schnitzel. Now if you don't have ground meat on hand and you're homemade meat grinder burnt out last month when you helped the Austrian embassy destroy some critical documents, you can made a good facsimile with just your knife and cutting board. (No, a piece of paper does not count as a cutting board; you need at least 2 to make a wood laminate.) Take your pig and chop it as finely as you can. Make sure you use a sharp knife, since raw meat tends to be difficult to cut. Incidentally, that's part of the reason why we cook it at all.

Once your deer is nicely chopped, put it in a bowl. Add katsup, plenty of panko, mustard, paprika, and any other ingredients you would like integrated into the patty. Do not add salt. Do I look like Alton Brown? No? Then just do what I say without a detailed explanation. Obviously panko has a lot of substitutions; raw flour, corn starch, corn flour, torn up pieces of bread, the entrails of your enemies. Everything else equally so; paprika could be replaced with carmine, mustard with chlorine, and katsup with tomatoes squished by the flat of your knife. Just experiment, you're sure to make something cool, if not delectable.

Once all other ingredients are in, it's time to add the binder. Normally this is an egg. If you have chopped, rather than ground, chicken two eggs might be in order to get everything to stick better. If you and your roommates are oviphiles, and thus you went through the 70 eggs that you bought a week ago, there are a number of substitutions. If you used corn starch instead of panko as your filler, just add water. So long as you keep quickly and forcefully flipping the patty as it cooks it should hold together pretty well. Other options for those with less wrist strength include honey, syrup, Elmer's Wood Glue, and liquid nitrogen.

Mix up your bowl until it's entropy tends towards the maximum for the mixing process. Make fist-sized balls. (This technique is particularly advantageous because it regulates the portion size to your body size, at least to a degree.) Put two or three balls at a time into a pan that you've had the foresight to pre-heat for the last 5 minutes. Before you do so, put a little salt in the pan. If you don't have a pan, you can put them directly onto the grill; if it's an electric stove it's like using a flat-top grill like in a restaurant. If it's a gas stove, on the other hand, it's functionally identical to using a barbeque. Just try to keep the grease out of the flame. And of course if you have a barbeque you can also use that.

Use your spatula to squish down the patty into an elliptical-prism with a height much less than the semi-major axis. Put a lid on top of your pan/oven so that the top of the patty cooks a bit as well. After a few minutes, flip the patty.

Serve with olives, pickles, pickled onions, beets, and anything else you can find in the back of the fridge.

# Five Things You Really Don't Want to Know

## Putting the Fun in Funeral

CAITLIN MCLAREN
3T CHEMICAL

5 THINGS YOU DON'T WANT TO KNOW

Dearly beloved readers, we are gathered here today to discuss a serious subject: death. From the revelry of Irish wakes to the crocodile tears of ancient Egyptian paid mourners, our ancestors have exhibited many and varied ideas about how to behave at funerals.

Here are some excellent examples from our ancestors of how not to behave at funerals.

### Mummify yourself

In old-timey Japan, some sects of Buddhism got weird. A few monks decided that while this "compassion" stuff was all very well, the best way to reach nirvana was to make yourself into a mummy.

To do this, you eat nothing but nuts and seeds for a thousand days, while exercising heavily to eliminate all fat from your body. When that's done, you then go for another thousand days eating bark and pine root, to get rid of moisture. After all that is done, you drink some poisonous tea to make your body too toxic for maggots to eat. Finally, you get the other monks to seal you in a stone room with nothing but a bell, which you ring every day. When the other monks stopped hearing it ring, they'd unseal your body and check to see if the mummification had been a success. It usually wouldn't be.

If, however, you managed to become a nice-looking mummy, the monks would put your body on display. They might even use it as the core for a nice statue of Buddha, while the Buddha himself presumably looked on and facepalmed.

### Invite the dead person to a party

If you are an old-timey Australian Gadjalibi Aborigine, you want to make sure that the person is completely dead. To double-check, you throw a large party. Of course, your buddy won't want to miss out on a party, so you dress him up all nice and fancy, put his makeup on, and tie him to a pole. Then you sing and dance, make fun of him, and invite him to dance with you. If he doesn't, that means he is actually dead.

You then have several burial options, depending on which tribe you are from, and how important the deceased was. If he was super important, and you want to be really respectful, you put the body up on a platform and let it decompose up in the air where everyone can see (and smell) it.

When that's done, you have some more options. You take the bones down, and maybe paint them red. You then figure out a place to put them: a cave is nice, or inside a hollow log. Or just carry them around with you. Everywhere. For a year.

### Invite the dead person to a lot of parties

If you found that dead party guest a real hoot, why not go to Madagascar? There, the Merina people traditionally dig up their buried relatives every seven years, and throw a huge party. Everyone pulls out the corpse of their favourite grandparent, and dances with them for hours, tossing them around and cracking jokes. Is there a band? Of course there is a band.

When you are done, you wrap the bodies in new scarves and rebury them. If you are having trouble getting pregnant, now is the time to get a piece of old shroud and put it under the mattress where you sleep.

This sensible tradition is still alive and well, by the way.

### Self-Mutilation

In old Hawaii, the dead were often burned, and the bones hidden, buried or preserved in a sort of mausoleum. Some people would also be buried at sea. That's all very reasonable and not particularly strange. However, the funeral rites themselves would be hardcore.

When an important person died, the mourners would cry and sing sad songs. They might also cut off their hair, knock out their front teeth, burn their skin, or, if they were very upset indeed, cut off one of their ears. When Queen Kamamalu's husband died, she got a commemorative tattoo… on her tongue.

However, the Hawaiians had nothing on the Dani of Papua New Guinea. When someone died, their female relatives would tie strings round their fingers. Not to remember them, but to cut off the circulation. When the finger went numb, a guy with a sharp stone knife would bang the elbow hard to make the whole arm numb (primitive painkillers are the best), and cut part of the finger off.

Then they would dry the finger, burn it, and store the ashes, because of course they did.

### Let your dead family member rot, make your other relatives eat him

Let's say you are an old-school Wari' from the Amazon jungle, and your sister or other close relative dies. Of course, you are sad, and you cry a lot. That's normal.

You then wait around for a couple days, and let the body go rotten. It's going to get eaten, but you don't want anyone to actually enjoy it! That would be highly improper. During this time, your relatives start to show up for the funeral. The close relatives are off the hook, but you pick out your in-laws and your asshole third cousin, and put them on barbecue duty.

When the body is cooked, you and the rest of the close family shred it and serve it up. However, you don't have to eat it: again, that falls to the in-laws and Asshole Cousin Bob. They also can't eat the meat with their hands; we don't want to be unsanitary, after all.

When they are done eating the rotten meat, you have a choice. Either you can burn the bones along with the leftovers and the barbecue grill (come on, are you actually thinking of reusing it?), or you can grind them up, mix them with honey, and eat them. The grandkids might like these in particular; they have to eat the brains, and maybe you'll need to bribe them with sweets.

Then you burn everything the dead person owned, including their house and their favourite walking paths in the forest. After a long mourning period, the whole family gets back together again, and this time has a proper, non-cannibalistic barbecue that everyone enjoys.

Some killjoys in the government made all this illegal for some reason.

# #FreeKesha

**RAEESA ASHIQUE**
2A ELECTRICAL

Kesha has been largely out of the spotlight until about three weeks ago. I wish I could announce that she's dropping a new album, but the real reason for reappearing in the news is much darker.

Her career has been at a standstill since 2014; in January she checked into rehab for an eating disorder, and in October filed a claim against her producer, Dr. Luke, for sexual assault and battery, sexual harassment, psychological and emotional abuse, and gender violence. She claims that he raped her twice: the first time giving her a "sober pill", which she later claimed to be the date rape drug GHB, shortly after signing with Sony at age 18; and the second time on a plane. He threatened to ruin her career by taking away her publishing and recording rights if she were to mention the incidents to anyone.

Kesha is now 29 years old; she only came forward two years ago.

Dr. Luke's alleged abuse does not end there. Kesha blames him for her eating disorder and negative self-image, depression, and post-traumatic stress, claiming he called her "a fat f***ing refrigerator" and once told her "You are not that pretty, you are not that talented, you are just lucky to have me." He coerced her into a publishing deal with his label, Sony-owned Kemosabe Records, and restricted her music to dance pop when she was interested in a rock and roll approach. His strong hold over her included threats, psychological abuse, and dictating her career path.

Dr. Luke countered Kesha's assault suit with a defamation claim against Kesha and her mother, Pebe Sebert, claiming they invented these "false and shocking accusations" so Kesha could work her way out of a recording deal, and also citing part of a 2011 deposition in which Kesha swore under oath that "Dr. Luke never made sexual advances at me". On this countersuit, Kesha's lawyer Mark Geragos's commented, "Luke's latest legal maneuver comes as no surprise; it's a desperate Hail Mary and a pathetic attempt to once again blame his victim. He threatened to destroy Kesha's life and the lives of her family if she didn't cover up his sexual assaults in a 2011 deposition; Luke is now following through on his threats." The courts dismissed this suit on February 3 because of jurisdictional issues.

Dr. Luke has been playing the victim, telling his side of the story on Twitter in recent weeks following months of silence. On February 22, he tweeted, "I didn't rape Kesha and I have never had sex with her. Kesha and I were friends for many years and she was like my little sister."

Three days beforehand, Kesha was dealt a crushing defeat.

Kesha filed an injunction request in February 2015 to have her Sony contract altered or ended immediately because her career would suffer if put on hold until the legal battle was settled, which she amended in June 2015 to accuse Sony of awareness of abuse of multiple artists, including herself. "This whole she's been put on ice for two years is solely of her own choosing", says Dr. Luke's lawyer, and yes legally this is the case. However, as she said in her February 24th Facebook post, "All I ever wanted was to be able to make music without being afraid, scared, or abused. This case has never been about a renegotiation of my record contract – it was never about getting a bigger, or a better deal. This is about being free from my abuser." She clearly does not feel safe continuing to work with Dr. Luke, and as such has frozen her career.

On February 19, accompanied by her mother and two fans, Kesha starts sobbing in the courtroom when the verdict denying her injunction was announced, holding her to six more albums. It was a heartbreaking scene. As she left the courthouse, dozens of fans were gathered in support.

Manhattan Supreme Court Judge Shirley Kornreich said her "instinct is to do the commercially reasonable thing" and they should not have to go the extra step to grant an injunction as "there has been no showing of irreparable harm", citing a lack of medical evidence such as hospital records. Besides, Kesha "is being given an opportunity to record." The judge also argued that granting the request would undermine contract laws in the state, which is unacceptable.

Sony also countered Kesha's request by saying that other artists such as Adele, Justin Timberlake, and D'Angelo have returned to a successful career following a long gap. They also said that "she does not need to have any interface at all with Dr. Luke", but her lawyer Mark Geragos calls this promise "elusive" and says that Sony is setting her up to fail. A Sony lawyer has said "Our interest is in her success. Our interest is in Dr. Luke's success. They are not the least bit mutually exclusive." However, as Dr. Luke makes them more money they will clearly try to protect him and will be less likely to promote Kesha's music.

Support has been pouring in from fellow pop stars and fans alike. In her acceptance speech at the 2016 Brit Awards on February 24, Adele, who is signed to another Sony-owned record label, said "I'd like to take a quick second just to thank my manager and my record label for embracing the fact that I'm a woman and being encouraged by it… And I would also like to take this moment to publicly support Kesha." DJ Zedd offered his help, tweeting that he is "very very sorry to hear about the whole situation. I'll be happy to produce a song for you if you want my help". Other pop stars, including Lorde, Demi Lovato, and Kelly Clarkson have added their voices on Twitter, and Taylor Swift donated a quarter of a million to Kesha's legal fund.

Lady Gaga has been a strong advocate for sexual assault victims, being one herself. Her Academy Award performance of nominated song "Til It Happens to You" was beautiful: she began solo on the piano, and was joined on stage partway through by fifty other survivors who had "Unbreakable", "Survivor", and "It happened to me" written on their forearms. It is so easy to forget that celebrities are people as well, and this powerful performance must have taken incredible courage.

On March 1, Lady Gaga Instagrammed a photo with her aunt and grandmother who were both previously unaware of the past she was dealing with, admitting in the caption to having been ashamed and afraid to admit what had happened. She has taken to social media in full force, using the hashtags #FreeEveryWoman, #FreeEveryMan, and #FreeKesha. One photo reads "This is not a bedroom. This is my office", captioned "Join us and raise your voice to make change. Protect every woman and man from sexual violence in the workplace and beyond."

So this is a message to any reader who can identify with these strong women: there will always be people to stand behind you. Remember the bravery of these artists who are coming forward to pave the way for other survivors. Kesha speaks to you when she says: "We're all in this together. You are not alone. I love you and thank you."

# Meet, Design, and Prototype with Velocity Start

**ALI AKRAM**
2A SYSTEMS

If you've recently been to the second floor of South Campus Hall you'll have seen Velocity Start's new 6000 sq ft space created to promote entrepreneurship and innovation. The space is available for student use from 8am to 11pm, with Velocity staff on-site at all times to provide information on some of their services like workshops, seminars, bookable spaces, maker space, and much more.

Generally, it can be hard to find a good place to meet up when you're in the process of starting – or trying to start – a business. As part of Waterloo's growing startup culture, Velocity thought it was necessary to have a space dedicated to this and available for everyone. This new space not only gives you an environment to plan your future potentially million-dollar start-up, but helps surround you with like-minded individuals!

After developing your concept on paper you can start prototyping the same day with their dedicated maker space. This section of Velocity Start is equipped with 3D printers, hand tools, and galls walls to block noise and disruptions. If you don't know how to use a piece of equipment or need help developing prototypes, there is staff to assist you.

Food Services will also be coming back within a month right next to Velocity Start.

There are several upcoming events this month (which generally have free pizza and drinks provided!) including:

March 9 – Pitch like a Pro
March 16-17 – Velocity Fund Qualifiers
March 23 – The Start-Up Roller Coaster
March 31 – Velocity Fund Finals

If you haven't yet been to Velocity Start, do yourself a favour and check it out. It's a wonderful place to study, with furnished wooden tables and outlets nearly everywhere: you might end up staying all day!

# Self-Mastery…with a Panda

**TIFFANY CHANG**
1N CHEMICAL

Something unique about the Kung Fu Panda series of movies sets it apart from other animated films in recent years.

I won't deny that it's rather refreshing to see a Hollywood series of movies that uses elements of Chinese culture as significant plot elements. In the most recent installment of the existing trilogy, Po undergoes the quest of mastering chi (in simplest terms, "the energy found within all living beings") while seeking a greater understanding of himself.

Perhaps that is what has captivated the trilogy's followers: People like you and me who see remnants of themselves in the fictional, black-and-white delightful character of Po.

In the first movie, Po started off as the son of a restauranteur and, through thick and thin, ended up becoming the Dragon Warrior to defend the Valley of Peace. In his quest of earning this title, he endured physical and psychological duress. Most of us can agree that we come from humble beginnings but are on a journey to achieve a greater version of ourselves. It isn't necessarily so much that we are dissatisfied with what we currently have that compels us to achieve personal greatness; it's the uncertainty of whether or not we have more potential than we think we have that propels us to become better.

A similar theme reoccurs throughout the sequel: Po can only master a certain element of kung fu if he further masters himself. In the second installment of the franchise, he must come to terms with his past. Despite the early tragedy that he experienced as an infant, Po remembers that he has otherwise lived a happy and fulfilling life and is thus able to attain inner peace—the key to mastering another handy skill in kung fu.

It's safe to say that we all have memories that we would rather forget than remember. However, the misfortunes of our past can no longer hurt us—unless we focus on all their negative effects rather than treating them as lessons to use towards dealing with our future. It goes without saying that none of us enjoy suffering, but sometimes, it is only through suffering that we can achieve a greater version of ourselves. For those of you that are not as familiar with Chinese culture, that is symbolized through yin and yang (re: the supposed symbol for the Engineering Class of 2020's aerial photo). It is only by the coexistence of opposites that nature achieves balance—whether it's light and dark, good and evil, man and woman, stress and relaxation. The struggle to find and maintain this balance is an everlasting struggle for all of us.

Finally, in the latest installment, Po's quest to master chi opens his eyes to the various roles that he plays in life—a son, a friend, a student, a teacher, the Dragon Warrior. It's another aspect of life that we can all identify with because we're all sons or daughters, brothers or sisters, friends, peers, students, employees…I'm positive you see the picture.

That's why the Kung Fu Panda movies are a success: They drive home a couple of recurring themes that everyone experiences at various stages of life as an essential part of growing up. The final nail in the coffin is that they incorporate bits and pieces of Chinese culture, which can clash with North American values at times. Yet, both people in the East and West face similar—if not identical—opportunities for growth and for learning. Different though everyone may be, in a sense, we're also almost nearly identical.

To me, that's the beauty of a great movie—great art in general. Great art is unbounded by social constraints, such as ethnicity, race, gender, and spiritual beliefs. Rather, it is meant to bridge the gaps between those of us that are supposedly "different"—as classified by society—and allow us come to a mutual understanding of one another.

I'm not saying that movies and other forms of art will solve worldly conflicts. However, at the very least, ordinary people like us would be more open-minded and accepting of other "different" ordinary people.

In the meantime, however, I will be looking forward to discovering which aspect of self-actualization Po must conquer next!

# Broskies on Brewskies Goes on the Road

**DONOVAN MAUDSLEY**
**TRISTAN KUEHN**
2T MECHANICAL
2T SYSTEMS

BROSKIES ON BREWSKIES

We decided to take the show on the road this week, and went out to broadcast live from the Block 3 Brewery in St. Jacob's. Craft beer, and beer in general, tastes better right from the taps. As Londoners we know this with respect to the Labbatt Brewery, a hometown icon. We also knew that Block 3 makes some pretty good beer. Lastly, we just needed something to do on a Friday after work. We brought our last roommate Andrew along for the trip, and found it very easy to get out to the brewery. The atmosphere in there bar area was also appreciated; we got to play euchre and listen to The Who and The Black Keys for a while.

I started off with their Belgium Brown Ale Tapestry. I was surprised at how smooth it was, while retaining a stout-like flavour. A most enjoyable beer, it really gets you with its high 6.1% alcohol content. If you're a fan of Kilkenny then you'll appreciate this one a lot. It has a slightly creamy caramel-like taste that sticks in your throat. Smokey undertones blended in craft, a really nice beer all around. Andrew pointed out his aversion to darker beers, so I'll relay to our readership as well that dark beer is an acquired taste, and that typically you don't want to drink a lot of them at once. Don't be upset if your opinions don't align with ours. We don't really know that much, but we enjoy beer. As fans of darker beer, we appreciate the Tapestry a lot, and give it four and a half stars out of five.

Tristan kicked it off with Beauty and the Belgian, a lighter, hoppier beer. Also a stronger beer, this one had our heads spinning almost as fast as the cards we were playing. With sweet, citrusy undertones the Beauty lives up to its name. There isn't a whole lot that needs to be said about this beer. It reminds Tristan of Leffe Brune, a Belgian beer that's one of his favourites. Beauty and the Belgian is a little less in your face with its flavour, which is appreciated. It has a pleasant flavour without being overwhelming; not the most remarkable beer we've ever tried, but solid. We both enjoyed it, and give it three and a half stars.

We both followed up our beer with the King Street Saison, Block 3's flagship beer. The King Street is a good beer, but following the other two it lacks a kick. It packs a lower alcohol content and is a more standard beer. It's also the beer from Block 3 that they ship most often in the LCBO. A decent beer for hitting up a small party or drinking with dinner, the Saison has a slight citrusy flavour similar to the Beauty but without the larger kick. It has by far the most mass appeal out of the beers we tried tonight, but just isn't as good as the other two we tried tonight. We give it three stars out of five.

One of the other huge benefits of visiting the brewery is that you get to fill up your growler. A growler is a 64 oz bottle, that you buy outright for $5 from Block 3 and fill for $12. I had one graciously bought for me by a family friend when we reviewed the Frankenstout, and today elected to fill it with Tapestry. Tristan also thought that the Tapestry was the best. If you like it, you will probably like it a lot. We strongly recommend taking a trip out there if you have the time, and like craft beer.

We thought that that was going to be the end of our tale, but it was not to be. Block 3 is open till eight o'clock on Friday nights, a reasonable hour to close down shop, we thought. We stayed till close to then and had a good time, then left for the bus stop to catch the 21. When we got there, however, we realized that GRT service to St. Jacob's and Elmira stops at 7pm. We were officially stranded in St. Jacob's folks. We want to send a HUGE shoutout to our heroes Stephanie and Natalie for coming to pick our sorry selves up and bringing us home. Your two are the best. We here at hope that everyone has a few good weeks and remind you to drink responsibly.

# WIMIn Ideathon: Ideas, Makers, Innovators

**PAT DUONG**
2A CHEMICAL

This past weekend, Waterloo's first ever WiMin Ideathon/Conference took place at the new Science Teaching Complex. Their mission was to "connect, inspire, and explore the potential of women across disciplines while helping them seed or grow ideas". Attendees ranged from undergraduate students to graduate students to university staff.

So what is an Ideathon? An Ideathon is an open-ended version of a hackathon that extends beyond the realm of technology. Conference attendees, in groups of 2-5, collaborated on a variety of interdisciplinary ideas to create concepts ranging from services and social enterprises to phone apps and businesses that have the potential to grow into a start-up. Over the 2 days, conference goers learned from a variety of interactive workshops, listened to inspiring and candid speakers, and networked to exchange ideas and build connections. It was a unique opportunity for women studying in different disciplines to meet and discuss a variety of topics, including pertinent social issues and creating start-ups.

The conference's workshops were based on two streams: Seeding an Idea and Growing an Idea. The first stream of workshops focused on finding an idea, solving problems through innovation and testing ideas (using bricolage). The latter set of workshops aimed to further develop an idea by determining value propositions, building strategic partnerships, and asking better questions.

Another main concepts of the conference was centered on using a business model canvas to turn a concepts into a viable business idea. The model divides a potential start-up's concept into 9 main categories that focus on 3 areas: the target market of the idea, the resources needed to bring the idea to life, and the economic model needed to sustain the idea. (http://www.businessmodelgeneration.com/canvas/bmc) Following the idea of creating a start-up, Melissa Durrell, a Waterloo City Councillor, former news anchor, and start-up pitch coach, guided the conference goers through making and delivering a good pitch. She emphasized knowing how to tell an engaging story, understanding the audience, and presenting with good body language.

Not only did conference attendees learn about how to find and grow an ideas into a start-up, they also heard from successful start-up founders. One of the keynote speakers, Lauren Lake, co-founded Bridgit, an app-based software aimed to improve the efficiency of the construction industry by streamlining communication and responsibilities between contractor groups. Another speaker was Caitlin MacGregor, the CEO of Plum, a service that helps employers hire the right person by looking beyond the resume and interview. Plum has developed an assessment (which can be taken on their website plum.io) that delves into a person's strengths and working style, helping employers find employees who will work well with the culture of their company and teams.

Altogether, it was a useful conference that forged lasting connections and sprouted diverse ideas that may become the next successful start-up or social enterprise.

# Mars Recalls Candy Bars Across 55 Countries

**NINA FENG**
4B ENVIRONMENTAL

In January, a small bit of red plastic was found in a German customer's Snickers bar. After some investigation by Mars, the maker of Snickers, it was concluded that the incriminating piece of candy was produced in Mars' factory in the Netherlands. The plastic originated from a protective cover used in the manufacturing process of the factory, located in the town of Veghel.

While Mars believes that it is an isolated incident and that it's unlikely that the plastic got into any other candy bars, officials at the company still decided that, in case of other incidents, it was safest to call back all candy recently produced from the factory. Specifically this means candy manufactured from December 5, 2015 to January 18, 2016. Unfortunately for Mars and its consumers, this particular factory supplies candy to the majority of Europe.

Affected candies include Snickers (the original culprit), Mars Bars, Milky Ways, and Celebrations. The recall spans 55 countries, including the UK, Sri Lanka, and Vietnam. While Mars has not explicitly stated the scale or cost of the recall efforts, this may cost up to millions of dollars. Furthermore, consumer analysts fear that the incident will cause some damage to Mars' reputation for a time, due to consumers warily avoiding their products.

The food giant, that has approximately 12% of the chocolate market in Europe, does specify that the recall only pertains to packages labeled "Mars Netherlands," and that other products are safe, and meet standards for quality. The plastic contamination in that singular Snickers bar is also notably less severe than other recent production scandals in Europe. For example, the Cadbury recall of 2007 came as a result of a serious public health concern due to salmonella contamination that infected several people, sending three to hospital. Mars' incident also contains very little malicious intent compared to other industrial scandals including that of the horsemeat scandal or even the VW recall for intentionally defective emissions test sensors.

While the incident is unfortunate, Mars' handling of it can be considered commendable, and helps to maintain public trust in the quality assurance and control measures used during their manufacturing processes. It's a bit of a shame though – so much chocolate. The incident, the first one experienced by the Veghel plant since it opened in 1963, shouldn't put too much of a dent in the company's sales, which also include favourites such as M&M's, 3 Musketeers, and Twix.

# A History of the Syrian Conflict

**BRIGITA GUBINS**
2A ENVIRONMENTAL

The conflict-turned-civil war in Syria has been fought since early 2011, were a myriad of factors sparked massive civil unrest.

### A Brief History of Syria Leading to Bashar al-Assad's Rise to Power

Syria rose as its own independent state after the Second World War in 1946. After a series of military coups, a 1954 uprising saw the armytransfer.z

power to the people of Syria. A brief union with Egypt (1958-1961) replaced the parliamentary system with a centralized presidential regime. The Secular Ba'ath Syrian Regional Branch performed a successful coup d'état in 1963, only to be overthrown by another military coup.

In November 1970 then-Minister of Defense General Hafez al-Assad, a Shia-Alawite, seized power in the "Corrective Movement" and declared himself president. General al-Assad held the position until his death 2000, when he was succeeded by his son, the current president Bashar al-Assad. The Secular Syrian Regional Branch party was the main political authority until 2012, when first democratic election was held by the People's Council of Syria.

The regime survived numerous armed revolts by opposition groups, namely the Muslim Brotherhood and various Sunni Islamists. When Bashar al-Assad rose to presidency in 2000, it was expected that his new government would bring democratic change and reform, himself being married to a British-born Sunni. However, his time as president has been marked by multiple arrests of activists and failure to deliver on promises.

### Unrest Before the War

Former president Hafez al-Assad instituted free market policies that drastically widened the socio-economic inequality in the country. These accelerated after his son, the current leader of the Assad regime, took his place. These policies benefited a minority of Syria's population, especially those with ties to the government. Like many other nations, Syria faced extremely high youth unemployment. In addition to politically-driven discontent among the people, the worst drought ever recorded struck the country from 2007-2010. The widespread crop failure caused food prices to skyrocket and families that had been farmers for generations were forced to migrate to cities to find work. In this same time period, 1.5 million Iraqi refugees fled the civil war in their home country, seeking shelter in nearby Syria.

By 2011, the mass influx of people to cities coupled with the drought, ever-climbing grain prices, and ever-present political discontent with the decades-long Assad regime led to demonstrations in the streets. These grew in size as time went on and more people were affected by the falling standard of living.

In March of that year, anti-regime protests erupted in the city of Deraa after the arrest and torture of several teenagers who wrote revolutionary slogans on the walls of their school. Government security forces fired on the demonstrators, killing several and wounding many more.

This event is regarded by many as the catalyst for the widespread protests demanding President Bashar al-Assad's resignation. Hundreds of thousands took to the streets, and by July of 2011, some began to take up arms to defend themselves against the increasingly violent government security forces, and later to push the regime's troops out of the areas where the demonstrations were taking place. By August of 2012, the violence had escalated, reaching the major cities of Aleppo and the capital, Damscus. The rebel (Opposition) forces had formed formal brigades to battle government forces; the country had descended in to civil war.

The United Nations estimated that approximately 90,000 had been killed by the summer of 2012. One year later, chemical attacks were launched on the suburbs of Damascus, killing hundreds more. Rebel and Assad forces blamed each other. Facing US military intervention for the UN-designated war crime, President Bashar al-Assad agreed to dismantle all regime stores of chemical weapons. Still, the Organisation for the Prohibition of Chemical Weapons (OPCW) found that chlorine was used in attacks on rebel-held bases, and reported that extremist militants had been using home-made chemical weapons including mustard gas and other sulphur-based compounds.

By August of 2015, it was estimated that 250,000 had been killed in the ongoing conflict.

### Syria's Allies and Enemies

The war in Syria is now considered to be a proxy war between regional and world powers, with sectarian overtones. The supporters of the current Assad regime include Iran and Russia, as well as the Lebanese Hezbollah movement. According to multiple sources, Russia and Iran propped up the Alawite-led regime, and have steadily increased their support in protecting their own interests in Syria.

Iran is the regional Shia power, and as such Syria is its main transportation point to supply weapons to Hezbollah supporters in Lebanon. Regime forces have received ground-support from Hezbollah fighters since 2013. Tehran is believed to be a major supporter of the regime, providing military advisors, subsidized weapons, lines of credit and oil transfers to the Syrian government.

According to the BBC, "Russia is one of Syrian President Bashar al-Assad's most important international backers and the survival of the regime is critical to maintaining Russian interests in the country." The Russian Federation has blocked resolutions critical of al-Assad at UN Security Council meetings, and has continued to supply weapons to the Regime forces despite heavy international criticism. Two critical locations keep Russian interest staunchly on the Regime's side: Moscow leases a naval facility at the Syrian port of Tartous, which is the sole Mediterranean base for its Black Sea fleet, and there are Russian Armed Forces stationed at a Latakia airbase located in the Shia-Alawite heartland.

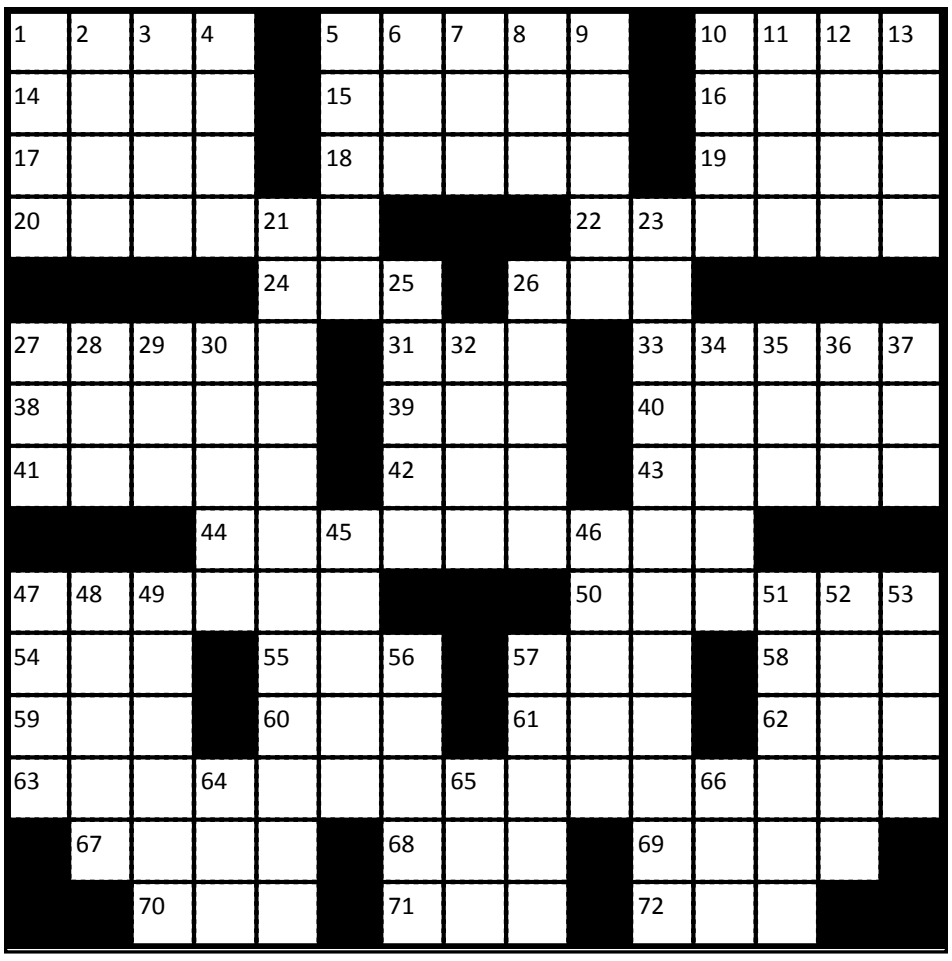
Supporters of the official Opposition include many of the regional Sunni powers, such as Turkey, Qatar, Jordan, and Saudi Arabia, as well as international backing from the US, UK, and France. Turkey has agreed to lead the assault on terrorist groups in the region, with continued ground and air support from the US.

In February, the United States and the Russian Federation, as co-chairs of the International Syrian Support Group, issued a joint statement outlining the terms of a cessation of hostilities by the officially recognized sides of the war. Peace talks have been intermittent and tenuous, however the recent agreement will hold until the next round of peace talks tentatively slated for mid-March in Switzerland.

# The Iron Crossword

## Product Placement

**CAMERON SOLTYS**
3A MECHANICAL



**1:** "As seen ___ ___" (2 wd)
**5:** Biome characterized by conifer trees and snow
**10:** Hockey equivalent to a soccer ball
**14:** Organization looking for alien life via radio waves
**15:** Popular ballroom dance
**16:** "America's Favourite Cookie"
**17:** French word for 8
**18:** Temporary immigrant
**19:** Fearsome mythical swamp monster
**20:** On fire
**22:** Monomer of polythene
**24:** One and five, for example
**26:** Catholic high school in downtown London, Ontario (abbr)
**27:** The speed of a piece of music
**31:** Single-stranded equivalent of deoxyribonucleic acid
**33:** A person related to your mother's family
**38:** Chrysler ___, SUV based on the Dodge Durango
**39:** Official name of the Vatican Bank (abbr)
**40:** Iron Age ancestors that spoke the predecessor of Welsh
**41:** Jewelry of a clam
**42:** Measurement of breath air to diagnose asthma (abbr)
**43:** Baby nocturnal bird-of-prey
**44:** Removing of clothes
**47:** "Baby ___ in the deep blue sea"
**50:** Electronic racing plaything (2 wd)
**54:** French for "to him"
**55:** Monetary unit of Hong Kong (abbr)
**57:** Expression of disinterest
**58:** Famous vector of plague
**59:** Engineering student tradition after receiving jewelry
**60:** Spanish word for "Uncle"
**61:** Mythical Greek queen worshiped as the "white goddess"
**62:** Executive of a company in charge of marketing (abbr)
**63:** A desire of socialists for the means of production
**67:** In a little time
**68:** Communist leader of Chinese guerillas
**69:** Stage or podium, for instance
**70:** Egg___, traditional Christmas drink
**71:** Abbreviation of Syria
**72:** Opposite NNW

**DOWN**
**1:** Canadian agency for worker safety
**2:** French word for 1+ 17 Across
**3:** Stock code for Tirupati Tyres Ltd
**4:** PlayStation handheld gaming system
**5:** Durable cloth often associated with the United Kingdom
**6:** File extension for the audible enhanced audio format
**7:** American program to help military veterans live independently (abbr)
**8:** Largest urban area in Canada (abbr)
**9:** Pre-Spanish natives of Mexico
**10:** Winnie the ___
**11:** Strong desire or impulse
**12:** European organization that found the Higgs Boson
**13:** Popular skin-lightening beauty product
**21:** Living a second secret night life
**23:** Fight of ___ ___ parody band (2 wd)
**25:** Less wet
**26:** Chocolate-like Mediterranean crop
**27:** Poke or hit lightly
**28:** 45 degrees north of 72 Across
**29:** 1 million newtons per square metre
**30:** A solider tasked with a hazardous duty
**32:** Exclamation of resistance
**34:** What we would need if Canada's government was overthrown (2 wd, 1 abbr)
**35:** Every
**36:** Old name for Toyota's European division (abbr)
**37:** Time zone of Waterloo (abbr)
**45:** Joe Steven ___ Colorado Avalanche hockey player
**46:** Hurricane that hit New York in 2011
**47:** Small error or signal
**48:** Greek name for the east wind
**49:** Capital city of Portugal
**51:** Red-headed comic book character
**52:** Harold ___, director of "Groundhog Day"
**53:** Word placed on octagonal signs
**56:** "If he tattles he ___ us all"
**57:** Along with Ursa Major
**64:** " Water! Water! Water!"
**65:** Path or course
**66:** Scandinavian Airlines (abbr)

# Sudoku

## #2016-03

**CAMERON SOLTYS**
3A MECHANICAL

Easy

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 3 | | 4 | | | 8 | | 9 | |
| | 7 | | | | | | | |
| 1 | | | | | 2 | 4 | 7 | 3 |
| | 3 | | 2 | | | 5 | | 7 |
| | | | 8 | | 5 | | | |
| 2 | | 7 | | | 4 | | 8 | |
| 9 | 4 | 3 | 5 | | | | | 8 |
| | | | | | | | 3 | |
| | 1 | | 4 | | | 6 | | 2 |

Medium

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 8 | | | 4 | | | 3 |
| | 4 | | | 7 | 8 | | 9 | |
| | | | 2 | | | 8 | | |
| | | | | 9 | 1 | 6 | | |
| 3 | 5 | 4 | | 8 | | 1 | 7 | 9 |
| | | 1 | 7 | 3 | | | | |
| | | 3 | | | 9 | | | |
| | 1 | | 8 | 6 | | | 4 | |
| 4 | | | 1 | | | 3 | | |

Hard

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 6 | | | | | 8 | | |
| 9 | | | 2 | | | 7 | | |
| | 1 | 7 | | 9 | 8 | 3 | | 2 |
| | | | 7 | 2 | 5 | | | |
| 3 | | | | 8 | | | | 9 |
| | | | 3 | 1 | 9 | | | |
| 5 | | 1 | 8 | 3 | | 9 | 4 | |
| | | 9 | | | 2 | | | 3 |
| | | 3 | | | | | 2 | |

Solutions for previous crosswords can be found on *The Iron Warrior*'s website at *iwarrior.uwaterloo.ca/distractions*.

THE IRON INQUISITION
*Vince Magas, 3A Management*

## *"Put the Word 'Iron' in a Movie Title"*

***"The Lord of the Iron Rings"***
Julie Yu, 3A Management

***"(Iron) Iron Man"***
Jeff Gulbronson, 3A Software

***"The Iron Ring"***
Abdullah Barakat, 3A Mechanical

***"Two Girls One Iron"***
Matthieu Count, 1B Management

***"Ironballs"***
Akash Malhotra, 1B Management

***"Iron Wars 7: The Iron Awakens"***
Darth Darth Binks, Manipulation PhD