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THE IRON WARRIOR

THE NEWSPAPER OF THE UNIVERSITY OF WATERLOO ENGINEERING SOCIETY

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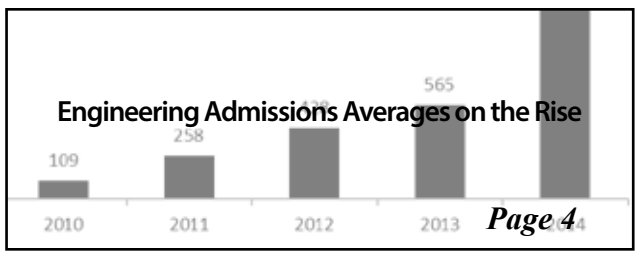

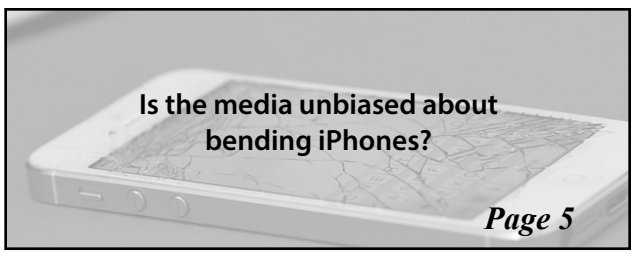

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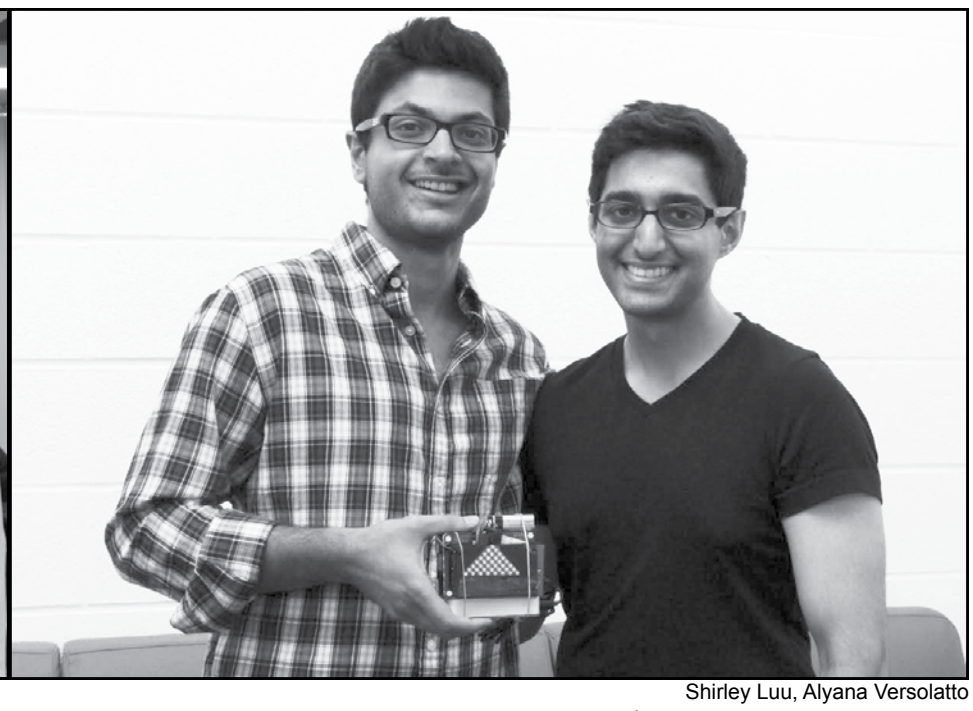
Waterloo Teams Crack Top 20 of International Shortlist

Ian Holstead



Shirley Luu, Alyana Versolatto

Waterloo Student design teams, Suncayr (left) and EyeCheck (right) are in the running to win global recognition and $46,000 cash prize

NACHIKET SHERLEKAR
3B NANOTECHNOLOGY

After being selected as runners-up at the Canadian stage of the James Dyson Award competition, two University of Waterloo engineering teams, Suncayr and EyeCheck, have made it to the top 20 international shortlist announced earlier this month. The teams will compete with several others from locations including Singapore, Japan, and the UK for the top spot that comes with a $46,000 award and a further $18,000 for their university.

EyeCheck has developed a smartphone app, which when used along with a stand-alone camera and server-side image processing can be used to provide people their prescription. This is a cheap and quick method to help people determine how to correct their vision, and holds great potential in developing regions of the world. As mentioned in the official press release by Dyson, Nick Schneider, a Dyson design engineer and one of the judges said, "the EyeCheck team have managed to engineer an affordable way of diagnosing eye problems quickly, potentially improving quality of life for many."

Suncayr, which was profiled in the first issue of this term, has developed a colour-changing marker that when applied on the skin indicates when sunscreen being used no longer works and needs to be reapplied. Likening Suncayr to Dyson, Nick noted, "much like the way Dyson engineers approach everyday problems, Suncayr is a simple solution for remaining protected in the sun. It is visual and intuitive, whilst also educating the user about the problem." The team has also gotten exposure by being featured along with other finalists in an online video by SourceFed.

It is hoped that these teams continue to succeed and are able to take their ideas to the next level, and continute to make the University of Waterloo, in particular us engineering students, proud. For more information on the James Dyson Foundation and on this year's finalists, visit *jamesdysonaward.org*. The finalists for this year will be announced on November 6, 2014.

Terror Strikes the Capital but Canadians Stand Strong

ALLEN CHEN
2A CIVIL

The past week has most certainly been a very tragic one for everyone who has been following the recent events. In the space of three days, an unprecedented series of violent acts shook Canadians around the world as three Canadian military personnel were attacked on home soil, two of whom have unfortunately passed away.

The first tragic event occurred last Monday, the morning of October 20, in the small town of Saint-Jean-sur-Richelieu, Québec. At approximately 11:30 a.m. ET, two soldiers were struck by a car in a hit-and-run located in a parking lot near the Collège militaire royal de Saint-Jean. The driver fled the scene afterwards and was shot and killed in an ensuing police pursuit.

One of the victims of the hit-and-run, Warrant Officer Patrice Vincent, died from his injuries following the incident. Vincent, aged 53, was a 28-year veteran of the Canadian Forces. He was working in the Joint Personnel Support Unit of the Canadian Armed Forces, which is responsible for providing support to families of fallen soldiers.

Not even 48 hours later, an honour guard stationed at the National War Memorial in Ottawa was shot twice in the back at point-blank range by a man armed with a hunting rifle. As nearby witnesses rushed to aid the fallen soldier, the shooter fled towards Parliament Hill across the street. An ensuing brief gun fight in Parliament Hill's Centre Block resulted in one Parliament Hill guard injured and the death of the shooter. The suspect was shot by Kevin Vickers, the Sergeant-at-Arms of the House of Commons. Kevin Vickers was a distinguished member of the RCMP prior to joining the House of Commons. The memorial guard later died of his injuries. He was unarmed at the time of the shooting.

At this point, all of downtown Ottawa was in lockdown, and all bridges towards Québec were closed. People were told to stay indoors and away from any doors and windows until the lockdown was lifted. Members of Parliament (MPs) had barricaded themselves in the party caucus rooms. Movement across campus was stopped entirely at the University of Ottawa for most of the afternoon due to the close proximity to the shootings. Eventually some snipers were stationed on top of buildings and helicopters assisted in sweeping downtown. The lockdown was lifted later in the day, with police stating that the threat had passed.

The soldier shot at the National War Memorial was Cpl. Nathan Cirillo, a member of the Argyll and Sutherland Highlanders based in Hamilton, Ontario, who was aspiring to become a full-time soldier with the Canadian Forces. Cirillo was 24 years old and the father of a six year old boy. The injured Parliament guard, Samearn Son, suffered a shot to the foot but otherwise survived.

As of October 23, it is unknown whether the two events in Ottawa and Saint-Jean-sur-Richelieu are connected in any way. Both suspects have had minor criminal offenses in the past and have had similar issues regarding international travel. However, the suspect involved in the hit-and-run was a confirmed radical who was a supporter of ISIS (Islamic State of Iraq and Syria). Both suspects were Canadian-born citizens who happened to have been Islam converts, the shooter, however, was reported to have a history of mental illness and drug addiction.

On October 23, a man carrying a rifle in downtown Halifax was reported. This was followed by Halifax police arresting a man who had carried a concealed firearm onto the bus, causing the lockdown of several public buildings and schools in Halifax. However, there was no confirmed connection with the two preceding events of the week.

With the recent string of tragic events resulting in the deaths of two soldiers of the Canadian Forces, there will be quite a debate as to how situations like these should have been handled and how they could have been prevented altogether. With a counter-terrorism bill being planned for discussion in Parliament sometime within the week, it is crucial to have a clear understanding of the recent events. Although the tragedy in Saint-Jean-sur-Richelieu are almost certainly a case of home grown terrorism, the motivation behind the shooting in Ottawa is up for discussion. Stephen Harper has referred to the Ottawa shooter as a terrorist while Thomas Mulcair and Justin Trudeau have rebutted that the shooting on Parliament Hill shouldn't be immediately concluded to be an act of terrorism.

Continued at Politicians on page 3

Halloween, Jobs and a Big Hello to Our Friends at Other Universities

LEAH KRISTUFEK
EDITOR-IN-CHIEF

With the colours changing, leaves falling and brisk chilly breezes springing up all over the place it is plain that the fall months are upon us. Although winter looms autumn has plenty to offer, pumpkins and gourds are ripe for the picking and corn mazes exist in abundance. We have feasted and spent time with our families. Now it is time to usher in the end of this season and embrace our fears of those things that go bump in the night. After all, nights are becoming longer.

Halloween is said to have begun as a Celtic festival called Samhain where people dressed in costumes and lit bonfires to ward off ghosts and bad spirits. They also believed that that was the best time for telling the future and discovering what was in store for the following year. In the 8th century Pope Gregory III designated November 1 as All Saints Day to honour all saints and martyrs. The night before became known as All Hallows Eve, and later as Halloween.

Halloween is different in every place. In France for instance it is begrudgingly celebrated. However, October 31st is a time strictly for scary costumes. They then have Carnival in March where everyone dresses up in fun costumes. Halloween only started to be celebrated in North America in the mid 19th century with the influx of Irish immigrants, eventually being commercialized to what we know today.

As a kid Halloween was always my favorite holiday. Not only did we get to dress up but it was also an excellent opportunity to scare people without getting in trouble. Before University I used to volunteer at a local haunted marsh walk. The best moments were always surprising people just when they thought they had made it past the danger. Although in some years I ran a haunted house indoors. It was always the most fun scaring people from the bush. It may have been cold standing in the dark behind the cover of trees wearing spooky costume, freezing for the occasional chance to pop out in front of a group of people or better yet, tap the shoulder of someone in the group that had just passed me on their tour of the marshlands causing them to practically jump out of their skin in fright.

In addition to corn mazes, haunted houses and general revelry, Trick or Treating is also a big bonus to the Halloween season. As a kid I used to sort all my candy and graph it before hiding it around my room to discover later in the year. As I got older it became more fun to dole out the candy and admire the costumes of local kids.

These days Halloween seems to be more about dressing up and going to parties. With Halloween falling on a Friday this is all the more true. Dressing up at Waterloo is a relatively big thing, the nerdier the better. I'd like to encourage all of you to dress up. Wearing a costume is like wearing a suit. It changes how you perceive yourself and how you interact with others. While a suit tends to make you behave more formally - a sit up straight and dot all your i's type thing- a costume lets you express parts of yourself that you might not regularly show to others. For instance, initiatives that place individuals with autism in mascot costumes have found it greatly improves their interpersonal skills.

Dressing up is fun. In my class there is an ongoing, but informal competition every Monday to out-dress MJ, one of our class mates. People do it because it's fun to be a little bit fancier than normal and because it's always fun to have a little bit of competition. Halloween can bring that sense of competition to a whole new level as people try to outdo each other's costumes. Competition aside, wearing costumes is just a good time; after all you can be whatever you want. You can dress up with a group or rock a costume on your own. You can go for the scare factor, or simply live it up as one of your favourite television characters. Then of course there are those pun-tastic costumes. The options are infinite!

Personally, between midterms, assignments and production weekends I'm beginning to attain pasty skin and dark circles under my eyes that would make any ghoul or ghost envious! For those of you with slightly better sleeping and eating habits than me I present a list of easy and cheap costume ideas for the semi-enthusiastic Halloween lover.

- Worshiper at the church of the Flying Spaghetti Monster: Grab a spaghetti strainer, place it on your head and voila! Costume made. If you at any time you feel the need to not be dressed up simply remove said strainer and away you go! Suddenly you are just a person carrying home a device for your kitchen, easy peasy lemon squeezy.
- Stick person from xkcd: Use black tape to create stick arms, legs and a torso. Wear a top hat to seem especially devious.
- Ghost: An old one, but a good one. Cover yourself in baby powder...okay, well maybe a bed sheet would work just as well.
- Mummy: Ooops, where did all the toilet paper go? Definitely not into my super awesome new costume, not at all. This would also be a great surprise costume. Just don't physically injure your friend in the process of wrapping them up!
- Modern Alice lost in Wonderland – Simply act dazed and confused, ask people "where is the mad hatter with my tea" and "Will this cake make me shrink?" Scream and chase any white rabbits you encounter.

Now that I've gotten those out of my system I'm going to ruminate briefly on the excitement that is Jobmine. For many of you it has been but a couple of days since discovering where you will be next semester. This knowledge, perhaps after a weekend of tough decisions between several offers, is undoubtably quite the relief. If you have been matched with a job it's timre to sit back and relax, well after sending your employer a nice email or phone call and looking at your housing options that is. Undoubtably it is not without it's trials and tribulations.Some of you have accepted an 8 month co-op that will cause you to switch streams. Others may be headed back to their home towns to live with their parents while working or heading abroad.

Even though there might be some cons with a co-op placement the pros inevitably outweigh them. For one, it is satisfying to actually know where you're going, and to be able to plan things in your life two months from now and even further away. As I write this I am on tender hooks waiting to see if my rankings will become offers. That said I'm not terribly concerned, not getting a job in first round doesn't mean you're unemployable nor does it mean you've missed out on the best jobs. Continuous round is not second tier jobs by any means. There are still tons of amazing employers and opportunities. Not to mention interview stresses have diminished somewhat with less (or no) midterms to contend with. Don't give up now! Never give up! Rankings take place within days of the interviews so there is less waiting. Now, if only getting midterms back was like continuous round! I could do with knowing how much I bunged up a midterm at the end of the day I wrote it!

Finally, and unfortunately very fleetingly, I want to give a big shout out to all the other engineering schools out there! I know you receive copies of our humble publication. Hopefully you enjoy reading it! I know I enjoy reading other university publications whenever I visit other campuses. It's always interesting to see how other students handle the trials of tribulations of the engineering student lifestyle! If you've read the 'Engineering Traditions' column you will know that we enjoy learning about other schools traditions. Let us know what you think by writing to our email, theironwarrior@gmail.com or maybe even sending us your engineering newspaper! Lots of love from Waterloo Engineering to all you awesome people across Canada!

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Malaysia Airlines MH370: The Technology Behind the Search

DEREK KAN
2A CIVIL

It seems impossible in such a technologically advanced era for an airplane to seemingly vanish in midair. The disappearance of Malaysia Airlines MH370 on March 8, 2014, has lead to numerous search attempts involving a variety of technologies.

Radar is the primary tool for tracking passenger flights. There are different types that can be used by air traffic control to identify planes over land. Primary radar detects objects by bouncing back radio signals, while secondary radar involves the plane automatically sending responses to identify itself. In primary radar, even if the plane is not in communication with ground control its location can still be tracked. These signals do not communicate with the plane.

With secondary radar, periodic query signals are sent to the plane and answers are received back to verify location, identity and altitude. It is an automatic radar system that can be turned off or disabled if there is a loss of power. In the case of the Malaysia Airlines flight, it was being tracked by secondary radar over the South China Sea when it disappeared from monitors.

Searching such vast areas and depths in the ocean requires some high-end technology. Planes carry an underwater locator beacon or pinger, which transmits an ultrasonic pulse from the cockpit voice recorder and flight data recorder with a varying range of 3 to 20 kilometers away depending on the device. Pingers become triggered when immersed in water. A device called a towed pinger locator can dive to 20 000 feet below the ocean surface travelling at 2 to 9km/h for hours at a time to search for the pulse from this beacon. Dragged behind a ship, this technology was used in the earlier stages of the search because the batteries powering the ping from the plane only lasts 30 to 40 days and can be drowned out completely under certain ocean conditions.

Autonomous underwater vehicles or AUVs are usually used in the oil and gas industry to survey oilfields. However, when the pinger of the black box is dead, an AUV can map the ocean floor and narrow down the search for the crash site of the plane. One of the most sophisticated AUVs was flown to Perth, Australia to help with the search for MH370. It can be lowered to 20 000 feet and travel at a speed between 3 to 8km/h for about 20 hours. Using a side-scan sonar it can create a 3D map of the seafloor. AUVs are unmanned and can be programmed to use a grid style pattern to create an image of the deep sea.

Using sonar technology the investigation of the floor of the Indian Ocean has unraveled the secrets of parts of the seabed that have never been discovered before, including a 1.5 km canyon and extinct volcanoes spread out across the ocean floor. The Australian Transport Safety Bureau is mapping the approximately 60 000 square kilometer area most likely to contain the remains of the plane where pings thought to be from the black box were detected earlier in the investigation.

The mapping of the underwater topography is key for the next stage of the search, which includes multiple pieces of search equipment towed just above the sea floor for a more detailed search for debris. The information gathered will help ensure safety and avoid any unexpected obstacles for the equipment to collide into. Although 72% of Earth is covered in water, the majority of it has yet to be explored because of the depths and conditions of the oceans. Technologies like radar and satellites are only good for building maps of Earth's surface, unable to penetrate the seawater. Therefore sound has to be used to do the mapping underwater and it is a slow and tedious process.

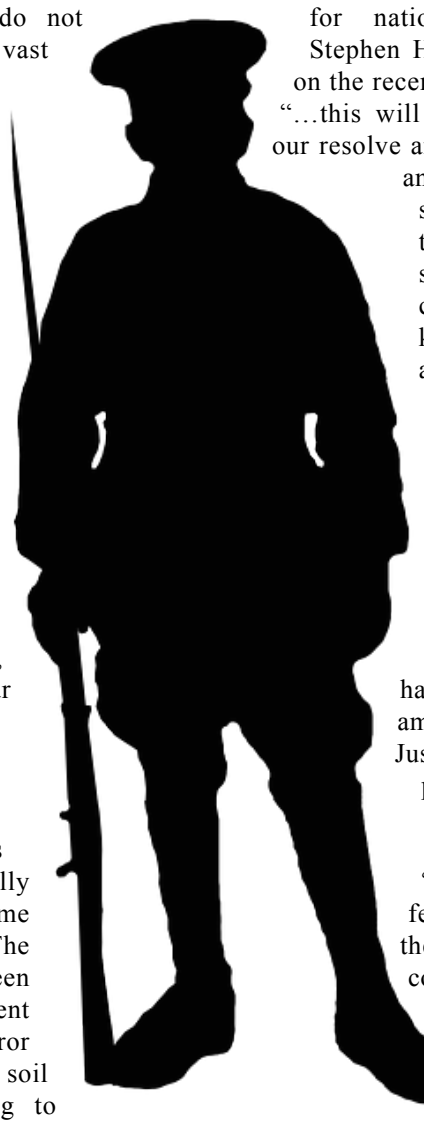
Not only is the 3D map being generated by sonar aiding with the search but it may also provide scientists and meteorologists with a better forecast for tsunamis. Tsunamis have proved to be one of the deadliest natural disasters, and detailed models of the ocean terrain could help save many lives. A greater understanding of the ocean can also be valuable for geological interpretation purposes including plate tectonics, analysis of unusual sea floor features, and a better understanding of ocean currents and the climate.

The fact that the incident occurred over the ocean means that it could be years before we know exactly what went wrong. Finding clues in such a vast area is slow. It took two years for investigators to recover the black box recorder from the Air France 447 flight. With the Australian Transport Safety Board recently predicting that the wreckage is most likely to wash up on the Indonesian coast, we can only hope that answers will be found soon.

Politicians Comment on Ottawa Tragedy

Continued from TERROR on page 1

Elizabeth May of the Green Party commented on the recent attacks, "I do not believe that it was a vast network, or that the country is more at risk today than it was last week."



These recent events, as tragic as they were, should not be blown out of proportion. For context, in 1970, two Members of Parliament were kidnapped (one was later murdered) by the Front de libération du Québec. The Prime Minister at the time, Pierre Trudeau, enacted the War Measures Act. This is a lengthy topic of its own, and reading up on it whenever time permits is encouraged. Essentially Canada briefly became a police state. The similarities between how the government deals with acts of terror by radicals on home soil would be something to closely watch for. Anyone who is familiar with the changes in security policies in the United States within the last decade should be familiar with what happens when liberty and freedom is sacrificed for national security. When Stephen Harper gave his speech on the recent events, he stated that "…this will lead us to strengthen our resolve and redouble our efforts and those of our national security agencies to take all the necessary steps to identify and counter threats and keep Canada safe here at home."

Hopefully Canada does not follow in the footsteps of the United States regarding national security. One of the main goals of terrorism is to spawn hatred, fear, and distrust among the population. Justin Trudeau had a portion of his address dedicated to this issue, notably stating "Losing ourselves to fear and speculation is the intention of those that commit these heinous acts. They mean to shake us. We will remain resolved. They want us to forget ourselves. Instead, we will remember. We will

A Crescent Sun and a Blood Moon

DEVIKA KHOLSLA
1A NANO

If you were watching the skies this October, you would have witnessed both a solar eclipse and a lunar eclipse.

On October 23, between 5:39pm and 6:24pm EDT the sun appeared crescent shaped in most of North America. This was due to a partial solar eclipse, a phenomenon that occurs when the moon comes in between the Earth and the sun causing the moon's penumbra (partial shadow) to temporarily pass over the Earth.

Just two weeks before, on October 8 there was also a lunar eclipse. From Waterloo, the eclipse occurred between 4:17am and 7:22am, though it was also visible in much of North America, South America, Asia, Australia and Eastern Europe. At the height of the eclipse - around 6:25am - the moon turned red, a result of the sun's light getting filtered through Earth's atmosphere before reaching the moon. Lunar eclipses only occur when the Earth is directly between the moon and the sun.

These were the last 2 eclipses out of 4 eclipses that happened in 2014. Every year there are at least 4 eclipses and at most 7, and a solar eclipse and a lunar eclipse always occur within approximately two weeks of each other. Uniquely, this time both of them could be seen from across Canada and the US. The next partial solar eclipse visible from most of North America won't be until 2023. Canadians, however, will be able to see the total solar eclipse coming up on August 21st, 2017. Your next chance to see a total lunar eclipse is next year - on September 28th, 2015. If you missed either eclipse and want to see a recording, slooh.com both live streams and makes recordings of eclipses and other celestial events.

Another way to see the stars is through the telescope in the Gustav-Bakos Observatory - on the roof of the physics building. Approximately once a month, it opens for free public tours; the next one is November 5. The tours consist of a 30 minute talk about general astronomy given by a graduate student at the University of Waterloo followed by a chance to look through the telescope, weather permitting. Generally it's not too crowded, and if you've already been to the talk you can just come for the telescope, so it's a great opportunity to either way. Even if it is too cloudy, you can still come to see the views from the roof of the physics building and the observatory itself.

eBay and PayPal Split

BOGDAN CONSTANTINESCU
1A NANO

After weeks of speculation, eBay and PayPal have publicly declared that they will be separating. CEO John Donahoe had apparently been against the split, yet it seems that he and eBay's Board of Directors did a complete 180 in only a few short weeks. The separation has been announced to occur in the latter half of 2015, and will see two new publicly traded companies emerge. These companies will find themselves each with a new CEO, as John Donahoe will not be continuing as CEO of eBay after the split. The split is a strategic maneuver in the idea of allowing both companies to expand and grow faster in their respective markets. Furthermore, since the companies are fundamentally different, this separation will not hinder either moving forward, especially since both companies plan on maintaining a close synergy in further dealings.

Some questions arise for both companies moving forward. A few of these include: Will separation make the two companies more competitive? Will separation be possible without distracting innovation? And, will separation create sustainable value for shareholders over time? With many of these questions, only time will prove an accurate judge, yet the eBay Board of Directors already seem to have some ideas on how the split will be very beneficial for both parties. They believe that eBay served as a wonderful platform for PayPal, but seeing how rapidly PayPal has grown and how useful it could be in other markets and areas has lead the board to recognize that eBay now only serves to hold PayPal back. The reciprocal is also true however, and eBay will have more freedom in the way they conduct their own online transactions in the future.

To truly understand the magnitude of this split, it is important to understand just how much revenue and business these companies are generating on a yearly basis. Over the past twelve months, revenue increased approximately 10% to $9.9 billion for the two companies as a whole, with eBay Marketplaces accounting for $8.7 billion. eBay is one of the worlds top 30 Global brands and has more than 700 million live listings at any given time. "Ebay has been a leading innovator in the world of commerce for almost 20 years; it's an incredibly special business," said Donahoe when discussing the acclimatization period that is bound to happen after the separation. He goes on to say that the CEO who will be taking over eBay, Devin Wenig, will, "make a fantastic CEO". On the other hand, PayPal is a rapidly growing global leader in digital payments and online banking and the most trusted digital wallet, with over 152 million registered accounts. PayPal facilitates one in every six dollars spent online today and clocked in over $203 billion in payments in the last year. It is also branching out and becoming a leader in mobile payments (a main factor in the decision to split) with acquisitions such as OneTouch and Braintree. They processed $27 billion in mobile transactions in 2013, which is quite an astounding figure. It is evident both companies have generated massive revenues as a single entity and it is worth keeping on eye out on how much they will flourish on their own. Moreover, the common user of eBay and the services of PayPal should not be worried that this split will affect their accounts and account security in any way since eBay assures that transactions will run as smoothly as they do now. In essence, the separation of eBay and PayPal is nothing more than a strategic move in order to expand at an even greater rate in the global market, and it will not be affecting the online banking that eBay provides. As Donahoe states, "Tremendous opportunities exist for each business."

Increased Competition for Engineering Admissions at Waterloo

THOMAS DONNELLY
2A CHEM

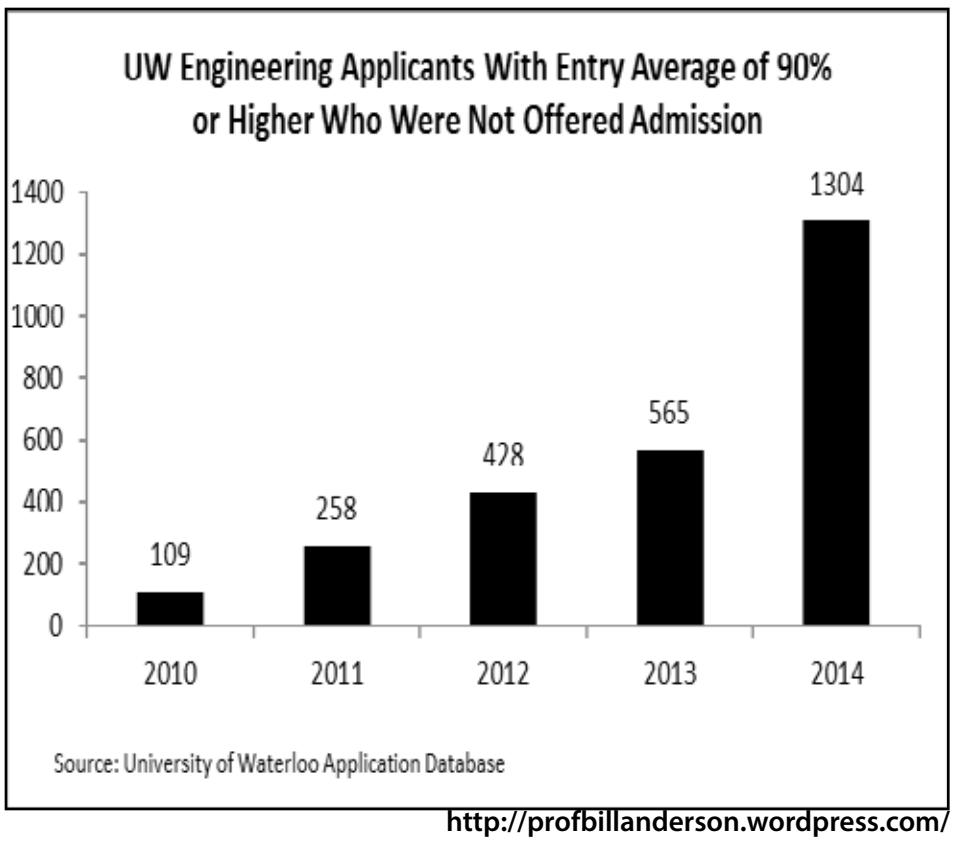
Admissions into engineering programs at Waterloo are competitive. During 2014, approximately ten thousand students applied for just one thousand five hundred total spaces. Every year, Ontario, out-of-province, and international students alike polish their Admission Information Forms and pray their grades will meet the cut. But this competition has increased dramatically in recent years: from 2010 to 2014, the number of University of Waterloo undergraduate engineering applicants with entry averages of 90% or higher who were not offered admission rose from 109 to 1304, according to a recent blog post by professor Bill Anderson.

When a student applies to engineering at Waterloo, the student selects the program they are most interested in and completes an Admission Information Form (AIF). The AIF has a number of different sections where the student can describe their extracurricular activities, employment background, and explain why they are interested in Waterloo and in engineering. There is also the option to identify a second and a third choice program in case the student does not receive an offer for their first choice. The AIF is scored from 0 to 5 by a team of Waterloo Engineering alumni. The student's admission average is calculated based on the required courses, which vary between schooling systems. The sum of the student's AIF score, admission average, and an "adjustment factor" is used to create an "admission score". The adjustment factor is the difference between a student's admission average and their expected first year engineering average based on historical student performance data for different schools or regions. Applicants are ranked and selected based on this admission score. If a student does not submit the AIF, it is unlikely that they will receive an offer.

Waterloo currently offers 14 undergraduate engineering programs, including the new Biomedical Engineering program which began this year. According to Common University Data Ontario (CUDO), our engineering programs received a total of 6675 applicants in 2010. This number rose to 8490 in 2012 and has since continued to rise. With more students applying, the grades of the students accepted has also increased. In 2010, the percent of first year engineering students entering with averages of 95% or higher was 11.2%, and the percent of first year engineering students entering with averages between 90% and 94% was 39.5%. In 2012, these numbers increased to 20.0% and 45.8%. Unfortunately, CUDO does not have these percentages for 2013 or 2014.

The 2015 admissions brochure for Engineering includes a table listing the probability of admission given a student's admission average and the program to which they are applying. For example, based on the table, a student applying to Mechatronics Engineering with an admission average between 80 and 85% has approximately a 2% probability of being accepted. These probabilities are based on 2014 admission results, do not include results from the AIF scoring, and group a large number of programs together; they should be considered rough approximations.

An increase in competition for admission is bittersweet. Having more applicants suggests that Engineering at Waterloo is becoming more renowned and that future incoming classes will be more talented and capable. But it also means that qualified students may be turned away simply because of an insignificant difference in grades. More applicants result in more high admission averages, but the number of spots available for these high scoring students is relatively constant. The Biomedical Engineering program will likely be expanding by five spots per year over the next few years, but there are currently no plans to expand any other programs. As long as there are more qualified students applying than there are spots available, tough admissions decisions will need to be made.



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Use a Crowd-Sourced Cloud Platform to Protect Yourself from Hackers

CAMERON SOLTYS
2A MECHANICAL

If you are an individual with some level of computer expertise who accidentally stumbled onto a "Hot Tech" article on the internet any time in the last few decades or so, you probably Alt-F4ed out of there screaming after the first paragraph. No matter how insightful a journalist's commentary, or how fascinating a new product is, it's hard to take the article seriously when it is peppered with buzzwords and the associated inane chatter which suggests the writer is just regurgitating phrases initially conceived by someone only slightly more knowledgeable on the topic. So get ready for a wild ride, as we look at some of the current most popular buzzwords, and investigate just why they are as stupid as they sound.

When it comes to buzzwords, the hottest one these days is "The Cloud." To be fair, cloud computing is a legitimate service that normal users are being confronted with it more and more as many software packages migrate to online models. But the cloud is not a new idea, and certainly not one that has yet, nor is ever likely to, drastically revolutionize computing as we know it. Cloud computing, in its technical form, would be more accurately called "up in the clouds computing;" essentially, the computation that you need to be done is not performed on your device, but on some other device. This second device could be located anywhere, be of any type, and be run by any person. So long as you can send your commands and get a response, that second device is of no concern to you.

Cloud computing may sound like a revolution, but it's been around since just about the start of computers themselves. In the 1970s, when computers were massive and expensive, academics and corporate workers accessed the university or company computer from a terminal, which was essentially a keyboard connected via very long wires to the computer, having no computing ability itself. The advantage of the terminal was that several people from several locations could use the computer at once, making the fullest use out of a very expensive piece of machinery. Today, everyone is familiar with cloud computing thanks to services such as Gmail, Facebook, and Google Search; you click buttons and hyperlinks, and the server sends you back a personalized webpage with your information and results.

The use of the phrase "cloud computing," however, has exploded to the point where it's treated as a modern miracle. For instance, today we have cloud storage in the form of Dropbox and Google Drive. But both of these are really just more refined versions of emailing an attachment to yourself and then opening it on another computer—useful, but hardly game-changing. And there seems to be this general delusion that cloud computing can do things that the computer you already own can't. At least that's the impression I got from a site advertising for a "Cloud Connected Summit." The summit, it boasted, would allow you as a business owner to "Leveraging the Cloud to Fulfill the Promise of the Internet of Things: Network, Analyze, Capitalize." A few years ago, we called that renting access to a server from someone in the server-renting business to do your extensive computing operations.

The overuse of the word "cloud" has prompted such annoyance from some people that they made a browser extension to fight it; Cloud-to-Butt replaces all instances of the word "cloud" on a webpage with the word "butt," and allegedly makes articles about online services just barely pleasant enough to read. It also has an annoying tendency of replacing "cloud" on other sites—such as weather forecasts or information entry-fields—but the extension's users seem to find that a worthwhile sacrifice.

One of the major issues which has been raised regarding cloud computing and cloud storage is the issue of security, since when you are using a cloud service you necessarily forfeit control over your information and commands to some unknown entity. Even if you trust the service to keep your data private, can you also trust them to keep it safe from hackers? That question will be left unanswered in this article, because it is better used as a segway to our next buzzword, "Hackers."

Every day there are front-page headlines about how hackers breached some secure service or took down an important website. Most recently, a group of hackers infamously gained access to the iCloud accounts of celebrities, leaking nudes and other personal photographs. These "hackers" are a perfect example of the overuse and disfigurement of the word; they didn't identify some exploit or issue with the way iCloud operates on a technical level, but rather reset the accounts' passwords by answering security questions with the biographies from the celebrities Wikipedia pages. Is this an ingenious method? Absolutely. But to consider both this "hacking" and exploits such as heartbleed to be hacking requires adopting a definition so broad that almost any malicious activity by which someone gets access to information they should not have via a computer is hacking. Including those thousands of spam emails we all get trying to send us our free iPads if we would just give them our damn credit card numbers please.

The abuse of the word "hacker" came to a triumphant crescendo when Lizard Squad, a group of bored individuals who want "to experience the raw thrill of anarchy" was labeled as a "hacking group" by some gaming-news outlets. Their major claim to fame is tweeting a bomb threat to ground the plane of Sony's President, John Smedley. According to news site Vocativ, the group also "hack into both PlayStation Network and XBox Live, shutting down the networks for hours at a time." Their hacking method of choice? The DDoS attack, the hacking equivalent to a superspy stopping an important letter from reaching its destination by burning down the local post office. Once again, it's a malicious group which operates exclusively electronically, but once again, the hackers need almost no specialized computer expertise to perform their actions.

Some people will argue that words change, and that what I call "buzzwords" and "the unrighteous slaughter of the English language" is really just natural forces of linguistics taking their course. Now I have no issue with that statement in general, and a look back at some 1000 CE English manuscripts is proof enough. But that doesn't mean that this is a desired trend, or that we should just let everything slide. Language is only useful to the extent that it can express useful, intelligent ideas. Commandeering words and defining them so they can be appended anywhere to evoke strong feelings but convey no useful information is an outrageous and aggravating action. I'm all for evolving language to suit our ever-advancing technical innovations, but I don't think we need to tend towards a language where we have a bunch of useless, impressive-sounding appendages that once stood for important and nuanced ideas.

As all the articles about the new Christmas gadgets begin to flood in, happy reading.

The Bigger Issue Behind #Bendgate

BRYAN MAILLOUX
1A TRON

Most of you have probably seen, heard, or–if you're one of the many robots masquerading as people living among us–telepathically downloaded off the Internet the hashtag #Bendgate or #Bendghazi. It's no secret that on social media, lots of people are finding that their new iPhone 6 Plus bends really easily. The initial complaints of users whose phones had accidentally bent were soon followed by a barrage of Youtube videos on the matter. In response to the allegations of bending, Apple came out with an official statement saying that "a total of nine customers have contacted Apple with a bent iPhone 6 Plus", despite their having sold more than 10 million devices (both iPhone 6 and iPhone 6 Plus) after just the first three days, essentially denying that the phone could bend using only the force from one's hands. Even though users continue to complain about their bent phones, Apple has made no further comment on the matter, though most major media outlets have denied that the phone actually bends.

The whole controversy seems to have split the Internet into two factions. On the one hand are those who believe that the phone does bend, and this group seems to include mostly Youtubers, including Lewis Hilsenteger (from the channel Unbox Therapy), who uploaded the "original" iPhone bending video, and independent tech websites. On the other hand are those who firmly deny that the phone can bend, and included in this group are most major media. I did a bit of googling and found that USA Today, the Washington Post, the New York Times, CNN, FOX News, and NBC all fell into this group. Initially, the media responded to Youtube videos showing that the phone could bend by having news anchors try it, but of course the anchors were "unable" to bend the phone with their bare hands. Later on, Consumer Reports released their own video showing a machine calculating the force needed to bend the phone, and affirming that it would be impossible to do so with one's hands. In response to the Consumer Reports video, one independent website, 9to5mac.com, accused Consumer Reports of not applying the stress test to the correct spot on the phone.

So the accusations go back and forth, and for people who don't actually own a bent iPhone 6 Plus it's difficult to know who is telling the truth. The independent website analysis does seem more credible though; the Consumer Reports test does, in fact, test the middle of the phone. This is an area that is much more reinforced than the where the phone actually bends, just under the volume buttons. So why can't we all just agree that the iPhone bends? Of course, the theory had been advanced by those who think the phone bends that the media is being paid off by Apple to deny all allegations. Which is entirely plausible, since a good chunk of American media reported that the phone does not bend. So the bigger issue here is companies controlling the mass media, and this turns us to the question: Can we trust everything we see on social media to be true? Is social media more or less trustworthy than the regular media?

If you're not already checking your Facebook feed on your bent iPhone 6 Plus because you're bored of this article, kudos to you for sticking around until the end. And no, I don't have any cookies for you.

General Meetings and Why They Matter

LEILA MEEMA-COLEMAN
PRESIDENT

This past summer at Joint Council students voted in favour of the Engineering Society holding General Meetings (GMs). There will be one meeting each term with the spring meeting being a Joint General Meeting between the Societies. At a GM every member of the Society has a vote. This means that every student who pays a fee to the Society each term (this term $15.22) has a chance to move motions, voice their opinion, and give feedback on the direction of the Society.

This term, the first ever General meeting was held on October 8. There were just over 40 students in attendance which, including the members holding proxies, met the quorum of fifty votes present. On the agenda in addition to Society updates was a motion to pass a diversity policy for the Engineering Society. After a very good discussion and multiple amendments the policy was passed as seen below.

Policy O-7: Diversity, Equity and Inclusivity

1. The Society is committed to promoting diversity, equity and inclusivity among its members, the Faculty of Engineering, and the engineering profession.
2. The Society is committed to ensuring a safe, secure, inclusive and accessible space for all of its activities
3. The Society is committed to creating an environment free of harassment and discrimination in all of its activities
4. Discipline
   - Any member's behaviour that is found in violation of the intent of this policy may be disciplined accordingly at the discretion of the on-term Executive team through a formal warning or removal from a Society event or Service, and a report will be filed with the Student Relations Officer.
   - For Executive, a recommendation shall be made to council to remove the member(s) from a Society leadership position.

This policy will be brought forward to the B-Society council in the Winter term and if passed will be added into the documents officially.

There will be another General Meeting in the Winter term for the B-Society members and a Joint General Meeting in the summer. I strongly encourage everyone to come out to the meetings and if there is a change you would like to see, put forward a motion.

In addition, even though only at GMs does every student get a vote, I would like to remind you guys that everyone is invited to every single EngSoc meeting and everyone is allowed to give their opinion and speak at the meetings. The agenda for the meetings will be sent out on the mailing list the Sunday before the meeting and the date of the next EngSoc meeting is always posted on the board across from the orifice.

That's all for now engineers and I hope to see you all at the next EngSoc meeting!

Impact with Input: Course Evaluation Packages

Course evaluation packages will soon be sent to your professors and instructors, who have been asked to bring them to class between November 10 and 21, 2014. Student representatives will be called upon to distribute one questionnaire to each student in each class, collect them when they are completed, and deliver them to the EngSoc office. Your Course Critiques Directors (coursecritiques@engsoc.uwaterloo.ca) will work with student volunteers to prepare the packages for computerized scanning and processing. It's a process that has been repeated every semester for over 40 years. And yes, it's quite a big undertaking, but it's one we believe is well worth it.

On the day after grades are due, a package is mailed to each course instructor with a summary of the numerical data plus the original completed questionnaires so that they can read the comments you've written on the back. Instructors rely on your input to help improve their teaching. Department chairs use summaries of course evaluation results to inform tenure and promotion decisions. And the Associate Dean, Teaching uses course evaluation results to inform course improvement efforts. Results are also posted online (see links at https://uwaterloo.ca/engineering/teaching-learning/course-evaluations) so that you and future students may review the results.

A new feature has been added to the Engineering Teaching web site. A teaching award nomination form is available for students who want to support the nomination of an excellent instructor for a teaching award. Visit http://uwaterloo.ca/engineering/teaching-award-nomination for the form (login required).

Your thoughtful and candid responses to course evaluation survey questions have a big impact. Instructors rely on your feedback to help improve their teaching. The faculty and departments use the feedback to make tenure and promotion decisions. And your feedback helps the Associate Dean, Teaching to gauge how effectively our teaching supports students. Thank you for your time, your feedback, and, most importantly, for your continued support of this longstanding and valued process.

Sincerely,
Bjorn Dawson, Course Critiques Director
Devansh Malik, Course Critiques Director
Gordon Stubley, Associate Dean, Teaching

EngFair, Teaching Awards and even MORE meetings!

JOSHUA KALPIN
VP EDUCATION

Hello people of engineering and welcome to yet another exec update from yours truly. There are more than a few things to cover this time soooooooo let's do this!

First up is an update on the WaterlooWorks demo days. Those will now be taking place on Wednesday November 5 and Monday November 10 instead of November 3 and 5. Otherwise, there will be a presentation by CECA at the EngSoc meeting on October 29 explaining all the cool new features that will be in WaterlooWorks (hint: It's way better). In general, if you want to keep in the loop about WaterlooWorks I recommend you join the WaterlooWorks student panel Facebook group (*https://www.facebook.com/groups/317004421788243/)* to get the latest on updates and give input into the project.

Next up is EngFair! EngFair is coming up on Tuesday November 4 and will have a number of employers present. This is a great opportunity to meet face to face with employers and get that all-star co-op or full-time job in the process. We are working on some raffle prizes for those that bring their resumes to the event so don't miss out! More details can be found on the facebook event (*https://www.facebook.com/events/1506676719578806/*) and if you have any question feel free to send the Career Fair directors an email at *careerfair@engsoc.uwaterloo.ca*.

Another thing coming up soon is the deadline for the EngSoc Teaching Excellence Award. If you have a professor, lecturer or lab instructor that is under the Faculty of Engineering (sorry, that means Rohan or your calculus prof aren't eligible) that has gone above and beyond what is expected of them or has just been awesome, you should nominate them. The nomination form can be found at *bit.ly/EngSocTeacherNom* and the deadline for applications is October 31 just before midnight. If you have any questions about the nomination process send an email to *teachingaward@engsoc.uwaterloo.ca* and the committee members will be happy to answer you. The winner of the award will be announced in the middle of November in this very paper, so stay tuned for those updates!

To be even more jumpy with this exec update, I wanted to give another update on my initiative to meet with every program's academic reps. I met with the Systems Design reps last week and learned a lot of interesting things about their program. I'm continuing to meet with various program's reps every week or two and should hopefully be done by the end of the term with the programs that have 2015's on stream right now.

The last thing I wanted to say this week is a big thank you everyone that filled out the fall 2015 scheduling survey that I sent out a couple weeks ago. We received almost 500 responses in a very short period of time and I presented the results to the Feds Education Advisory Committee. I will give you all a proper update once I know what direction the University is planning on taking.

That's all for this week and as always if you have questions please feel free to send me an email (*vpeducation.a@engsoc.uwaterloo.ca*) or pop by the orifice at any time. I hope midterms and job hunting has gone well for everyone and I'll see you next issue.

RidgidWare – a New Hardware and Electronics Component Workshop

KEVIN MCNAMARA
VP FINANCE

Hello Engineers! For this update I would like to talk about one of the Engineering Society's most exciting new services that falls under my portfolio: RidgidWare.

On October 7, the Engineering Society opened its own electronics component and hardware shop, RidgidWare. The concept for RidgidWare was created over the past 8 months by Joe Kinsella and Ali Amin, and the two of them along with the Engineering Society have been working to launch the service ever since. The purpose of RidgidWare is to bring hardware and electronics components to campus in a friendly environment where students can browse and shop for all of their needs. There are very few places in the vicinity of campus (the closest store is Cambridge!) where one can purchase these types of components, and ordering online can often take a long time to wait for the parts to come in. Whether for class projects, capstones, or personal projects, the goal of RidgidWare is to offer the parts that students need, and make them easily available.

The store operates similar to Novelties, in that it is open over the lunch hour in CPH Foyer, from 11:30 to 1:30pm. Currently the store is just open on Tuesdays and Thursdays, but the hours will be expanding as demand increases. The store has everything from resistors to LEDs, Arduinos, breadboards, and soldering irons, and much more. Thanks to a contribution from Dean Sullivan the store was able to purchase the start-up inventory, which can be viewed on the EngSoc Website (engsoc.uwaterloo.ca) under Services, Student Spaces and Stores, RidgidWare. We also have lots of information on the Facebook page *http://facebook.com/ridgidware.*

This is a new service, so it is starting small; however we are definitely going to be expanding the items available for sale over the coming terms. We would love to hear what you would like to see offered in the store past the initial inventory. Send an email to *ridgidware@engsoc.uwaterloo.ca*, or fill out the feedback form at *bit.ly/RWFeedback.*

The Engineering Society is very excited to offer this new service to students, and I hope that you find it to be beneficial to your needs! If you have any general feedback or suggestions for the running of the store, or any finance questions in general, feel free to email me at *vpfinance.a@engsoc.uwaterloo.ca.*

Wiggity WEC!

HEATHER SMITH
VP EXTERNAL

Hey everyone! Midterm season is (for the most part) over, which means more time to partake in a bunch of the events EngSoc has to offer over the next few weeks! Since the material you've learned so far this term is still fresh in your minds from studying, or cramming, over the past 1 to 3 weeks, why not apply all that knowledge in the Waterloo Engineering Competition? The Waterloo Engineering Competition, or WEC for short, is a chance for all undergraduate engineers to put their skills to the test in this design competition. WEC is run by your Engineering Society and the Sandford Fleming Foundation (SFF). Participants can sign up as a team of four and can partake in the Junior design, Senior design, Consulting or the Programming competitions.

The Junior design competition is open to all first and second years while the Senior design competition is open to all third and fourth years. Check-in for the Junior design competition is at 5:30 PM and for the Senior design competition, check-in is at 4:30 PM on Friday November 7. Competing teams will be given a design problem on Friday evening with different problem statements for the Junior and Senior design competitions. The teams will then work on the Friday night to engineer a solution to their problem until 11:00 PM for junior design, and 12:30 AM for senior design. On Saturday, November 8 from 7:30 AM to 1 PM, each team will have a chance to present their engineering solutions to a panel of judges.

The Programming Competition is open to students in all years. Similar to the Junior and Senior design competition, sign up for this competition is in teams of four. All teams will be given the same problem, for which each team must find a solution. Each team will reach their solution by putting their programming skills to the test, which they will present to the judges the next day from 7:30 AM to 1 PM.

If you're looking to put your project management and research to the test, partake in the Consulting Engineering Competition! All undergraduate engineers are eligible for this segment of WEC and compete in teams of four. Teams are given an engineering problem for which they must work with their teams to come up with a solution that is both economical and feasible. Check-in for this competition is at 5:30 pm on the Friday, and competing teams have until 12:30 AM on Saturday to come up with their solution to be presented on Saturday from 7:30 AM to 1 PM.

So you may be wondering why you would want to partake in WEC when you already have engineering classes, assignments, midterms, projects, labs, etc. Well maybe it's the chance to actually apply all the skills and technical knowledge attained from your assignments. Or perhaps the chance to win great prizes from one of the aforementioned competitions. Winning teams will have the chance to represent Waterloo and compete against engineering students at other schools across the province at the Ontario Engineering Competition (OEC) hosted by Ryerson University in Toronto on February 6, 2015. Winners from OEC will have the chance to compete in the Canadian Engineering Competition, where you would be competing with 150 of the most innovative engineering undergraduates in the country.

All of these awesome opportunities start with participating in WEC, so why not? You'll at the very least have fun and learn a lot. Sign up for WEC is now open! The link has been sent out through the EngSoc mailing list, as well as the Facebook groups, but just in case, sign up here: *http://bit.ly/12rds5r.* If you have any questions about WEC, OEC or CEC please feel free to email me at *vpexternal.a@engsoc.uwaterloo.ca* or your WEC Commissioner, Will Wilmot at *wec.a@engsoc.uwaterloo.ca.*

How to Take Midterm Chaos in Stride

PUNEET NATT
VP INTERNAL

These past couple of weeks have been chaotic to say the least. With midterms, conferences, school and family, my schedule has been very busy since the long weekend, but life doesn't stop for anyone.

I needed to create a solid schedule in order to keep track of everything that has been going on, and even then, I found it difficult being an executive, a friend, a student and a sister, all at the same time. Life can get overwhelming when everything comes together at once and it can be stressful. I am not someone who gets stressed easily, but these past two weeks have been crazy for me.

I am thankful for my executive team, my friends and my family for being there when I need them. Though life can get to be a little much sometimes, never be afraid to ask for help. There are always people who will help you. If you're struggling with a course, don't be afraid to ask your professor or TA for help. If you're struggling with friends/family, find that person you can count on and spill your heart out to them. It's scary trusting someone with your secrets and your struggles. I am someone who seemingly has it together all the time, but I don't always. I would drive myself crazy if it weren't for my friends and family. There are so many people here on campus and there's definitely one that is willing to listen to you and help you out. If you can't find anyone, shoot me an email (puneetnatt30@gmail.com) and we can have coffee. I'm a good listener.

Ever since first year, my go-to book has been "Oh, the Places You'll Go!" by Dr. Seuss whenever I'm feeling overwhelmed. My roommates and I would read it several times a day during midterm and final season to calm ourselves down. I'll keep a copy in the Orifice, so feel free to stop by for a read. I'm sure it'll take you on an emotional roller coaster, but it'll provide you with positive reinforcement about the potential you have and the places you'll go.

"So be sure when you step. Step with care and great tact and remember that Life's a Great Balancing Act. Just never forget to be dexterous and deft. And never mix up your right foot with your left. And will you succeed? Yes! You will, indeed! (98 and 3/4 percent guaranteed.)" – Dr. Seuss; Oh, the Places You'll Go!

Upcoming Events Calendar

Wednesday October 29	Thursday October 30	Friday October 31	Saturday November 1	Sunday November 2	Monday November 3	Tuesday November 4	
Charity Pancakes 8:30 AM CPH Foyer Professional Photoshoot 11:30 AM -1:30 PM Engsoc Meeting #3 5:30 PM - 7:30 PM CPH 3607	2017 Spirit - Pumpkin Carving 4:30 PM - 6:30 PM POETS First Year Mentoring 7:00 PM - 9:00 PM	Halloween Crawl Orifice Trick or Treating 8:30 AM - 4:30 PM Costume Contest 11:30 AM - 1:30 PM POETS	Charity Bottle Drive 10 AM - 3PM EngHack 2:00 PM - 11 AM Sunday M3 1006 2019 All-Nighter 8:00 PM - 10:00 AM	2017 Spirit - Olympiad 1:00 PM - 3:00 PM	E7 Referendum Mini Town Hall Meeting 5:00 PM - 7:00 E5 3101 Executive Review Committee Open Meeting 7:00 PM - 9:00 PM CPH 3607	Career Fair 10:00 AM - 5:00 PM Festival Room Hockey Night in POETS 7:30 PM - 9:30 PM POETS	**Check out up-to-the-day event postings on the EngSoc website at engsoc.uwaterloo.ca**
Wednesday November 5	**Thursday November 6**	**Friday November 7**	**Saturday November 8**	**Sunday November 9**	**Monday November 10**	**Tuesday November 11**	
Charity Pancakes 8:30 AM CPH Foyer WaterlooWorks Demo Day 11:30 AM - 2:30 PM CPH Foyer Engsoc Meeting #4 5:30 PM - 7:30 PM CPH 3607	Speaker Panel 6:00 PM - 7:30 PM QNC 1501	Waterloo Engineering Competition 5:00 PM - Midnight	Waterloo Engineering Competition 8:00 AM - 2 PM EngSoc Goes to TheMuseum! 9:00 AM - 3:00 PM		Charity Grilled Cheese 12:30 PM - 2:30 PM CPH Foyer WaterlooWorks Demo Day 11:30 AM - 2:30 PM	Colouring Contest 4:30 PM - 5:00 PM	

Co-Founders: Using Code to Optimize Industry

NACHIKET SHERLEKAR
3B NANOTECHNOLOGY

CO-FOUNDERS

The Iron Warrior recently asked Andrew Andrade to share his start-up story and his secret to success. He seems to have acquired an ability not many people have – to remain dedicated and hard-working while still being constantly inspired to innovate. Along with uWaterloo grad Dominic Toselli, Andrew is the co-founder of PetroPredict, a company that uses advanced data analysis techniques to optimize the efficiency of the energy industry while simultaneously solving environmental problems. Since its inception, the company has gotten a lot of attention: from winning the $25,000 Velocity Fund Finals award in May, to publishing a paper that went on to win the third place at the Society of Petroleum Engineers student paper contest at the Master's level, as well as participating in numerous hackathons over the past year, they seem to have made their mark in the start-up scene.

Andrew, who is a Mechatronics Engineering student, comes off as quite unassuming when it comes to his achievements – "…I don't think that I am as successful as others in the Velocity community"; however his success is not to be taken lightly. I recently asked him some questions about his company, his experience with entrepreneurship in the KW region, and his plans for the future. An edited version of his replies follows:

Q: What is PetroPredict about, and how was it conceived? Could you give a brief technical explanation of what your product is and how it works?

A: It began with a presentation by economist and professor Larry Smith. He spoke about building great ventures. You can check out beastar.uwaterloo.ca to learn how to have a great career and start a great venture. His secret to getting instant traction in the industry requires solving problems that urgently require solutions. To do this, he suggested looking at your co-op terms for problems which severely affect or imperil the industry; all I could think about was my experience in the energy industry.

I learnt that while there are great renewable technologies, many things in the world are fueled by petroleum, especially in developing countries like India or China. There are huge environmental problems which sometimes occur during the production of oil and gas, and while companies try their best to prevent these from occurring, they don't always have access to the newest technologies used in other industries. That is where the idea for PetroPredict came from.

PetroPredict enables energy companies to use artificial intelligence and predictive analytics to model risk and solve environmental problems before they happen. Data exists in many different forms, and is difficult to understand and make actionable decisions from. We build technology which uses different sources of data for engineers to use to identify low capital and high reward optimization opportunities in their fields which also benefits the environment. Our mission is to apply quantitative engineering, distributed computing techniques, and geospatial analysis to allow the petroleum industry to make smart enterprise decisions, improving their profitability and efficiency.

Q: What has your experience been with regards to setting up a company in the Kitchener-Waterloo region, and in uWaterloo specifically? How was the environment conducive to the establishment of your company? What sort of help did you get along the way?

A: The KW region is one of the best places to start a company. Similar to my experience working at Silicon Valley, everyone here talking technology and is really smart, hard-working and driven. There is a reason why most of the world's best and largest companies hire from Waterloo; the talent pool is so great.

UW provides so much support for entrepreneurs. One of the biggest things is Policy 73, stating that all members of the University own their own Intellectual Property without having to give royalties to the school. We also have really amazing professors, especially in engineering, who support and guide our endeavours. In addition there are amazing programs such as Enterprise Co-op and support from the Conrad Center for business and entrepreneurship, the Velocity Alpha, Residence, Science, Garage and Foundry program, and even success coaches at the Student Success Office.

The school also has many integrations with clubs and societies which help you network and speak with like-minded people. Specifically for me, the Society of Petroleum Engineers Student Chapter was a great way to network and where I met my co-founder Dominic Toselli. Another society is the Entrepreneurship Society which also runs great events for networking.

Through these sources, I have met countless mentors who have really helped and supported me, and I wish I could list them all here. They provided advice, connections to industry, and most of all inspiration. Watching other people graduate from the same program as myself and becoming successful is really inspiring.

Q: What is your opinion of the start-up culture in general at the university? Does it live up to the hype?

A: If anything, I would say that the start-up culture in Waterloo is under-hyped compared to the Valley, which is considered one of the hottest places to work. Free snacks and lunch offered by more established companies hiring out of Silicon Valley has its appeal, but the experience you can get from working for a pre-Venture Capital backed company is even better. For example, working for a company out of the Velocity Garage or Foundry or even the Accelerator Centre lets you have a far greater impact, and you learn much more than from a more established start-up.

Q: What are your plans for the future? For the company and for yourself?

A: I envision a future where information technology allows humans and computers to make better decisions and control complex situations without relying on pre-programmed solutions. Over the past half century, the foundations for artificial intelligence have been laid out and most recently we have the technology to implement it. I have really strong research interests in artificial intelligence, robotics and man-machine symbiosis. I can't wait to be able to have access to many unique sources and solve problems which were otherwise not possible to solve.

With PetroPredict we see a paradigm shift in the energy industry where equipment is becoming intelligent and we can create a Digital Oil Field, industrial internet-of-things style. Insights, trends and actionable information from existing data allows us to symbolically find hidden treasure which is worth millions of dollars and really beneficial to the environment. We look to continue to solve difficult problems enabling the industry to make better decisions.

Q: What are some of the things you feel have helped you, personally, gain such a level of success as an entrepreneur at the undergraduate level? What advice do you have for other budding entrepreneurs?

Continued at PetroPredict on page 12

Get On The Air with the UW Amateur Radio Club

MURPHY BERZISH
4N SOFTWARE

Somewhere in an overlooked corner of the engineering buildings, behind an unmapped secret door and up a blind flight of stairs, an "extra floor" that shouldn't officially exist can be found. On this landing lies the portal to a mysterious club room, left in disuse for over a decade but recently resurrected to open its doors to a new generation. This is no ordinary club room; it is a nexus to the whole world, with arcane devices that provide instant, real-time wireless communication with similar rooms located all across the globe. Serpentine cables are strung across the walls and ceiling, and powerful machines sleep quietly, dreaming of ages past when their might was unleashed on the ether. Most people who find this room mistake it for a warehouse or a museum, but those who have come to understand its capabilities know it as The Shack of the UW Amateur Radio Club.

Founded in 1959, the UW Amateur Radio Club is quite possibly the oldest club on campus, and we would like to state for the record that rumours of our downfall have been somewhat exaggerated. Although a lot of our equipment turned up broken when we excavated the club room last year, operations are continuing and we have a new complement of hardware to help new "hams" operate with modern radio techniques of the 21st century.

The process of getting started with amateur radio has changed significantly since the "old days". The availability of radios and accessories from online stores has made it possible for almost anyone to get equipped. For about $100 and a quick visit to a Toronto supplier's website, it's possible to get a handheld radio that can operate anywhere on battery power and communicate with other users farther than with any hand-held "walkie-talkie". It includes features that allow access to local repeaters that will rebroadcast your signals over an even longer range (one local repeater covers all of Kitchener, Waterloo, Cambridge, and Stratford, and most of the surrounding countryside). You don't have to build everything from scratch (but you can if you want to) and you absolutely don't have to learn any Morse code to get started!

What's required to get an amateur radio licence in Canada is a 100-question multiple choice test whose question bank is in the public domain. The questions cover amateur radio regulations, standard operating procedure, basic electronics, antenna construction, and the basics of radio transmitters and receivers. Getting 70% or better on this exam earns you a Basic Qualification, which is enough to start operating on any amateur radio frequency above 30 MHz—this opens up a huge part of the spectrum to whatever experiments or contacts you want to make. These frequencies include the popular "two-metre band", which can be used for local communication with other amateur stations. (For the best long-distance communications capabilities, you'll need privileges below 30 MHz. Try for 80% or better to earn a Basic with Honours, and you'll be able to make contacts all over the world.)

There are many different things to do with a radio licence. If you're interested in global communications, you can participate in contests and exchange "QSL cards" to provide a record of contacts you've made in countries around the world. If you're into electronics, you can put your skills to work in building receivers, filters, and antennas, or get your Advanced Qualification and get licenced to build transmitters and high-power amplifiers. For those interested in digital signal processing, software-defined radios make it possible to implement radio transceivers entirely in software, and the open source revolution has made programs available for high-speed digital communication using existing radio hardware. Finally, radio amateurs are often called upon to provide emergency communications, especially when traditional channels cannot be used. You could be the operator that gets through to the hospital when no one else can.

Even without an amateur radio licence, there are no laws against receiving most radio signals, so if you're interested in scanning the airwaves, the "RTL-SDR" family of devices is a quick and inexpensive way to start listening in with just a computer and some free controller software—find them online from a variety of suppliers. But if you're interested in getting licenced and making transmissions of your own, whether you're interested in talking "around the block or around the world", there are a few places to start, and the biggest one on campus is right here with the UW Amateur Radio Club. Visit us online at http://uwarc.uwaterloo.ca/ to take a look at some of our resources and what's happening with the club. We're always accepting new members and we'd love to help you get your licence, so come out, talk to us, and get on the air!

Will Freezing Eggs Keep Women in the Tech Industry?

RAEESA ASHIQUE
1A ELECTRICAL

While gender equality has increased dramatically over time – at least women are considered people now, right? – the world is by no means perfect. No one can claim that both genders have equal opportunities, because it has always been more difficult for a woman to reach the same level as a man in the same field, and who knows when this will no longer be the case. No one can claim that gender stereotypes do not exist either. What is the point of this feminist rant? Unfortunately, engineering has always been labeled "a man's job", and this gender stereotype has persisted.

As a female engineering student, I can testify that my classes are majority guys, and this ratio directly transfers to the same situation in the real world as well. Facebook and Apple have realized that this is an issue, and decided to address this. In an effort to attract female employees, and to make sure that their current employees stay, they have offered to cover the cost of freezing the eggs of fertile women in order to allow them the option to delay having children, up to a maximum of $20,000. Egg extraction costs $10,000, with another $500 annually for storage.

The age at which women choose to start a family has been on the rise, with more women giving birth after thirty-five. This is risky because as a woman ages, the chances of getting pregnant in the first place decreases, and the chances of chromosomal abnormalities in the child increase. However, it turns out that these risks are not necessarily related to the age of the woman's uterus, but of her eggs, so having the ability to freeze eggs opens up a whole new scope of options for female workers. This could be the key to allowing them to postpone starting a family until after they have been in the workplace long enough that they feel like they have already been successful.

It is fascinating to think that this type of technology is available, although it is still relatively new. Could these massive companies mean well by offering to cover the costs of this treatment? Is a woman's successful family life really in their list of priorities? I think this sounds like wishful thinking, and is a way of gaining more support by being able to boast diversity.

I understand the appeal of wanting to establish your career first. As a female in a male dominated field, and in general in a male dominated world, creating a name for yourself is critical, which is that much harder as an older woman returning after raising children.

However, choosing to put work first is a matter of personal preference, regardless of the field. This is not a phenomena specific to women in computer engineering. Also, this is not a viable option for everyone: some women want to put their career first, but many don't, and for them the company should have alternative options. It would be a better use of the company's $20,000 to implement better maternity leave policies. This gives women an option to be on leave, and return knowing her position is not in jeopardy. They could also have child care in the workplace, to give women the option to work while raising a family. At the end of the day, every woman makes her own decision and if the company wants to be supportive of their female employees, they need to understand this and address each circumstance accordingly.

This does not even take into account the fact that this technology is far from perfect. The process is strenuous on the woman's body, from injecting hormones to undergoing surgeries, and only about three in ten women can actually get pregnant.

I think they are putting too much emphasis on surveys which suggest women choose to leave the engineering field for maternal reasons, when in fact this is bound to happen in any field. The reason there are not many women in engineering is because highschool girls do not choose to enter this field, not because they leave when they are in their 20's. Therefore, if companies such as Facebook and Apple genuinely want to make a real difference, they need to address the root of the problem, which comes back to stereotypes and opportunities. Even from a young age, girls are not encouraged to play with gadgets or take things apart, so this is not necessarily an idea she would consider when she is older and choosing her career path. And of course, this is traditionally a male dominated field. It is great that Facebook and Apple want to change the gender dynamic in their workforce, but they should be targeting teenage girls to encourage them to enter the field, rather than spending thousands on a risky procedure that still has a high failure rate.

Tiverton Ontario: A Windy Place to Live

JESSICA KEUNG
2A CIVIL

SMALLEST VILLAGES

In this second installment of the smallest villages in Canada, we will be looking into Tiverton, Ontario. Tiverton is located in Southwestern Ontario in the county of Bruce and in the municipality of Kincardine. You can get there from Toronto by first driving west for three hours. If you hit water, you have gone too far! Once you are on the shores of Lake Huron, adjust your latitudinal position until you hit Tiverton. There is also a bus you can catch from Kitchener that will take you all the way to Tiverton. This small town of 743 people is located on Highway 21 between the towns of Port Elgin and Kincardine. Tiverton is home to Ontario's first commercial wind farm, "Huron Wind," which has 5 Vesta V80-1.8MW wind turbines; the Enbridge Wind Farm Project that has been recently constructed between Tiverton and will have over 100 wind turbines; and an East Indian Restaurant. One of the biggest contributiors to Tiverton's local economy is the Bruce Nuclear Generating Station, which frequently hires engineering co-op students.

The Bruce Nuclear Generating Station is the largest nuclear facility in North America in terms of output. It is located on the eastern shore of Lake Huron and occupies 2300 ares of land. This is the largest nuclear generating station in the world by the total reactor count and the number of operational reactors. The nuclear generating station has been in commission since 1977 and is owned by the Ontario Power Generation. One of the features on site are the Bald Eagles. Bruce Power releases heated water back into Lake Huron, preventing the surrounding shore line from freezing over during the winter. This causes an inordinate amount of fish to gather, which in turns attracts droves of Bald Eagles to winter in the area. It is not uncommon to observe several dozen eagles in and around the general vicinity of the plant even in late February and early March.

Tiverton was settled in 1850 and waited until 1860 to become known as Tiverton, after the borough for which Lord Palmerston, the English Prime Minister, sat in Parliament. It is said that the founder of the village was a man by the name of Norman McInnis who also opened the first shop and post office. Tiverton was first given as the name of the post office that had just opened and eventually became the name of the village.

In the next issue of The Iron Warrior, we will be expanding from Ontario to up North and exploring through text the community of Keno City, Yukon. A former mining town, now a small and quaint community of approximately 15 people, the settlement is home to the Keno Mining Museum with an extensive collection dedicated to the history of mining in the Yukon from the early 1900s until the present. Keno City is located at Mile 69.1 of the Silver Trail, Yukon Highway 11. The closest town is Elsa, Yukon, which is 13 kilometres away and owned by Alexco Resource Corp, who currently owns and operates various deposits in the Keno Hill area.

All About #gamergate

RATAN VARGHESE
1A ELECTRICAL

Sometimes things are clearest in the rear-view mirror. An event is shrouded in chaos initially, and only when the dust settles is its true form revealed. Gamergate is one of those events. Gamergate seems a confusing array of actions and counteractions. The #gamergate movement is leaderless, its members disorganized and largely anonymous. Its supporters and critics range from lone Twitter users and hackers to paid writers and large corporations. Perhaps it is best if the phenomenon were considered all the way from the beginning.

The Beginning

Zoe Quinn was no stranger to online harassment: her early-2013 indie game *Depression Quest* made her the target of hate mail. However, things took a sharp turn for the worse in August 2014 when Quinn's ex-boyfriend, Eron Gjoni, published a 9000 word post full of alleged details of her intimate life. Deep in this sprawling blog post, Gjoni claimed that Quinn had slept with video game journalist Nathan Grayson so that he would write a positive review on Kotaku for *Depression Quest*.

The fact that Gjoni's claims were false (Grayson never wrote a Depression Quest review) did not stop users of 4chan's videogame board from starting to harass Zoe Quinn. She received rape and death threats over the phone and online. Hackers shared her personal information and leaked emails and nude photos. The growing mob also targeted Quinn's family and friends. The first few times Quinn claimed she suffering harassment, her critics tried claiming it was faked. They responded by continuing to threaten Quinn.

Zoe Quinn did not back down, however. She continued to speak out against her harassers, and made it a point to document their transgressions.

When asked what all the fuss was about, Quinn's haters claimed they were seeking to improve ethics in games journalism. Actor Adam Baldwin tweeted in support of this movement, coining its current name: #gamergate.

Escalation

At about this time, large websites were starting to notice their infrastructure being used for nefarious ends, and tried blocking discussion of Zoe Quinn. Even 4chan, well known as a cesspool of anonymous anarchists, decided to ban supporters of #gamergate. This backfired enormously, as #gamergaters took the bans as a sign that their viewpoint was being suppressed. There were even claims that Zoe Quinn was controlling these sites behind the scenes.

Other prominent women in the games industry were also targeted. Brianna Wu made a series of memes about #gamergate which ridiculed the great inconsistencies of the movement: namely, that people truly worried about ethics in journalism would not resort to harassing their opposition. Brianna Wu was then sent numerous threatening tweets, emails and phone calls. A Twitter account named "Death to Brianna" made Wu's address public, forcing her to flee her home.

Anita Sarkeesian, was (and still is) examining how women are portrayed in video games via her YouTube series Tropes Vs Women in Video Games. She was already a victim of online harassment, but threats against her intensified when #gamergate gained ground. Several other women in games journalism and game development were also harassed: some of them (such as Mattie Brice and Jenn Frank) quit the industry entirely, disgusted that the reward for their work was an excess of hate mail and abuse.

The hashtag #notyourshield soon started to trend on Twitter. It was, on the surface, a movement by pro-#gamergate ethnic minorities, speaking out on how people were misusing social issues to push political agendas in the games industry. However, by silently observing and making screenshots of a number of chatrooms, Zoe Quinn revealed that the #notyourshield movement was largely fabricated: quite often, supporters of #notyourshield were white men with sock-puppet accounts.

A number of games journalists wrote articles about how the "gamer identity" was both shallow and highly inaccurate. These articles were written within days of each other, but shared a similar themes: the games audience is far more diverse then before, the old focus of the industry on high-income men doesn't have to continue, and most people who play games do not identify as "gamers" any more. #Gamergaters saw this as another conspiracy and began sending letters to the firms that advertised on games journalist websites. This movement, called "Operation Disrespectful Nod", was actually mildly successful: Intel pulled its advertisements from the game site Gamasutra, and suffered criticism from anti-#gamergaters as a result.

"But it's about ethics in games journalism"

The #gamergate party line (to the extent that one can exist) is that their movement is really about ethics in games journalism. Apparently, only a minority of #gamergaters engage in harassment, and the real issue is the fact that games journalists don't adhere to the standards set by "real" journalists.

There are even claims that #gamergate does not condone harassment. On one hand, harassers who support the movement are not castigated for their actions. On the other hand, how is an anonymous mob spread out over several dark corners of the internet supposed to police itself? The ultimate result of all this chaos is that harassers have benefited from the movement far more than moderates truly concerned about journalistic bias. Games journalists operate much the same as they did before.

This leads to another issue with this view of #gamergate: games journalists have acted against the interests of their readers for many years now. In the 21st century, all news is free and advertising-supported, to the point where even mainstream news outlets publish advertisements disguised as articles. Websites desperate for page views sacrifice quality for search-optimizing buzzwords. And of course, advance reviews of blockbuster games often cause a ratings boost or two. These problems have always existed, but apparently people only care when women's personal lives are involved.

Not all #gamergaters seek unbiased games news: some of them wish to remove all discussion of race and gender from the games media. Ultimately, this is simple whining: games and their audience have become more progressive and varied, and #gamergaters are stuck in the past.

The Future

#Gamergate is ultimately a hate movement with the thin veneer of a rights movement. Moderates who participate hoping to actually improve games journalism will be disappointed; #gamergate is a vehicle for misogyny and the stunted development of games as an artistic medium. #Gamergate takes on the disguise of a revolution, when in fact all it has achieved is a repeat of the past, a horrid attempt to make video games continue to cater to the stereotypical audience of angry men. Things certainly look bleak in the present for women in game development. However, #gamergate is a change-resistant minority: as gaming becomes more mainstream, time is not on their side.

Crossing Borders

Judy Chen 1A Software

Point Vs. Counterpoint

Waterloo Should Institute a Midterm Break/ Reading Week in the Fall Term

POINT

SPENSER GOOD
4A MECHANICAL

On November 4 to 6 all full time students at the University of Waterloo will have the opportunity to vote in a referendum asking the following question: "Should classes start on the first Thursday after Labour Day in order to allow for two additional days off in the Fall term?" So, before beginning my point on why I believe everybody should vote "yes" to the above proposition, it should be made clear that students are not necessarily voting on the institution of a full reading week. Instead, what would likely be instituted is a quasi-reading week, with a couple days added close to Thanksgiving to give students a bit of a breather (likely a five day break). Although a full reading week would, in my opinion, be preferable to this, it would still be a welcome break for all of us students who face a stressful academic schedule in a time in our lives where mental health problems tend to be most prevalent.

Being somebody with some personal mental health issues—which can be quite debilitating at times—the issue of a fall reading week hits a nerve. Most undergraduate students are at an age where mental health illness, whether it be more serious maladies such as schizophrenia or bipolar disorder, or more minor, but still draining conditions such as anxiety, OCD or mild depression, begin to present themselves. I want to make it clear that I am not here to advocate that a couple extra days off can present a cure for any of these disorders. Mending these problems takes serious commitment to self-recovery, often with the aid of counselling and medication. That being said, I can speak from personal experience that time off, however short, can provide a major relief when these disorders are at their worst. Not only does it provide time to unwind and address these issues with family and friends, it provides a light at the end of what can be a very dark tunnel. During my summer work term, I strongly believe that taking a medical leave from work for a week saved me from a summer of much greater suffering, and gave me time to develop a plan of attack to deal with my own mental health issues. Unfortunately, such academic leaves are not possible simply because a week off can mean missing deadlines or midterms, which despite efforts on the part of the University and professors, can be very difficult to deal with. It is a shame that so many students fail terms, or feel obliged to withdraw, because they have no time to deal with their issues. I believe that an extended break could prevent many of these unnecessary and counterproductive occurrences.

Not only would reading week provide a much needed break for people with more chronic mental health issues; it is also worth speaking about the benefit a quasi-reading week has on the majority of people who have no experience of recurring mental illness. School is stressful. Every term we are bombarded with exams, interviews, projects, and sometimes also feel the burden of extra-curricular activities, all while trying to maintain some semblance of a social life. I know I have experienced many moments when I just wanted to escape, even if for only a couple days, from these high stress periods and just take a breath. I am sure many of you readers feel the same way. An extended break would allow for such a breather, a time when we could study in moderation, relax, maybe go on a trip, and most of all get away from the stress cooker that university can be. We could then return to our studies as well rested and more productive students.

One advantage of this extended break would also be how strongly it would impact first year students, many of whom are experiencing tumult and stress that they have never before experienced in their lives. Suddenly burdened not only with the challenges of academia, but also with everyday trials of independence which had previously been performed by their parents, first year students face a high risk of homesickness, overwhelming stress and, quite frankly, fear. On top of all this, many first years are only 17 years old when they enter this environment. This fall quasi reading week would provide first years with a milestone they could work towards, in which they could go home and unwind with family and old friends, and get to experience the some stabilizing forces that often become so absent in University. I believe that this could greatly lower first year dropouts and lesson the fear factor for first years entering a challenging new environment.

There are many arguments against the institution of this quasi-reading week, some of which can be countered, while some just have to be weighed against the benefits. The most major of these is that Orientation Week would have to be cut short, and students would have to start the term two days earlier. This is an inconvenience, especially for us Engineers, many of whom would have to sacrifice part of their only full week off before starting school after a work term. That being said, most of us understand that the first week of class, in particular the first two days, are generally syllabus overviews and review which can easily be caught up on it if one wishes to miss the first two days to preserve that week off. For the more studious of us who would not skip class, I would simply say that it is a pretty paltry price in comparison to stronger mental health and a much needed midterm break. As for the shortened Orientation Week, it would affect only first years and those of us who volunteer to help out. I have already spoken on the benefits this would hold for first years, which I think far outweighs the downside of a shortened O-week. As for O-week leaders, the experience is supposed to be about helping first years, so if that is truly their interest, then they should be willing to sacrifice a couple of days to help the group of students the event is designed for.

An article in the Toronto Star last fall stated that 11 of 20 Ontario Universities have some kind of fall reading week. I know that this fall Laurier instituted its own entire week off, despite its already stretched resources and cramped schedule. The fact that this University has not followed suit dumbfounds me. Us students, whether we like to admit or not, are at a vulnerable time in our lives. We are entering adulthood and our lives are becoming our own. University needs to be challenging for us, but it also needs to be manageable. Fall reading week would be good for all of us, it can provide mentally sound students with a break so that they return as their most productive selves, and for those of us at the brink, it can provide us with a chance to take a breath and, in many cases, formulate a plan to help ourselves. A couple days off midterm, whatever the cost may be, is a small price to pay for our mental health and our happiness.

COUNTERPOINT

MICHAEL LAANVERE
4A MECHANICAL

Having a fall reading week/mid-term break is by no means a novel idea. I say reading week/mid-term break because the upcoming referendum here at the University would involve giving students two extra days off in the fall rather than a full reading week, but I will use the terms interchangeably. In fact, around a dozen of the 20 universities in Ontario already have a fall reading week. It has been implemented mostly as a means to deal with mental health issues inherent in the post-secondary school system by providing students with some time to relieve stress and relax. So why shouldn't the University of Waterloo do the same thing? While I applaud the intention of fall reading week, there are, in fact, a couple reasons that maybe we should hold out on this one.

The first and main reason fall reading week or break may be a bad idea is the scheduling aspect. In order to create a week off, we are going to have to make up the time elsewhere. The main consensus is that either we take time from Orientation Week and start school early, or take time from Christmas break and end finals later. Neither of these seem like great options. For example, finals end this year on Friday, December 19. So if we were to have a fall reading week, we could potentially add the 20th, 22nd and 23rd to the final exam period. Would you really want to be writing a final exam from 7:30pm to 10:00pm on December 23? And what would happen if we had one of those ever elusive snow days? Would we have to go to school on Christmas Eve? I would say arguably that would be a pretty stressful situation, especially for people who have to move out of Waterloo to a place further away than, say, Southern Ontario.

And what about the second scenario of reducing Orientation Week? Orientation week is meant to give the first years some time to acclimate themselves to their surroundings and to make the transition to university easier. This is likely the first time they are living on their own, and reducing the amount of time they have to get used to this also contributes to increasing stress.

Additionally, reducing Orientation Week has impacts not only on first year students, but also students on co-op. Now there is less time between co-op and school for us to move out of our co-op places and move back to Waterloo. This is especially true for those who have co-ops abroad. That's very little time to be back with your family and friends (who you may not have seen for four months) before starting school. Getting rid of the break in between co-op and school also gets rid of a time for relaxation and de-stressing.

This also impacts employers who wish to take advantage of the Orientation Week to have some overlap of co-ops to allow the transition to be smoother.

There are other ways to make up the time: make-up lectures, reducing break time between lectures and weekend lectures being some examples but these all arguably create more stress throughout the term by making it even more packed, than the amount of stress that a Fall Reading week might relieve.

Another thing to think about is how it would align with Hell Week. Most Fall reading weeks lie in October which is coincidentally when hell week lies. So would our fall reading week be right before, or immediately after midterm week? If it was right before, students would be spending most of their time studying instead of de-stressing. While if reading week was after midterms, we would likely spend it doing assignments and projects that we would inevitably be assigned due to missing 2 weeks of lectures in a row. And if students spend their reading week relaxing and de-stressing as intended instead of doing assigned work they could end up returning to school and be far behind in coursework creating a stressful situation. There is also the fact that different years and departments have hell weeks at different times which can add complications to the timing of a Fall Reading week.

If extra days were added during Orientation Week they would likely end up being de facto days off anyways. Talking to people who have had fall breaks this year, almost all of them just didn't go to their first two days of class which occurred during our Orientation Week. If this becomes the case then students end up starting school already two days behind which would cause additional stress while they are trying to catch up.

The entire idea of fall reading week is to help with mental health by reducing stress. Fall reading week might not actually accomplish this objective though. Arguably it can be seen that in the big picture that if stress were quantifiable, more stress may end up being created than removed if a fall reading week were to be implemented.

Will a fall break truly reduce stress?

Editor's Note:
Point Vs. Counterpoint is a feature meant to stimulate discussion on thought-provoking topics. The views and opinions expressed here do not necessarily reflect those of the authors, *The Iron Warrior*, or the Engineering Society.

Hybrid Solar Cells Set to Dramatically Increase Efficiency

THOMAS DONNELLY
2A CHEM

A research team working at the University of Cambridge Cavendish Laboratory have developed a method for increasing the efficiency of the conversion of solar energy to electricity, which could be used to create hybrid solar cells exceeding current efficiency limits. The results of this research were published in Nature Materials on October 5, 2014. The research team is comprised of Gates Cambridge Scholar Maxim Tabachnyk, research fellow Akshay Rao, and other members of the Cavendish Laboratory. The team aims to develop an organic film that would be used to coat existing solar cells to convert wasted energy into a form that could be used by the cell to create electricity.

Currently, standard solar cells are made from silicon and have a maximum efficiency of 33.7%. When a photon is absorbed by the cell, an electron is energized and freed from its atom. This creates an electric current used by the cell to generate electricity. However, when a high-energy photon excites an electron, a large amount of the photon's energy is lost as heat. This energy loss causes the low theoretical efficiency of the cell.

An electron in an excited state is referred to as an 'exciton'. Certain organic compounds such as pentacene will create two 'triplet' excitons rather than one 'singlet' exciton when they absorb a single photon. A triplet exciton possesses a lower energy level than a singlet exciton. "The idea is to distribute the energy of incoming high-energy photons into two triplet excitons and to transfer their electrons onto silicon." Tabachnyk told Electronic Engineering (EE) Times magazine.

Using laser spectroscopy, the team followed the energy transfer between pentacene and lead selenide nanocrystals and observed the transfer of two triplet excitons resulting from the absorption of a high-energy photon. The transfer of excitons occurred within a femtosecond, and energy transfer was shown to have an efficiency of 95% or higher. Previously, the energy transfer had only been demonstrated for singlet excitons.

The organic material used to generate these results, pentacene, would not be suitable to use for coating silicon. For the energy of an exciton to be transferred to a compound like silicon, the energy must be greater than the minimum absorption energy of the compound. The excitons produced by pentacene do not meet this requirement. However, the research team is currently working to find an alternative organic compound for coating silicon cells. The advantage of using organic compounds is that they are easy to process: by producing the organic compound in a solution, it could be printed or sprayed onto traditional cells. This operation would theoretically be cheap and easy to integrate into the current manufacturing process of solar cells.

The Cavendish Laboratory is also investigating other applications for harvesting additional electrons from high-energy photons. For Tabachnyk's team, the current goal is to develop a prototype solar cell more efficient than conventional solar cells. This cell would need to be optimized to meet industry requirements for easy processing and long lifetimes.

Funding for the research was provided by the UK Engineering and Physical Sciences Research Council and the Winton Programme for the Physics of Sustainability as part of a larger initiative to work through challenges such as climate change and renewable energy.

MIT: The Reign of the Brass Rat

CAMERON SOLTYS
2A MECHANICAL

ENGINEERING TRADITIONS

Well I'm back, and I'm pleased to say that there are in fact other Engineering schools out there with traditions and history as rich as Waterloo's. This issue, I decided to cross the border to visit our neighbours down south, and take advantage of some duty-free alcohol on the way back up. So pack your bags kids; we're headed to MIT!

Ever since it opened in 1865, the Massachusetts Institute of Technology has apparently been attracting traditions in the same way that running water tends to attract local beavers. In its 154 years of life, the students of MIT have created and maintained so many traditions, and performed so many pranks that I don't know when they find the time to do school work at all. For instance, at final exam time all of the first years are hauled from their rooms the night before the dreaded first year physics exam and pushed into the residence showers by seniors in the annual event known as the "Freshman showering." The purpose of this even, it seems, is to prevent the first years from getting any studying done and usually devolves into an all-out water war by the time the night is complete. But this is only the start of the crazy hoops you would have to jump through to be a student at MIT.

The next, and probably most confusing tradition students take part in is the academic numbering system. While MIT has perfectly good names for buildings and classes, the student body seems to have rejected it for a much more efficient numeric index of all important academic titles. Every major, for example, has a number associated with it, starting with 1 for Civil Engineering. Buildings are similarly indexed, with most buildings (excluding residences and a few others) referred to primarily by their numbers. But the real kicker in this system is the class codes, which receive a decimal designations. Each class has an official course code and number, just like Waterloo. But at MIT, they replace the course code with the related major number, and add on the course number after the decimal. So the civil course Uncertainty in Engineering is referred to as 1.010. As someone who is still adjusting to the fact that saying "M.E." can refer to five of the six classes I am taking this year, I would probably just try to never talk about my courses with another student ever.

It's time now to move away from the group activities which students of MIT participate in together, and into the much more fascinating and daring traditions: pranking. MIT has a long history of pulling elaborate, elegant pranks known as "hacks". It's a well-respected tradition, and the successful pranksters are well respected. On the prank-pullers part, all pranks must be safe and enjoyable to the victims, an ideal which is strictly adhered to.

One common focal point for pranks is the "Great Dome" which sits atop building 10, the Barker Engineering Library. In 1994, students created a doppelganger of a police car out of wood and exterior car-body parts—complete with flashing lights—and assembled it on the great dome overnight. In 1999, the Great Dome was the target of another attack, when students dressed up the structure like R2-D2 to celebrate the imminent release of The Phantom Menace. But perhaps the greatest pair of hacks were performed on MIT's rivals, Yale and Harvard, 8 years apart. The first hack, in 1982, occurred during a Yale-Harvard football game in Harvard Stadium in front of 10 000 people. During the first quarter, the game was rudely interrupted by a weather balloon, "MIT" proudly painted onto its side, which burst from the ground in the middle of the field and exploded. The second hack also occurred at a football game, this one in 1990. Following in the fashion of the 1982 hack, MIT students buried a rocket at one of the goal lines. Sometime in the second half of the game the rocket was launched, dragging behind it a banner emblazoned with "MIT".

That's all the traditions I have room for I'm afraid, and it doesn't come even close to documenting all of the traditions and history that MIT holds within its ancient, confusingly indexed, walls. I have no idea what I'll be writing about next issue, but I worry that MIT sets a difficult act to follow. I might even have to do two universities at once just to match.

PetroPredict

Continued from Cofounders on page 8

A: Mechatronics Engineering provided me with enough background to enter the energy industry and most importantly taught me the basics of artificial intelligence and machine learning. This AI background allowed me to some things in the energy industry which are otherwise not possible.

Jackie Lee, another Waterloo Entrepreneur, once told me that an entrepreneur is someone who can hack the world in their favour to make the impossible possible. Being able to make things happen quickly is one of the greatest skills. It includes soft skills like communication as well as hard technical skills. Soft skills take time to learn and can be found by observing others. Technical skills can be acquired quickly by taking online courses/reading and building things.

As Mike Kirkup (director of Velocity) constantly tells us, no one is born an entrepreneur. It is a skill which can be learnt by anyone and only improves with practice. The best entrepreneurs have many start-ups under their belt. If you are interested in being an entrepreneur talk to Wayne Change and do an E co-op working on your own company. You can also learn the basics of entrepreneurship from Steve Blank's Udacity course on how to build a start-up (udacity.com/course/ep245).

Also, Stephanie Johnstone's success coaching taught me many of the fundamentals of time management and goal setting. It lead to me following David Allen's 'getting things done' system and combining many techniques for accelerated learning and rapid knowledge acquisition. The biggest advice I can give is a Facebook philosophy: focusing on impact and doing what takes the least effort to give the most return.

If you are interested in learning more about the Petroleum Industry, Andrew is currently launching a Petroleum 101 tutorial series with the Society of Petroleum Engineers found at speuwaterloo.ca/blog. This blog will go over the fundamentals of the industry and present technical aspects of the business in terms that everyone can understand. This aims to be a great resource for gaining an understanding of possible careers in the industry as well as technical knowledge for both employment and coming up with the next innovation in the industry!

Leather Jackets: From Military Aviators to Rock n Roll

VINCENT MAGAS
2A MANAGEMENT

HIT REPLAY

Following suit with the last article on aviators, there's a crucial piece of clothing that just burns brightly to match. That's right, I'm talking about that iconic look that spells cool from every angle: the leather jacket. Worn by people of all walks of life, the leather jacket never really faded from the limelight. It has been sported by military men, actors and actresses, and of course rockers throughout the ages.

Although leather use has existed for ages, dating all the way back to the Roman Empire, the modern leather jacket did not appear until the 1910s. The original pilots and aviators of World War I wore leather jackets to fight the strong wind and cold of high altitude. Over time, these brown aviator jackets evolved into the Bomber Jacket that we know today.

In 1928, Irving Schott designed and produced what became known as the iconic Biker's Leather Jacket. The jacket was sold at a Long Island Harley Davidson distributor for only $5.50, an astonishing contrast to today's +$500 jackets. The jacket appealed not only to bikers but to the general public as well; it became the symbol for danger, adventure, and excitement.

By World War II, the bomber jacket returned to play with pilots once more braving the cold altitudes alongside the heat of war. Leather jackets were adopted wholesale by the military, and it was not uncommon to see a soldier sporting one across Europe. The end of the war brought the jackets to homes in North America and Europe. Many of the former enlisted took on the look, and the leather jacket remained part of many wardrobes.

At the dawn of rock and roll and the 50s, the leather jacket reached an all new status. The leather jacket became increasingly popular amongst teenagers, and it became the quintessential look for the cool guy-bad boy act. The look was mainly popularized by the likes of actor and racer James Dean (whose iconic look featured him in a black leather jacket with slicked hair) and the rebellious leather jacket wearing heartthrob and king of Rock 'N' Roll, Elvis Presley. Subsequently, many school systems across North America banned the leather jacket because of its association with the rebellious teenage demographic.

Many rock stars since the 50s helped popularize the leather jacket. Prior to wearing their crisp, clean suits, even the Beatles wore black leather jackets. The 70s and 80s saw the leather jacket as the symbol for the underground punk rock movement. Bands like the Ramones, Blondie, and the Sex Pistols were all known for sporting leather jackets.

The years and the changing world have seen a rise in variety in leather jackets. Many other jacket types have evolved from the original bomber and biker jackets while still keeping the attitude, protection, and durability that they were initially known for.

The first of the most common leather jackets is known as the Flight Jacket or Bomber Jacket. Known as the father of all leather jackets, these originated from the First World War and were designed for plane crews. They were made for insulation and warmth, and typically have roomy flap side pockets. These are often zipped straight up front.

The iconic bad-boy biker jacket is known as the Double Rider or Motorcycle Jacket. Usually containing multiple pockets and large spreading lapels, the jacket is made for travel on the road. It is often designed to zip at an angle and have a protective flap behind the zipper to protect against strong winds seeping through the jacket.

A popular jacket in the racing world, known as Motocross or "Moto" Jackets, are fitted, streamlined jackets. Often giving a very clean look with few or no pockets, these jackets were popularized by professional racing. These jackets zip straight up and are usually much thinner than other styles of leather jackets.

Leather jackets come in different grades and hides. The most common divisions, from best to worst quality, are: Full Grain, Top Grain, Genuine Leather, and Bonded Leather. These four divisions, along with the inclusion of synthetic material, make up the leather jackets you see in today's market.

Full Grain and Top Grain grades are often expensive and top of line, and are made of the whole outer hide of the animal. These provide the longest lasting and sturdiest of leather jackets, and are often preferred.

Genuine Leather are the most common jackets at a mid-price range, and refers to leather made from the inner hide of an animal. Genuine Leather is less durable than the aforementioned Full and Top Grain, and often feels thinner depending on the construction.

Bonded Leather is often cheap, low-quality material made from segments of different leather that is pressed down and chemically bonded. This grade is less durable compared to the other grades due to its construction from mixed leather pieces.

Synthetic leather material also exists in the market, and is often much cheaper than the other options. These are often certified to be animal by-product free, and require little to no maintenance in comparison to animal hide leather.

Just as there are many grades of leather, the possibilities for different animal hides are extensive. The most common leather is made from cows, which is known as steer hide. Often a by-product of slaughtering for meat, steer hides are strong and usually very stiff. Jackets made from steer hide require a long break in period, but also last very long. Bison and horsehide are also common materials for leather jackets that provide much the same qualities as steer hide.

Lighter materials for leather jackets include deerskin, goatskin, and lambskin. Often the choice for cool or warmer weather, these provide nice mid-season jackets. These are often much more supple in comparison, and do not feel as stiff as hides like steer hide. For example, lambskin often provides the smoothest and softest of leather jackets. The downside to these materials is they are often not as durable as steer or bison.

In a little over a hundred years, leather jackets traveled from simply being a functional, sturdy jacket to an immortalized look that is known throughout the globe. Over the years, leather jackets have seen fluctuating waves of popularity and sales, but they endured to make it to the modern day. Today, there are thousands of different styles to choose from, including many new and unconventional looks that have risen from the original jacket. Its impact is certainly one that is undeniably powerful. Be part of the journey and grab one today; it's certainly one look that's sure to be played over and over again.

Forgotten Tales: Horror Movies of the Decade

NANCY HUI
4N CIVIL

TAKE FIVE

Modern horror movies don't have much of a shelf life. They're like fairy tales, in that way. Each new offering recycles the tropes and shocks of its predecessors, and is quickly forgotten. The only way to achieve longevity is through sequels (e.g. *Saw* 1-7, *Scream* 1-4, *Final Destination* 1-5...).

But not all movies keep bleeding their cash cow. Usually, it's for the better: I would have been thrilled if *Final Destination* had never had a sequel, and I'm sure glad there won't be a *Cabin in the Woods 2*.

These five movies? I doubt you'll remember them. They don't have a sequel, and they're certainly not classics, all being less than 10 years old. They range in quality from very good to tragically lacklustre. But time waits for no monster.

Here are five horror movies that time forgot, in order of increasing quality.

The Resident (2011)

Juliet (Hilary Swank) moves into a new apartment after a nasty break-up but, unbeknownst to her, the landlord (Jeffrey Dean Morgan) is a guy who gets his rocks off by secretly watching her bathe.

The DVD cover promised "relentless horror... evil that you can't see" but it's ironic that a movie about a stalker shows the audience exactly how he operates. That takes out the suspense. So in lieu of any real mystery, we get countless voyeuristic episodes in which Juliet takes a bath, sleeps in skimpy pajamas, and drinks wine. She drinks so much wine she think she's a lush.

As a horror movie, this movie is toothless: a viewer gets over the initial (and only) shock of having a stalker in their apartment pretty quickly. As pornography, it's impotent: the bearded voyeur keeps breathing heavily and sobbing, which really kills the mood. The only genre in which it's decent is as a real estate ad, starring The Apartment With Trendy Secret Passageways.

I'm sure that the stars only did it because they really needed the cash - Hilary Swank won an Oscar for *Million Dollar Baby*, why else would she do this movie? Avoid *Resident* unless you're getting paid.

Dark Water (2005)

A mother (Jennifer Connelly) and her daughter move into a dank, dark apartment. Soon after, the daughter finds an imaginary friend and dark, bubbling water starts seeping from the ceiling.

If "creepy children" and "malevolent plumbing" float your boat you've won the rubber ducky lottery. Otherwise you're not gonna feel it. The film is technically proficient: the special effects crew did a great job on making ceiling leaks look frightening and evil. Jennifer Connelly won an Oscar in 2002 and brings her A-game, as does the supporting cast (Pete Posthlewaithe as a superintendant, John O'Reilly as a real estate agent, and Tim Roth as a lawyer).

Dark Water has the atmosphere down pat but sadly the premise is not much scarier than the horrors of finding student housing or sleep-deprived parenthood. Building tension by increasing the hydraulic head to accelerate the liquid flux of evil through the walls? Pulling my heartstrings by appealing to my maternal instinct? Not gonna work.

If the writer wrote this by pulling two horror tropes out of a hat, they drew a dud. Why not "vengeful naiads" and "Gothic Victorian England"? Or "zombie plague" and "Caligula's torture room"? Or even "axe murderer" and "succubi"? Ugh. So many missed opportunities.

The Skeleton Key (2005)

Caroline (Kate Hudson) is a private nurse who is hired to care for an elderly couple in the Louisiana bayous. Little does she know, their mansion contains a host of sinister Hoodoo secrets.

Hoodoo is a rural American tradition of folk magic originating from the slaves of the Mississippi delta. Hoodoo spells originate from Biblical text, but are performed to increase personal power and fortune. Power is invoked by tools, personal belongings, and symbolic objects. Voodoo, on the other hand, is a structured monotheistic Haitian religion in which rituals are performed to curry the favour of spirits subservient to the reigning god.

This isn't particularly important. What's important is that *The Skeleton Key* makes full use of the simultaneously fecund and decaying swamp in which it is set. The hoodoo elements are darkly visceral and kind of meta, since in order for hoodoo to work, you have to believe in it, which you may for a bit while watching this movie. At one point, Kate Hudson's face shows up with the eyes and mouth stitched closed and I haven't been able to forget it since.

Untraceable (2008)

Special Agent Jennifer Marsh (Diane Lane) investigates a website which streams the torture and murder of its victims. The more views that are received, the more quickly the victim dies. OooooOOooooh.

This is an interesting take on torture porn, exploitation, and the Streisland effect. Do you watch viral videos? Do you rubberneck at collision scenes on the highway? Such is human nature as addressed by *Untraceable*. At some point, against the recommendation of Agent Marsh, the news of the murder is released to the press, who urge viewers not to visit the site. Needless to say, subsequent victims die really quickly. So is this movie hypocrisy or irony?

Cute premise aside, *Untraceable* is a by-the-books film. People die in increasingly painful and creative ways. The hero is eventually captured by the villain but manages to gain the upper hand. There's no shame in a formula when it's executed with as much intensity as in Untraceable. But after I watched it, I felt gross, because I learned that I'm not into torture porn. Don't watch this movie.

1408 (2007)

A horror author (John Cusack) stays in room 1408 of the Dolphin hotel in hope of getting more material for his novels. As the hotel manager (Samuel L Jackson) says, it's a fuckin' evil room.

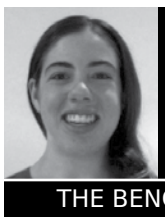
Pitting a man against a card-carrying Chaotic Evil supernatural force with the sole goal of causing the man to go insane is refreshing in premise and execution. I like it in the same way I liked *Taken*: fast, forceful, and fresh. But instead of a child prostitution ring, the antagonist is a room in a building, which has no limbs with which to wield traditional implements of murder. That alone requires some creativity. Thus the air conditioning conspires to kill John Cusack. The sprinklers cut off his contact to the outside world. The doorknob breaks.

Sound ridiculous? John Cusack can't believe what's happening either. And that sense of groundedness - along with his will to survive - is what makes this movie work.

Finally, the room seems to have a self-imposed one-hour time limit in which to drive its victims insane. This is excellent for the viewers because it tightens up the plot and ends the movie before things get stale.

The 2014 World Serie-ous: Baseball's Unlikely Best

Injured star players will make for an interesting season



ELIZABETH SALSBERG
2T NANOTECHNOLOGY

THE BENCHWARMER REPORT

As the trees change colour and lose their leaves and students write midterms, the seemingly interminable NBA preseason wears on, the NHL starts up, and the World Serious is on! That's right folks, the only sport with significant games in the dreary fall is baseball—and it's truly at it's best.

After 162 regular-season games, two wild-card face-offs, four 5-game division series and two 7-game conference championships, the Kansas City Royals and the San Francisco Giants are duking it out on the World Series stage. With the Series tied at one game apiece, let's take a look at each team and how they will look to win it all.

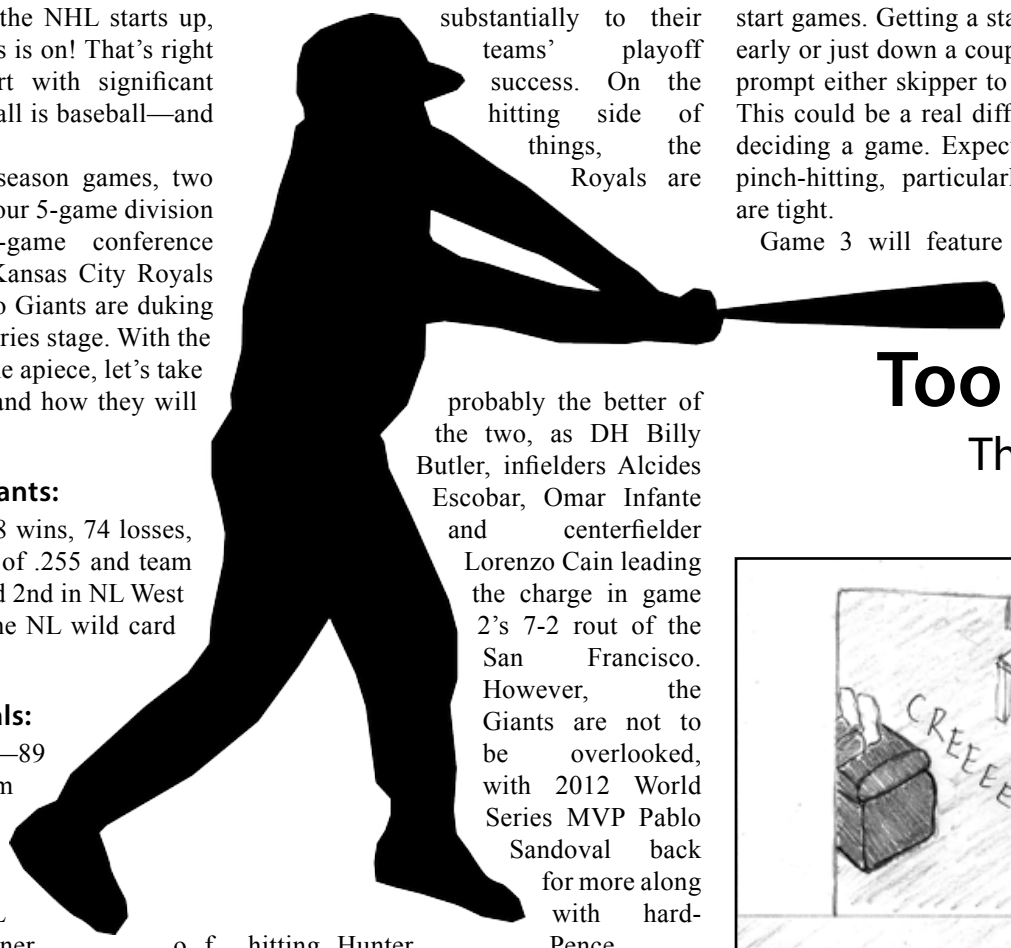
San Francisco Giants:

Regular season—88 wins, 74 losses, team batting average of .255 and team ERA of 3.50. Finished 2nd in NL West division, winner of the NL wild card match.

Kansas City Royals:

Regular season—89 wins, 73 losses, team batting average of .263 and team ERA of 3.51. Finished 2nd in AL Central division, winner of AL wild card match in extra innings and winners of all 8 of their postseason games prior to Game 1 of the World Series.

Looking at key regular season stats, these two teams are clearly very close. While neither have stacked, Cy Young pitching, both have excellent bullpens and reliable workhorse starters. Each has an ace, being James Shields for the Royals, and Madison Bumgarner for the Giants, both of whom have contributed substantially to their teams' playoff success. On the hitting side of things, the Royals are probably the better of the two, as DH Billy Butler, infielders Alcides Escobar, Omar Infante and centerfielder Lorenzo Cain leading the charge in game 2's 7-2 rout of the San Francisco. However, the Giants are not to be overlooked, with 2012 World Series MVP Pablo Sandoval back for more along with hard-hitting Hunter Pence.



But we all know the past means little in these kinds of games. Game 3 goes ahead Friday night, effectively now game 1 of what has become a 5-game series. Note that the Series is shifting from Kauffman Stadium over to AT&T Park in San Francisco for games 3 through 5—and the rules change over from AL to NL. There will be no more designated hitter, meaning that regular Royals' DH Billy Butler and Giants go-to batting man Michael Morse will not be able to start games. Getting a starter into trouble early or just down a couple of runs could prompt either skipper to lift their starter. This could be a real difference-maker in deciding a game. Expect to see a lot of pinch-hitting, particularly when games are tight.

Game 3 will feature quality starting pitching in Jeremy Guthrie for the Royals and Tim Hudson for the Giants. 39-year-old Hudson has never pitched in a World Series despite his long postseason careers. Guthrie, having spent most of his career in the AL, has not seen much of the Giants, so it will be interesting to see how they react. On the other hand, Hudson has held players on the Royals roster to a stingy .222 batting average. That being said, key Royals batters Butler, Cain and Gordon all have big hits against him.

This is definitely a hard game to call, but one would have to think the Giants will come out strong following their game 2 mauling back at Kansas City. But to win the Series? This is harder to predict still, but my hunch is the unlikely Kansas City Royals will finish what they started and become Baseball's Unlikely Best.

Too Geeky for Humour

The Midterm Black Hole

Kyla Rogers, 2N Civil

Zdeno Chara to Miss 4 to 6 Weeks

ANDREW MCMAHON
4A ENVIRONMENTAL

The Bruins will be without their captain and number one defenseman, Zdeno Chara, for the next four to six weeks. Chara tore the posterior cruciate ligament (PCL) in his left knee while delivering a hit to Islanders centre John Tavares with 8:44 left in the first period last Thursday. The four to six weeks that Chara is supposed to miss means that he may not be available until November 28, and could miss 15 games. Since joining the Bruins in 2006, Chara has missed just 20 games and the Bruins are 8-7-5 without him. Chara leads the Bruins with an average ice time of 21:41 per game this season and has led Boston in ice time in each of his nine seasons with the team. So far this season, Chara has tallied two goals, one assist, 28 shots on goal, and has a minus 2 rating.

The impact of this injury is amplified by the trade of Johnny Boychuck, the injury of Kevan Miller, previous injuries to Dennis Seidenberg and Tyler McQuaid, and Chara's fantasy value.

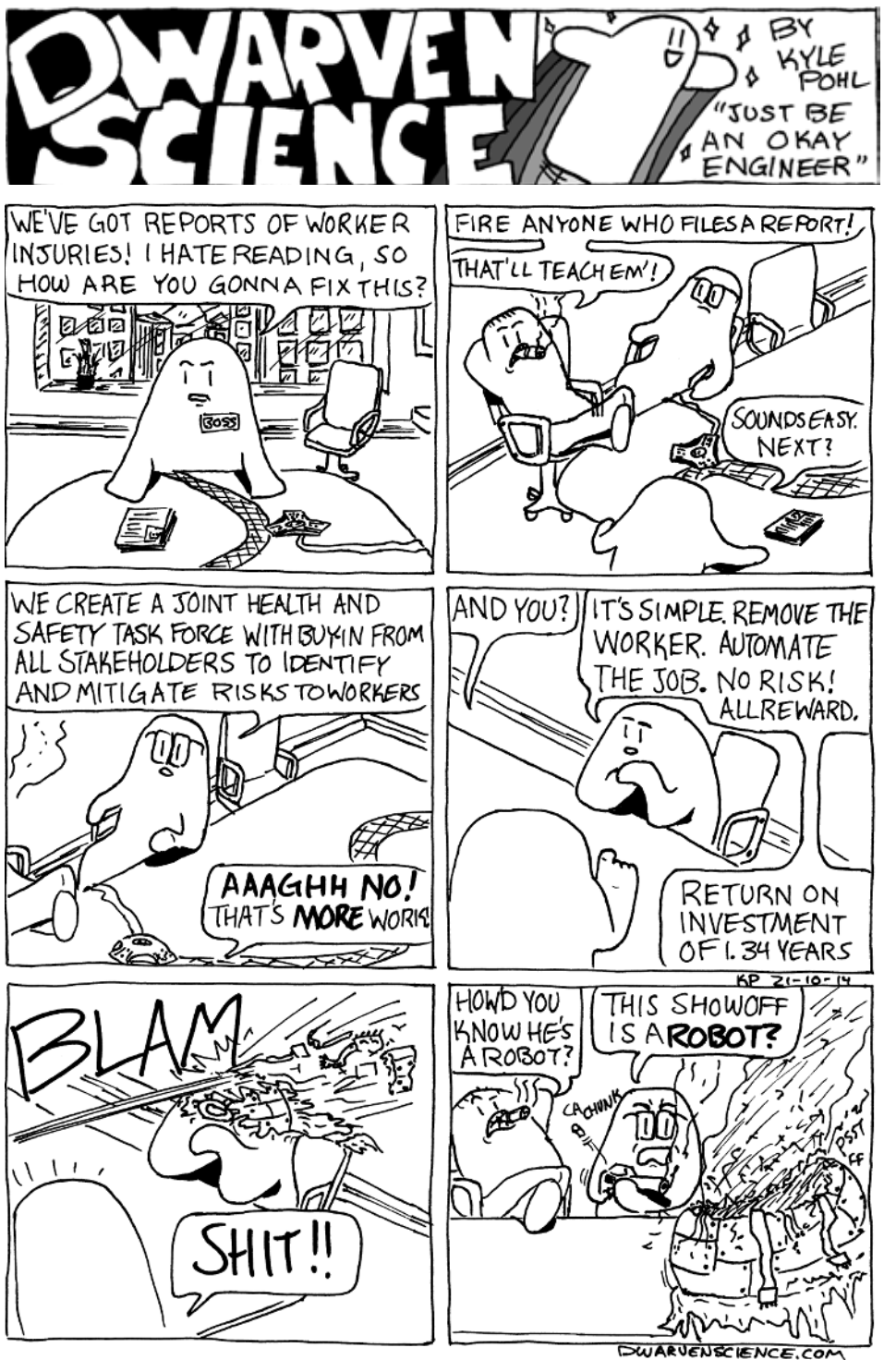
The Bruins traded 30 year old top-four defenseman Johnny Boychuk to the New York Islanders on October fourth in exchange for two second round draft picks as well as a conditional draft pick. General Manager Peter Chiarelli cited reasons such as salary cap and proactive team planning as justification while announcing the trade. Boychuk has flourished this season with the Islanders and is on pace to shatter his previous career-high points total.

Kevan Miller, who the Bruins expected to absorb some of the minutes left following the Johnny Boychuk trade to the Islanders, dislocated his shoulder on October 18 while fighting Buffalo's Nicolas Deslauriers; Miller is out indefinitely.

Dennis Seidenberg is coming off of his own knee injury. Seidenberg tore the MCL and ACL in his right knee on December 23, 2013. The 33 year old has missed roughly half of the past two seasons due to injuries. Tyler McQuaid was limited to 30 games last year because of a quad injury and an ankle issue that led to surgery. McQuaid has been playing with Seidenberg on the second defense pairing and has increased his minutes per game from 16:03 to 21:15 this season.

Stepping away from the real world and into the realm of fantasy hockey; as of last Friday Chara was owned in 96% of Yahoo fantasy leagues and NHL.com has Chara ranked as the 15th best fantasy defenseman in the league. Chara plays the point on the power play, averages just under two hits per game and one penalty every other game. When productive defensemen are at such a premium in fantasy leagues, team managers may struggle to replace Big Z.

The Bruins are now going to be forced to rely heavily on Chara's partner on the first defense pairing, 21 year old Dougie Hamilton, to soak up even more minutes against opposing teams' top lines. So it appears that the Bruins defense may not be as overwhelmingly dominant as it has been the past few seasons. Over the past years the Bruins have been a fixture at the top of the Eastern Conference, but after a lackluster 4-5 start to the season, top spot in the East may be up for grabs. All of this is especially good news for the rest of the Atlantic Division because seven of the 15 games that Chara is anticipated to miss, are divisional matchups. It will be interesting to see if the remaining Bruins defensemen can handle the increased workload during Chara's injury, or at least recover once he returns to the lineup.



#Engineering Problems

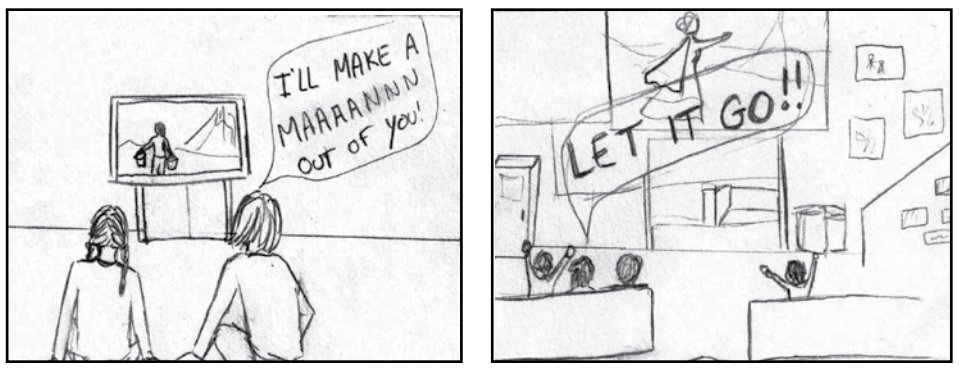
3 Ways University ~ Elementary School

Leah Kristufek, 3B Chemical

YOU DON'T CHOOSE YOUR CLASS SCHEDULE

HALLOWEEN COSTUMES ARE COOL

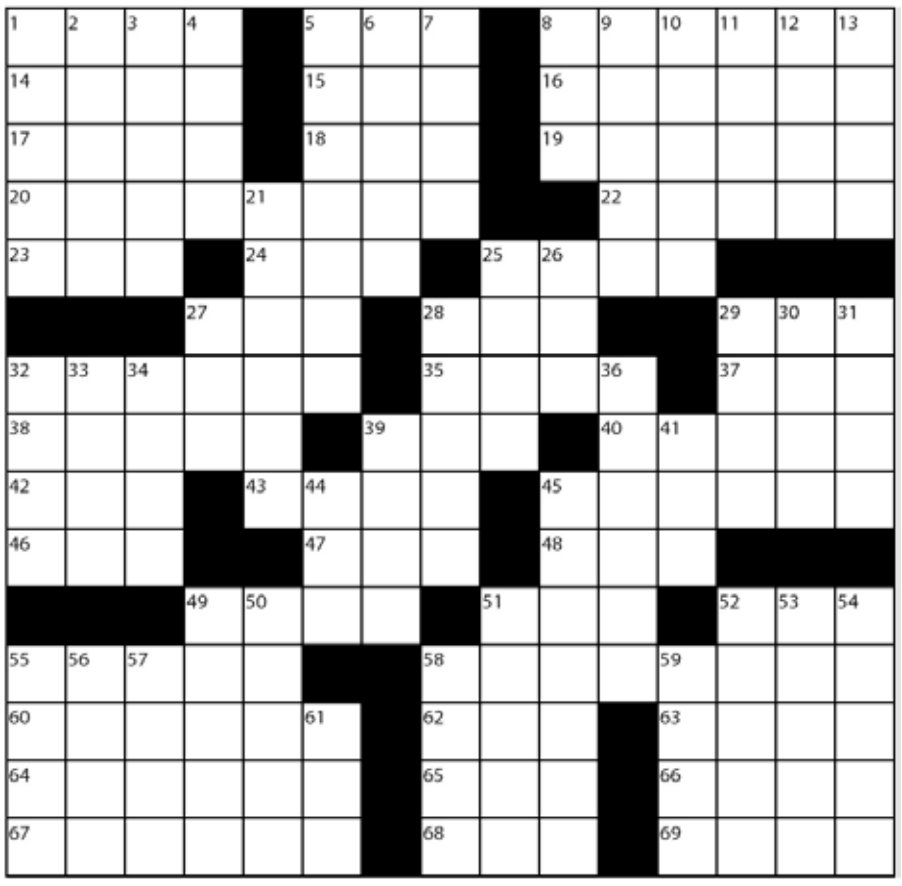
DISNEY MOVIES WILL ALWAYS BE AWESOME!



The Iron Crossword

Oh No Robot

NANCY HUI
4N CIVIL



ACROSS

1. Potato
5. Not on
8. News
14. Melody
15. Has bird and swine variants
16. Corrupted administrator of Aperture Science research facility
17. Shallowest Great Lake
18. A loop starter
19. Robbery
20. Crime-fighting Japanese robot
22. Snappy
23. Answer sheet
24. King or queen
25. White-collar workspace
27. Pie ___ mode
28. Married
29. Evil robot plant on the Nostromo
32. Gynoids with boob-cannons destroyed by Austin Powers
35. Car rental chain
37. It comes in bundles
38. Embellish
39. Boxer a.k.a Clay
40. There are 150 in the Old Testament
42. Lana ___ Rey
43. Asterix's homeland
45. Evil robot supervillain designed by Dr. Hank Pym
46. @67.50°
47. Before-
48. Tiny or Minchin
49. Picard's chief operations officer
51. Valar Morghulis - All ___ must die
52. Mixing tank
55. Bustling
58. Perverted AnthroPC from Questionable Content
60. The Paranoid Android
62. They're much appreciated in summer
63. Spanish water
64. Futile
65. ____ Lanka
66. Manic pixie dream ____
67. A group of seven, minus one
68. Our sun, as named in Star Trek
69. Draft picks

DOWN

1. A tasty piece of cow
2. Handbag
3. Togetherness
4. White-tailed or rein
5. "We're both a little _____ / I'm what you called blind / I'm more Frankenstein / Yet, somehow you make me complete"
6. Ark necessitator
7. Wrath
8. Sound of disgust
9. Schemes
10. Evil dustbin-shaped cyborgs from Doctor Who
11. Sums
12. Promote
13. Glimpse
21. Lozenge-shaped
25. Siva's wife
26. Cerberus-created Normandy AI
27. A better abbr. than abbr.
28. 29th-century garbage-collection robot
29. Slightly open
30. Falcon pilot
31. e.g. Amazing Grace
32. Dragon Age dream realm
33. Old utopia
34. Informant
36. Fracture immobilizer
39. A metaphysical air
41. Sewer label on blueprints
44. Capable
45. Mastication tool
49. Piece of turf
50. Appear
51. iPod that should have preceded nano
52. Prothean AI on Ilos
53. Brilliant blue
54. My favourite shades of bluish-green
55. Cedric Diggory's father
56. Satisfy
57. "Silly rabbit, _____ are for kids."
58. Skip a turn
59. E.g. Star Wars or Beowulf

Sudoku

#2014-13

SPENSER GOOD
4A MECHANICAL

Easy

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

Medium

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

Hard

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

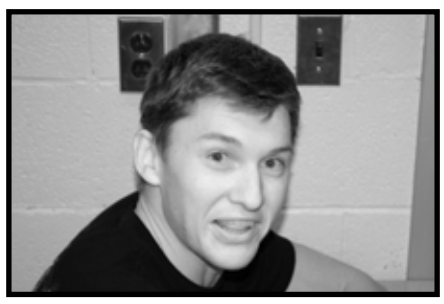
Solutions for previous crosswords can be found on *The Iron Warrior*'s website at *iwarrior.uwaterloo.ca/distractions*.

THE IRON INQUISITION

Jessica Keung, 2A Civil, Vince Magas, 2A Management, & Spenser Good, 4A Mechanical

"What Are You Going to Be for Halloween?"

"Tiki Man"
Alex Wigle, 4A Mechanical



"Crocodile Hunter"
Tim Foreman, 4A Mechanical

"It may involve crossdressing"
"TIBBERS!! My roomate is Annie"
"I have no clue. Chinese Dragon"
Ben Paul, Jesse Teare, Liza Sazonova, various

"Dos Equis bottle for the most interesting man in the world"
Leila Meema-Coleman, 3B Mechanical

"A hipster... I'm dressing up, I swear"
Melissa Deziel, Management '13

"Someone from the 80s"
Reinier Lakhan, 4A Mechatronics