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THE IRON WARRIOR

THE NEWSPAPER OF THE UNIVERSITY OF WATERLOO ENGINEERING SOCIETY

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Student Design Symposium Showcases Personal Technical Projects

KEVIN VELOSO
4C SOFTWARE

On Friday, January 18, the Student Design Symposium held their second showcase in E5, presenting various second and third year student projects. The symposium was comprised primarily of personal technical projects and pet projects worked on and created outside of class or during their co-op terms, all during their free time.

The main purpose of this event is to provide students an opportunity to showcase their personal projects. The event organizers, Andrew Andrade and Derek Chow (2A and 3B Mechatronics) were assisted by Dr. William Melek and Christina Lashbook, both members of the Mechanical and Mechatronics Department, in hosting this symposium. The goal for this event is to encourage other students and professors in pursuing and creating personal projects of their own, applying what they've learned in class to projects outside of class.

A contest was also held during the symposium. Visitors were asked to vote on three projects that they thought were the best, noteworthy, or most interesting. The winners were announced at the end of the symposium.

In third place, Shivani Tyagi (2A Mechatronics) won with her language learning computer program. Her program would present a sound file of a word pronunciation and the user would be asked to repeat back the sound through a microphone, telling the user how accurately he or she pronounced the word. With this program, she hopes to assist people with learning a new language without requiring a teacher to be present to correct their pronunciation.

In second place, Derek Chow and George Cao (3B Mechatronics and Systems Design) won with their gripper and scanner devices. They presented a gripper made with coffee grinds, a balloon, a suction fan, and other inexpensive items. The scanner was controlled by a metallic programmable arm, but also had the option of being controlled using a PlayStation controller. The gripper would be used to pick up various items while the scanner scanned the item to determine what the item was. A more sophisticated version of their gripper and scanner combination could be used in factories and assembly lines, moving and scanning various objects without requiring someone to be present.

In first place, Chris Thiele (2A Electrical) presented various music-related electronics projects. One thing he presented was a DJ Sword, a sword prop that had attached speakers and a functioning turntable mixer. Other projects he had at his station were light blocks (a set of circuit boards that would act as a prop for a costume) and an LED cube, both of which would blink and light up based on audio input coming from an audio device.

The first Student Design Symposium was hosted last year during the Spring 2012 term. The organizers are planning to host more events in future terms, with a possibility of another Student Design Symposium occurring on an A-Soc term. Keep a look out for future Student Design Symposiums, as well as future student pet projects!

Yola Harsono

Chris Thiele, 2A Electrical, presents his winning project, a DJ sword

Aaron Swartz and His Fight For Your Freedoms

JACOB TERRY
2T NANOTECHNOLOGY

Ripples were sent through the Internet community on January 11 when Internet freedom activist, Aaron Swartz, committed suicide in his Brooklyn apartment. Swartz was well known for his role in founding Demand Progress and his substantial efforts in developing the RSS 1.0 specification and Reddit.

Swartz was born in Chicago, Illinois, in 1986, the son of a software company founder. From an early age, he surrounded himself in studying the Internet and computers, and in his preteens he started theinfo.org, which he set up to share public records from US courts. At 14, he was working on the RSS 1.0 specification with World Wide Web creator, Tim Berners-Lee. He attended Stanford University, but left after a year to found Infogami, a Y Combinator funded software company making a wiki platform. He later merged with Reddit while it was in its infancy and after it gained popularity, the site was bought a year later by Condé Nast Publications, who managed Wired, The New Yorker, and Vogue among other publications. Reddit moved to San Francisco and worked in the Wired News offices, but Swartz was unhappy with office life and his situation and was asked to resign shortly after taking a long Christmas vacation.

He was very active as a Wikipedia editor, and in 2006 he ran for the Wikimedia Foundation's Board of Directors. A major proponent of his bid was a study showing that, contrary to what Wikipedia founder, Jimmy Wales, and others had claimed, Wikipedia was primarily written by millions of casual or even unregistered users that would write paragraphs at a time, while the core network of editors would do the spelling and grammar fixes and other minor changes. While he was unsuccessful in his electoral bid, he was able to present an alternative view on how one of the world's largest encyclopedias operates. He was also able to help develop the Creative Commons licensing system, which is a more open way to license content to others than the traditional copyrighting while still allowing some recognition or control past the public domain.

The part of his life that his family and friends have claimed is most responsible for contributing to his death concerns approximately four million articles he downloaded over MIT's network from JSTOR, a digital library founded in 1995 which provides searches for over a thousand journals. The U.S. government and other government agencies brought a lengthy court case against Swartz, charging him for hacking into MIT's network and JSTOR's database. After pleading not guilty to all charges and his release on $100 000 unsecured bail, JSTOR dropped their litigation against him since he returned the documents he had downloaded to them, which they claimed was their primary concern. MIT kept a neutral position throughout the proceedings, and the U.S. legal bodies asserting the trial that was to begin this year charged him with a potential 35 years in prison and $1 million in fines. Faced with depression and life-altering punishments, Swartz was found by his girlfriend in his apartment with no suicide note found.

Some discussion has sprung after his death concerning the ethical nature of having publicly-funded research locked behind closed access journals that require subscriptions to access, and some academics have acknowledged his role in knowledge liberation by posting free PDF versions of their research online in honor of his memory. Shortly after his death, a group of archivists set up a website where users could liberate public domain articles from JSTOR's archive by making use of a new feature on JSTOR's website which allows people to read three articles for free every two weeks.

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Letter From the Editor

An Experience with the Unknown

ANDREW FISHER
EDITOR-IN-CHIEF

Hello *Iron Warrior* reader! Thank you for taking the opportunity to pick up and read the best, and only, student newspaper in the Faculty of Engineering. This issue marks the 33rd year (give or take a few months) of *The Iron Warrior* since its creation in 1980. There has been a lot of history that has traversed through these pages over the years and I am honoured to add to that plethora of written information. As the 127th Editor-In-Chief (don't try the math, 'cause it won't work for you) I hope to continue the trend of providing you the student, professor, alumni or whatever category you consider yourself a paper full of interesting articles which will entertain the duller moments of your day.

Oops! I totally forgot to introduce myself! How rude of me. My name is Andrew Fisher and I will be your Editor-in-Chief for these next five issues of *The Iron Warrior*. I am currently in my 4B term of Civil Engineering and am well on my way to get my Iron Ring. How many days fourth years?? That's right, 17 days! I am from the small town of Dorchester, Ontario which is 10 minutes east of London. Don't doze off in the car because you may just pass through the town's two traffic lights and miss it completely. I am an avid car enthusiast and will take a trip to a car dealership over a movie any day. I also love wearing the colour green because it brings out my eyes and I am very computer illiterate; hence my pursuit of a civil engineering degree.

Throughout my time here at Waterloo, I have been heavily involved in the Engineering Society, Engineering Orientation, and the Federation of Students (Feds). All of my experiences in leading a team, event planning and logistics, as well as sponsorship are what brings me here to the paper today. Based on these experiences, I was asked to take over the role of Editor from the honourable Jacob Terry, the Editor of Summer 2012. I must say, I have very little experience producing a newspaper, but since you are reading this now, I guess I was able produce my first ever document using InDesign. Now hold on there! Don't give me that much credit. A huge amount of the paper you see in front of you was thanks to my team. I have a great group of people helping me out who also want to ensure the paper's success. Just take a look at the list of contributors to the right and see for yourself!

Speaking of contributions, we have some really great articles in this first issue of 2013. Jacob wrote a very enlightening article about Aaron Swartz's contributions to our society and I really encourage you to read it if you haven't had the opportunity to already. If you are more environmentally conscious and want to help improve the environment even after you die, take a look at the article regarding eco-friendly ways of disposing the dead. The Engineering Society is having a by-election this term for their Vice-President External and the WEEF Director, so be sure to turn to our centre spread to get the full details about the candidates as well as the date for their ratification. Lastly, be sure to check out the Arts & Entertainment section in the last few pages of the paper. We have a large variety of articles on recipes, movies, music, art, gaming, beer and comics!

As with every Editor, I have a few goals for the term that I hope to accomplish. As an outsider to *The Iron Warrior* these past 5 years, I come to the paper with a fresh perspective. My main goal is to increase the number of contributors to our paper. At this time we have a fairly consistent set of people who write for *The Iron Warrior*, and I am thrilled to have them as key members of my team; but I want more! As a paper reaching out to 6000+ students, faculty, and alumni, there is a great audience at my disposal. Wouldn't you want to write about tomorrow's history, today? Man, that's deep. But if you are interested in writing for the paper, be sure to email iwarrior@uwaterloo.ca and let me know. Our staff also meets every Tuesday at 6:30 pm in the Iron Warrior Office (E2-22349A) so please plan to attend if you want to get further involved!

This past Saturday and Sunday, I had the opportunity to experience my first *Iron Warrior* production weekend. It was definitely as painful as every past Editor says it is. I had such high hopes and expectations that, yes, I could definitely get this paper finished faster than past editors and without any hiccups. Well that was a very inaccurate assumption. I experienced the dreaded blue screen of death, late articles, InDesign not working the way I want it, writer's block, and of course, the almost all-nighter. However, I am not complaining. I quite enjoyed the experience and can't wait to do it again for the remaining four issues. Now hold on here, did I just say I enjoyed that? What is wrong with me? How could a task that is difficult, time consuming and stressful bring enjoyment to my life? I was texting one of my friends explaining what I was doing and he asked me, "Why do you want to do it?" I thought for a moment and I really didn't have an answer.

There are many factors which drive us as the human race. There is money, relationships, social acceptance, careers, and the list goes on. But can it just be one of these, or is it a combination of all the above that drives me. It can't be money, because Editor is a volunteer position, and its definitely not relationships because if anything, this position hinders them with the required time commitment. Well then it must be social acceptance — if I do something difficult, people will like me right? Not necessarily. They will appreciate the work you do, but that doesn't translate to a need to like you. Then I must be doing this to help improve my project management, teamwork, and communication skills which will lead me to be that successful employee one day. As much as I'd like to say this is the case, how often does the discussion of being the Editor of a paper come up in an interview, and how many times have employers skipped right to your work experience? This is gradually changing and employers are starting to put more weight on extracurricular involvement, but at this stage of my degree it really doesn't add anything to my resume which I don't already have. Hmmm, this is quite the conundrum. At this point, I have concluded that I do what I do for no reason at all. Well what is the point in that??

So taking a step back and thinking more big picture, it came to me quite abruptly — I got involved as Editor (as well as things in the past) because of the very same conclusion: the unknown. No one ever knows what life has in store for them, so why close the doors which could potentially change the entire direction of your life. The reason I got involved as Editor is because the door opened for me, and I had the choice to either go through that door, or close it and never see what could have happened. For all I know, I could end up having the worst *Iron Warrior* term in the history of the paper, but I would know that and experience that. There would no longer be the unknown; the "what if."

To those of you who are wanting to try something new, or get involved here on campus, go for it! Who knows what could happen, and from my experiences, it will always turn out to be a great experience if you just give it a try. There are hundreds of areas to get involved on campus. The Engineering Society has numerous Directorships you can apply to and help plan events, organize services, and lead teams. If event planning isn't your thing, try getting involved with a club on campus. The Federation of Students has hundreds of clubs which can tailor to anyone's interests ranging from cheese to death metal. If you want more of a short term commitment, then why not try being a leader for orientation? It's a one-week commitment, with a few weekends during the rest of the year. It is a great opportunity, especially for those in 1B to get their foot in the door here on campus. Leader applications will be opening this term for those who are interested, so be sure to keep an eye out for those. If campus involvement isn't your thing, the City of Waterloo has numerous programs which are always looking for volunteers to help out.

Hopefully with this article I have encouraged a few of you to step out of your comfort zone and give something new a try. Like I mentioned earlier in my article, the best reason to get involved and try something new is the unknown: embrace it, don't run from it.

THE IRON WARRIOR

The Newspaper of the University of Waterloo Engineering Society

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The Iron Warrior is a forum for thought-provoking and informative articles published by the Engineering Society. Views expressed in *The Iron Warrior* are those of the authors and do not necessarily reflect the opinions of the Engineering Society.

The Iron Warrior encourages submissions from students, faculty and members of the university community. Submissions should reflect the concerns and intellectual standards of the university in general. The author's name and phone number should be included.

All submissions, unless otherwise stated, become the property of *The Iron Warrior*, which reserves the right to refuse publication of material which it deems unsuitable. *The Iron Warrior* also reserves the right to edit grammar, spelling and text that do not meet university standards. Authors will be notified of any major changes that may be required.

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The Societal Impact of Aaron Swartz

Continued from AARON on page 1

The site, called Aaron Swartz Memorial JSTOR Liberator, allows users to engage in a small acts of civil disobedience by re-uploading the PDF to a separate, open-access archive even though the JSTOR terms of service state that the articles should not be shared with other individuals after being downloaded.

Other discussion has focused on the draconian laws surrounding computer usage laws from before the Internet's mass-usage, particularly on the 1984 Computer Fraud and Abuse Act that was used as the primary weapon against Aaron in the government's trial. Representatives on both sides of the political spectrum have introduced debate on the harmful effects of these laws and have suggested major changes should be made to ensure that government bullying such as that used in Swartz's trial is minimized in in future trials.

Swartz unfortunately did not have the time to make the change he wanted to, but his dedicated efforts on political activism later in life, primarily through his activist organization, Demand Progress, were instrumental in helping raise awareness for legislation like the Stop Online Privacy Act, which was a great controversy last year that eventually was postponed due to the mass negative attention brought to it by organizations like his. His death was tragic, yet it has done a great deal in bringing discussion on openness, unfair government control, and Internet rights to the masses. The debate brought about in his memory could bring significant changes to the way people and legislators view the Internet and their freedoms, and the best way to honour his memory would be supporting these arguments over social media, in discussions with others, and on your ballot when you pick the next MPs. If they are not able to fully understand the intricacies of the Internet and technology, what makes them qualified to legislate it?

Fred Benenson
Aaron Swartz at a Creative Commons event in December 2008

Waterloo Combat Engineers Cut Holidays Short for Bridging Exercise

MATTHEW AUSTIN
WATERLOO COMBAT ENGINEER, MASTER'S POLITICAL SCIENCE

While students took a break over the holiday season to read up on next term's courses or spend some time on turkey and family, Waterloo's Combat Engineers were flown across the country to take park in the annual Canadian Forces Paladin Response exercise.

Drawing from brigades across Land Force Western Area (LFWA) and Land Force Central Area (LFCA), Combat Engineers from across Western Canada and Ontario gathered in Chilliwack, British Columbia to take part in the exercise which would see round-robin competitions to build two different bridges and a raft.

Waterloo's 48 Engineer Squadron, a part of 31 Combat Engineer Regiment (The Elgins), would send four engineers to the exercise with all four commanding parts of the bridge builds and teardowns.

Surrounded by mountains in the Fraser Valley, Chilliwack, BC is the former home of the Canadian Forces School of Military Engineering from 1942 when it was called A6 Canadian Engineer Training Center until it was moved to CFB Gagetown in Oromocto, NB in 1998.

The exercise saw over 180 combat engineers and officers compete in three teams to build and tear down an ACROW bridge, Medium Girder Bridge (MGB) and Medium Raft (MR). Teams competed to see who could build each mobility project twice before the end of the day.

Besides encountering boat problems with the raft operations, the group of Waterloo engineers were amongst the team that built the greatest amount of ACROW and MGB for the times allotted. They were teamed up with engineers from Edmonton and Calgary, Alberta.

Chilliwack has hosted this annual exercise for over forty years with a current focus on training for domestic operations. This year saw engineers build bridges and rafts to train for flood mobility operations.

Students interested in joining the local Combat Engineers are encouraged to contact Warrant Officer Youden at 519-746-4565.

Matthew Austin
Waterloo engineer Corporal Brandon Amacher leads the center construction of the MGB

This Isn't the Petition Response You're Looking For

The Unforeseen Requests on the We the People Petitioning System

JACOB TERRY
2T NANOTECHNOLOGY

Since 2011, the Obama Administration in the United States has maintained an online petitioning system called We the People, billed as a method for citizens to petition their government on issues that are important to them as is protected under the First Amendment. Naturally, as with any open Internet forum, this leads to more lighthearted requests such as one created on November 14 of last year, requesting that the US government find enough money and resources to build a Death Star by 2016. The petition claimed that the construction of a Death Star would "spur job creation in the fields of construction, engineering, space exploration" and "strengthen [the United States'] national defense."

In the two months since, the petition received 34 435 signatures, allowing it to require an official response from the government. As expected, the request was rejected, citing a cost of more than $850 quadrillion and stating that they were "working hard to reduce the deficit, not expand it." They also noted that their Administration "does not support blowing up planets" and that a Death Star would have a flaw "[exploitable] by a one-man starship." Their response went on to discuss the benefits of the current American infrastructure, such as the International Space Station (ISS), private missions to the ISS and the Moon, and the James Webb Space Telescope, which is due to replace the Hubble Space Telescope in 2018.

The Death Star request is only one of many unconventional requests made on the system. One of the earliest requests made on the system (before the 5000 signature threshold was changed) was a petition to release the recipe for White House Honey Ale, a recipe the president stated he'd been drinking on the campaign trail after home brewing it in Washington. After 12 240 requests, the White House released their recipe and revealed they were using honey collected from beehives on the South Lawn as their special ingredient in their Honey Ale, Honey Porter and Honey Blonde brews. A recent petition gained 109 334 signatures petitioning the government to deport British media personality Piers Morgan after his heated interview with Gun Owners of America executive director Larry Pratt, where he argued banning assault rifles was a sensible gun control move. The White House turned down this request, citing First Amendment rights protect his rights to voice his disapproval of the Second Amendment.

To get a response from the Obama Administration, a petition must reach the specified signature threshold within 30 days. The stranger petitions that normally may not receive that many signatures may have played a part in their changing of the signature threshold twice since the system began. The threshold began at 5000 signatures, but rose to 25 000 signatures after the first month due to higher popularity than expected. Just in the past week, the threshold was raised again to 100 000 signatures because of the doubling of users over the past two months. Their blog post explaining the reasoning claimed that while it used to take an average of 18 days for petitions to reach the 25 000 signature threshold, it now takes as short as 9 days for petitions to reach this goal. By increasing the threshold, they make the system more resilient to impulse campaigns spawned by short-sighted reactions to policy announcements.

Changing the threshold to 100 000 signatures will unfortunately cut out a lot of petitions like the ones that are still awaiting a response from when the threshold was 25 000 signatures. The most popular petition open right now, which may even be the most popular petition yet since the system's inception, is a request for the Westboro Baptist Church to be legally recognized as a hate group. In the 30 days it had to collect signatures starting December 14, it gathered over 326 700 signatures, and is likely one of the most awaited responses on the system so far. The second and third most popular unanswered petitions also concern the Westboro Baptist Church, with the second (investigating the IRS tax-exempt status) collecting over 82 000 signatures and the third (combining the IRS tax-exempt status and the hate group classification) collecting over 75 900 signatures. It's unsurprising that the church has attracted so much hatred as they actively spew hate towards homosexuals, soldiers and other religions amongst other groups. The timing of the petition with their decision to picket Sandy Hook Elementary School in support of the shooting likely assisted in the rapid increase in signatures.

Many have claimed that the responses received to petitions are more general acknowledgement of opinions versus suggestion of actual change, but allowing citizens to petition the government and receive responses from the current administration is a good step towards allowing citizens to have a stronger voice in their government. Indeed, if Canada only had a system similar to theirs, we would be able to more directly voice our displeasure with laws and acts in our own government.

Point Vs. Counterpoint

Should iClickers be a mandatory component of course participation?

POINT

MEAGAN CARDNO
1B NANOTECHNOLOGY

Often a big challenge for students while in a University program is the adjustment from the small, personal environment of secondary school, to the cold, large university setting. When class sizes get large, it can be difficult for some students to remain as engaged and successful in their studies as when they had more of the teacher's personal attention.

One of the major components in this effect has to do with the heavy dependence on the student to work through practice problems on their own time and with their own discretion. While this is a very important skill for students to develop since it translates well into real work environments, it does cause some major drawbacks in what was their well-established learning process-- the evaluation, feedback, and revision processes.

In a small-class environment, multiple means of evaluation can be implemented without too much difficulty. Quizzes, tests, projects, labs, presentations, and reports can be assigned to provide a situation where the students can test their knowledge and understanding of concepts and applications, and, more importantly, can be given feedback on their performance. They write a test, receive a grade, and can use their results as a standard for adjustments in their studies. They can see where they are likely to make mistakes, where they are strong and weak in each course, and can use their time more efficiently to study places of concern, and spend less time reviewing what they already know.

Much of this process relies on the repeatability of evaluations, as it is entirely a relative process of monitoring improvements or the lack thereof. If a student only takes one test throughout the whole year, they can only have one set of data to analyze and thus cannot make as accurate of conclusions about their skills and difficulties. To see a larger trend in data, multiple evaluations are needed; however, whenever class sizes reach sizes greater than 100 students, this becomes a serious task to do. To mark 150 individual assignments is very time-consuming, even with the help of multiple TA's.

Often times, this intensive amount of work associated with grading is what will cause universities to have fewer assignments for each course, leaving students to study and review almost entirely independently. It also causes more of the academic weight to be placed on midterms and final evaluations. This compounds the effects that these large class sizes cause — since fewer assignments are marked and given to students to analyze, they have only an obscure idea of what they struggle with and thus study in ineffective ways. This can cause a poor grade on final examinations that, in turn, take up a larger percentage of their grade causing a notable decrease in their grades in comparison to secondary school.

The simple solution to this conundrum is to provide more opportunities for feedback on the students' performances but without putting many more responsibilities on the already very busy professors and TA's. iClickers provide a very feasible option — the teacher chooses a number of common or difficult problems for the students to attempt and then has only to provide a set of multiple answers for the students to choose from. When the questions are performed in class, they can give an idea of the time that should be required for the computation of the answer. They develop the skills to manage that time well in preparation for tests and examinations, while dealing with the pressure of time constraints.

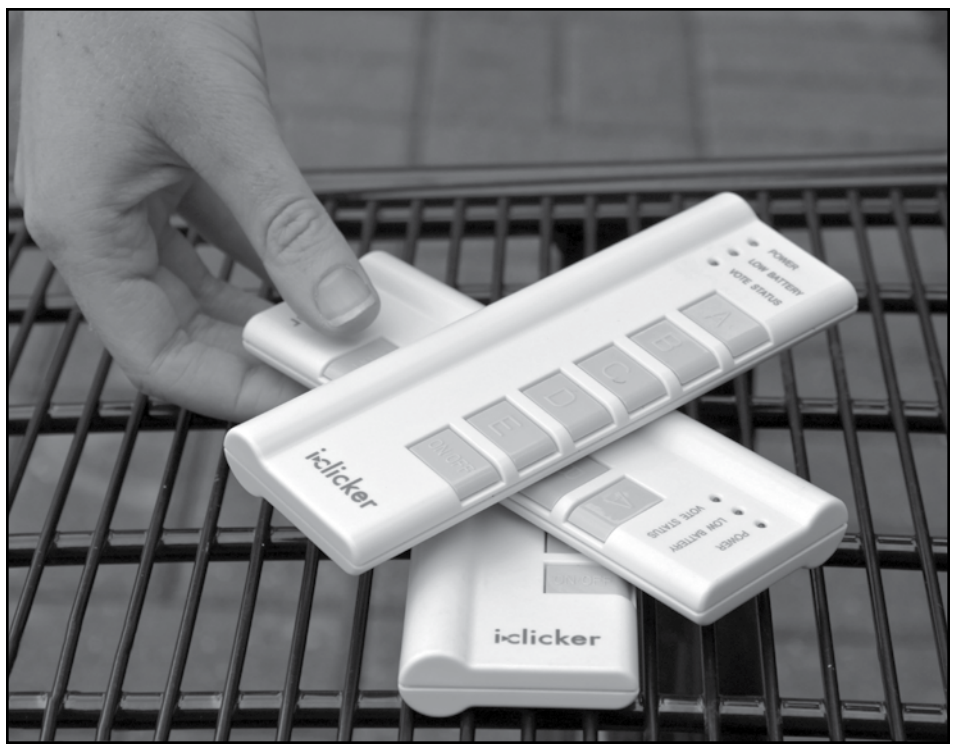
iClickers also allow for the confirmation of answers and processes that students cannot get when performing questions outside of the classroom environment. If the teacher helps them work through the problem, they can pin-point the errors of processes and computation that might occur, and ensure that they never just get 'lucky answers'.

iClickers also work as a teaching aid for the professors, providing feedback that they could use to adjust their teaching to suit each individual class better; they can see student success rates for certain questions and where the understanding of material is weak for the entire class. This is very convenient since the data is available automatically, thereby not requiring manual input from written tests or assignments, and can again provide more data resources with minimal more effort required.

If iClickers were to be made mandatory for course participation, a portion of the students' marks could be made based on this grade, thus allowing a grading scheme that slightly favours the students' success. This relieves some of the tension associated with examinations while also promoting student activity and attendance in class in order to receive these marks.

In a small-class environment, multiple means of evaluation can be implemented without too much difficulty.

Most clearly, the small amount of monetary and time investment required for iClickers, from both students and faculty, is worth the incredible potential that this system has for success in the post-secondary environment. If used correctly, iClickers could stimulate the significant improvement of examinational performance and study skills of many students, thus creating better-prepared professionals with less effort than previously implied.



LEAD

iClickers are starting to be used even more in engineering classes

COUNTERPOINT

JON MARTIN
4B CIVIL

University can be a huge change from elementary and high school, where you had frequent, maybe daily assignments individually marked by teachers. The teacher knew everybody's name, and was always there to help you when you encountered difficulties. But those days are gone.

As you go through your university career you will encounter many different teaching styles, levels of interaction between profs and students, and general approachability of the profs. You get that course where you are one of three hundred students packed into a lecture hall for a three hour night class, or you can get the course where you are one of fifteen people meeting for an hour at a time for a discussion based lecture. Both styles can be made better or worse by a great prof and the way they approach the course. Many profs are around for extended periods of time after their lecture ends, or throw the lesson plan out the window to ensure that people struggling have the support they need to grasp the topics that are floating just outside their reach.

The iClicker has become synonymous over the years with the monotony and classic stereotypes of university classes. There is nowhere where you are less of a person and more of a number when it comes to answering a few multiple choice answers along with your peers and seeing a little bar graph on screen of your performance. This kind of information doesn't help the learning process in any way. Why? Because it doesn't give any useful information. Why did 50% of the class get the question wrong? Did they misunderstand the question, were they flustered with the time limit and just picked a choice at random, was one student holding a number of iClickers in their pocket and picked the wrong answer for everyone (that group needs to rethink who they send to class), or were they struggling with one of a dozen concepts that all impact the possible answer? The only way for the prof to really know is for a student to ask a question directly and elaborate on what they are struggling with – so then what is the point of the iClicker?

So, what if the prof was to ask more involved questions in iClicker testing? "Solve this non-linear multi-variable equation in the next two minutes" Nope, somehow I don't think that is going to work. Many profs sit down to write a midterm or final based first on the material the students should know, and second on how much time they have to write it. One prof once told my class that he had finished his own exam in forty minutes, so he figured we would need two hours, so he gave us three hours to be safe. This kind of testing actually allows people to think and reason, to get past that test anxiety and get down to work. Even a course that is entirely multiple choice based (CLAS 104 comes to mind) still needs to have an excess of time in which to answer questions. People need time to think about a question, maybe give up for a bit then come back to it later after they calm down and their mind processes things in the background. The iClicker does not allow for any of this thought process; you are put on the spot, with absolutely no time to think of anything, and forced to scramble for an answer, even if your learning style and memory retention do not work that way. iClickers are ineffective as a means of testing because they cater to only a small group of people with very specific retention skills, and can really only be used on simple questions.

Another common use of iClickers is for 'participation marks' – basically attendance. Any prof who is teaching a class to three hundred people and says that they are using iClickers for participation is just making that up. Answering a dozen multiple choice questions throughout a lecture is not a good measure of participation; it measures if people are still awake. If a prof is using iClickers to track attendance, is this really a good use of time and resources? Should the prof just do a roll call at the beginning of each lecture? In addition to that being a horrible waste of time, it is also useless. As stated before: This isn't high school anymore. When you attended elementary and high school you weren't paying directly to attend, your parents weren't signing a cheque each September for you to start grade 4. Public schooling is paid for by the government, so attendance is a necessary measure to ensure that this money is actually being used and not wasted by someone skipping English because they hate Shakespeare or something. But, in University you are paying for your education (though a percentage is subsidized by government), so if you want to write that cheque to the university and never show up to a single lecture, then that is your choice (and if you are one of those people that comes to class and chats audibly through the entire thing – then please, I'm imploring you, please just stay home, the rest of us will thank you for it).

Overall, the concern is really not with the actual cost of the iClicker itself, it is about the extremely limited uses of this technology. The device cannot show a prof a student's thought process in the same way a written assignment can, it cannot cater to all the learning styles that will inevitably occupy the lecture room, and the only task for which it is suited, taking attendance, is an entirely useless measure in a University setting. The iClicker is a waste of time and money, and will only promote shallow approaches to teaching, and denigrate people of varied learning styles, neither of which have any place in a university.

Soothing the University Degree Burns On Your Wallet

FARZI YUSUFALI
3T NANOTECHNOLOGY

If there's one thing that can cause stress that rivals finals, it's worrying about paying for the next term of school. With that said, uWaterloo engineers have the benefit of having co-op to assist in paying for tuition but, let's be serious – with Waterloo having one of the highest tuition fees for an engineering program in the country, co-op isn't going to sustain these expenses.

Over the years, I've gathered a few tips for saving money that will benefit any first year (or any year, for that matter) in the long run as you become aware of the significant investment you're making in coming to university.

1. Spending on small things

Let's start with the easy stuff. Ask the upper years in your program to sell their books to you or look online on used book sites catering specially to Waterloo students instead of buying it from the Waterloo Bookstore. While I'm all for extra study materials, I've found that some classes, while they are recommended, have textbooks that are not needed to master the material. If anything, do the research necessary to discern whether it's worth that extra cost.

In addition, food is a major cost for the average student. Take the time to learn how to cook rather than spending four times the amount a week eating out. While I appreciate that you are, more or less, carnivorous, it is easy to see that purchasing meat and meat-based dishes (ready-made) will put a serious dent in your budget. The less prepared your meat is, the more you'll save. Furthermore, look for student specials that are available on certain weekdays at different grocery store chains. For example, Zehrs is known to have a 10% student discount on your entire purchase. Get to know when these specials are and make more frequent groceries trips as you'll be able to take advantage of 'on sale' items that change every couple of days. Finally, St. Jacob's market is a great place to get produce for less which usually ends up tasting better. Make a day of it on Saturday by taking the 21 bus from Conestoga Mall or visit the SLC on Thursdays at lunch to peruse the selection usually brought by the sellers at St. Jacob's.

2. Keep track of spending money

It's advisable to be aware of how much money you've spent. For starters, create a budget for the term that details how much you have in your bank account (after tuition) and allocate amounts to rent, food, school supplies, entertainment, etc. What's important is to be realistic with the values you allocate. Finally, always having some money set aside for contingency is advisable as I've found that I've needed it once every other term. Take the time every fortnight to collect all the receipts you have acquired so far and make a tally of the amounts you're actually spending and adjust your values accordingly. Not only will you get an idea of how much you need to spend on each category, you'll also plan better for subsequent terms. What's critical is that you remain realistic on what your spending habits are.

3. Cash over credit

Using a credit card for purchases can lure you into a false security where you're not really aware of how much you're spending. In order to keep your spending under control, carry cash around rather than carrying around your credit card when going out on excursions. By doing so, you're automatically putting a cap on your spending and are physically handling the money you're using up rather than hiding behind a piece of plastic. If you've specifically budgeted for a big purchase, feel free to use your credit card for the purpose of improving your credit score.

4. Real estate

If you have enough to have some spending money in the bank, make a point of saving up so that you can invest in real estate around the Waterloo region. Do the research and look into how much you can put into a down payment and base your house-hunting search on that. Not only does this save you the hassle of finding a place to live every time you are on school term, having roommates that pay rent in your household will automatically ensure that mortgage payments are covered. What's even better is that, after university, your property will still be a source of income to you.

Another way to do save money on your housing is to look at the student classifieds. There are two times to look for a place, either super early or super late in the term. Looking really early for a place will allow you to pick up places that offer a nice space with reasonable rent as these are snatched up quickly. If you can handle the pressure, it may also be beneficial to look for housing a couple of weeks before the start of term in the student classifieds. Most students who want to sublet their place will often lower their asking price and will throw in expenses like utilities and internet (which can add up) with their asking price. Be ready to look at a lot of places in a really short space of time and making snap decisions when you see something good. With that said, being a sublet during the spring term is especially good since everyone outside of co-op will be looking for someone to take over their room.

I hope these tips are a good way to start on being savvy with your money and getting that extra bang for your buck. Take them as inspiration to find other ways to save money and put it towards something that will benefit you financially in the future.

Eco-friendly Ways to Dispose of the Dead

NINA FENG
2A ENVIRONMENTAL

LEAFY THOUGHTS

Whilst hunting for new developments in the environmental world, one often stumbles across the weird, the wacky and the wonderful in eco-friendly technology and innovation. Eco-friendliness has truly become a paradigm of our modern world, and millions of people working in every economic sector providing billions of services to the public have been trying to green their products and processes. We've heard a lot about environmentally-friendly transportation, housing and energy sources, not to mention the earth-safe shampoos, dish soaps, bags, and even clothing. Anything green-ifiable that humans use daily has at least begun the transition to sustainability.

But then there are those things that not many of us deal with often. Things that have quietly already been pro-earth, or have recently made the switch. Death and funeral-related practices are one of them.

Coffins/Caskets

Should burial be the method of choice (which is likely seeing as it's the most common method of body disposal), there are a growing number of creative and innovative eco-friendly coffins and caskets to choose from. For background, coffins are the ones with six sides, tapering towards the feet and head regions. Caskets are four-sided and usually perfectly rectangular. Although they were originally made out of wood, over 85% of the modern ones are now made of non-biodegradable materials like steel. Recently, new eco-friendly, biodegradable materials are being used, such as wool, paper, and banana leaf. Some beautifully woven types include willow and bamboo. There is also a snug, streamlined 'eco-pod' made out of recycled newspapers. Cardboard coffins/caskets in particular can be printed and decorated to colourfully reflect the deceased's patriotism, interests, family photos, hobbies, and just about anything else.

Liquid Nitrogen

The liquid nitrogen treatment freezes a body to the extent that it becomes very brittle. At that stage, it can then be disintegrated through vibration and shaking, and reduced to a powder. This powder can then be buried in a biodegradable container where it will usually break up and become one with nature in a few months.

Post-cremation disposal

While most people keep the ashes of loved ones in urns to be displayed on the mantel, or scatter them in sentimental spots, there are opportunities for those who wish to put them to some other sort of use. Through heat and compression, the ashes can be converted into graphite, and then into diamond. The use of such diamond is up to the family of the deceased. I suppose setting grandma in a ring is an option… however strange it might sound. If kept at the graphite stage, they can be put into a pencil, inscribed with their name. There have been some who have loaded their loved ones' ashes into shotgun cartridges, and others who have used them in fireworks displays.

Exposure to nature

Though less common and prohibited in many countries, leaving a body to the elements and to scavengers allows it to quickly be recycled into natural systems. Some examples include Tibetan sky burials, where the body is typically placed on a mountaintop at the mercy of the weather and various birds of prey. Burial at sea is an older, much less common method nowadays, though this method allowed for sea scavengers to help process the deceased.

Death is an unavoidable part of life. Throughout the entirety of human existence, there have been special rituals, customs, and traditions associated with the disposal of the dead, which have evolved and developed over time. It is a good thing to know that an attempt is being made to make the process more sustainable, especially with 7 billion people on the Earth.

Forethoughts, fourth years?

KEVIN VELOSO
4C SOFTWARE
THE GRADUATING WARRIOR

Fourth years are students in their last year of their five to seven year journey through undergraduate life. They are also taking their final term of university this term (provided that they have submitted their Intent To Graduate form, of course). Like first and second years, they will probably have no idea who some people are in POETS. With the younger years, it's probably because they haven't checked it out or because they are still learning names. With students coming from Fall co-op, that is a large number of names to learn! With fourth years, they've realized that they have four class years under them. With a new class coming every year, that's a lot of strangers to come through. Their upper-years have moved on to the world of the ringed graduate, leaving fourth years as the oldest (by school term) upper-year undergraduates on campus. It's also possible that some fourth years don't recognize anyone in POETS because they still haven't been inside during their five-to-seven years at Waterloo, but that's okay.

With their final term comes the very fun and exciting time of planning their fourth year events. The long anticipated Iron Ring Ceremony is happening in less than a month, GradBall due in March, as well as picking the last of their courses. By now, their choices are set and done, but they are free to late enroll in some courses and drop unneeded extras. For those looking for full-time jobs, it's job hunting season, which means some companies with full-time positions may invite them to an onsite interview. It's pretty much an excuse to travel for a couple of days, hopefully paid by the employers. Fourth year projects are also being completed, with some departments hosting the Fourth Year Design Symposium in March. There is definitely more than what I have listed that goes on in fourth year (no spoilers, of course), but from what I have listed so far, it sounds like a busy time, doesn't it?

Unless they are planning on heading to grad school, there isn't a next study term (unless they're taking courses in the Spring and graduating in the Fall), or another four-month co-op job. Fourth years have to make those scary choices and answer those scary questions such as, "What are you going to do after you graduate?"

The answer to that question might be simple if they just consider the time after their last final exam ever and convocation. After exams, they could go on an extravagant road trip or adventure, making it back by the ceremony. Or, they could go on a longer, more extravagant intercontinental trip and skip convocation. (The degree will come in the mail, hopefully.) Others may head straight to work after exams, either returning to a previous employer they have found in one of their previous co-op positions, or working for a new company that has offered a full-time position. There are also those who might be taking it easy, having either a stay-cation or heading to the cottage or another city before heading to convocation. There are also those who are in great anticipation for grad school, continuing their pursuit of higher education by exploring more of their field. There are those who might not find a job by then, and there are also those who don't pass. It is unlikely, especially since they have made it this far, but it still happens. I could continue listing off things that can be done between exams and convocation, but that list is way too long and possibly riddled with spoilers. The above are just things that I have seen most of my upper years do after finals.

The question of "What are you going to do with your life?" still scares me, especially whenever I hear some lucky fourth years elegantly answer this question.

The point is this: fourth year is very complicated. It could get quite overwhelming when faced with all kinds of decisions, and unlike looking for their next co-op, it's not something they can easily say, "It's just four months; no big deal". I recall many first years who have chosen Engineering over similar programs in Math and Science because their Study/Work sequence was arranged and their courses were either predetermined or on a list that they can pick and choose from.

I think I am speaking too generally when talking about all this post-undergraduate planning. The question of "What are you going to do with your life?" still scares me, especially whenever I hear some lucky fourth years elegantly answer this question. As of now, I don't have a job lined up, and I'm not planning on going to grad school at the moment. I'm probably in the same boat as a lot of other fourth years, overwhelmed by various options and exploring possible career options based on likes and interests. If you are a fourth year and have a plan on what you want to do for your last term and post-undergrad, fantastic! Stick with it! For those without a plan (such as myself), breaking out of the co-op/study term cycle gives you a chance to take on fun but risky opportunities. Some fourth years may plan on starting their own companies with their fourth year project, or some may join smaller companies with hopes of it becoming the next Facebook or Reddit. Fourth years graduate with a degree and at least 20 months of work experience on their resume. If they are taking risks after graduation, they have this to fall back on if things don't go smoothly.

To sum up fourth year: it is like riding a huge roller coaster. Having seen your graduated upper years go through the same thing with huge smiles and anticipated worried-but-excited feelings, fourth years right now probably have a pretty good idea on what to look forward to. At the same time, the roller coaster tracks are pretty long and you can only guess where it will go after going through the tunnel known as convocation. If you are really, absolutely, positively petrified of what could potentially happen next, or if you feel like you need a small nudge in the right direction, go seek career counselling, as they will probably have better things to say than I do.

Fourth year isn't easy, but they gotta fight their way through it, sort of like a graduating warrior.

Creativity in Engineering

KRISHNA IYER
3T NANOTECHNOLOGY
INTERESTING THINGS

Typically growing up, I thought of engineering as a vocation that requires the routine use of math and physics concepts to solve real world problems. I did not understand what these real world problems were. Only after being inducted into this loosely defined profession have I understood what an engineer is. The best way one can describe an engineer is "The nexus between pure science and society". Over the years engineering has been stereotyped into an individual that roams around with a pocket protector and a calculator to solve problems.

This may have been true a few decades ago. The profession has come a long way since. It is no longer about solving problems using math or sitting at a drafting table making those crucial blueprints. In a broader sense, the problems facing engineers are bigger than ever before. The evolution of technology and society over the past few years has forced a lot of factors to come to the forefront of engineering. Engineering is now as much about design as it is about problem solving. The engineer's toolbox has expanded rapidly to include tools such as computer-aided design, simulation software and the Internet. This has raised the bar for expected output from a professional engineer. An engineer is no longer expected to know everything; they are instead expected to be able to learn and implement new methodologies fast.

This changing landscape of engineering forces an engineer to innovate every day. They are expected to come up with solutions to problems with a unique solution. This has prompted the new age enterprise comprised of engineers with bright ideas. This evolution accelerates the rate at which society progresses as a whole as evident from the several garage-to-billions stories that we are all accustomed to. As a profession steeped in tradition, it is important to recognize the changing environment of the profession.

Testimony to the role of creativity in the profession is the variety of IT and biotechnology enterprises that are spawning a new era. Hyperconnectivity to a degree not imaginable has been possible thanks to incremental improvements in technology by some really creative people. Furthermore, we can now predict the occurrence of otherwise life threatening diseases well before they are symptomatic. Progression of the engineering professional is now reliant on these creative solutions.

This is only possible with creative problem solving. This is something that most teachers are not geared to address. Creative people are often veered towards the arts. I think that it is about time creativity is reclaimed by the engineer. There is a general lack of recognition of the need for creativity in engineering. The problem is further propagated by the stereotyping of the role of engineers as unscrupulous puppets who work in the petroleum industry or as a cubicle worker solving complex problems on a computer. There needs to be increased awareness of the role of an engineer and the promotion of creativity in engineering.

Waterloo Develops Predecessor to Laser Logo

ANDREW FISHER
4B CIVIL

In late July 2009, a possible option for a new University logo was leaked to the public. What was to be known as the laser "W" resulted in huge outcry from both the student and faculty populous alike. The remnants of this fiasco is still apparent when searching Google Images for "University of Waterloo Logo" — the laser "W" is the first image recalled.

Since the controversy, the University has had a new logo put in place — the simple "University of Waterloo" in black Gotham font. With this logo roll out also came the bright faculty and college colours, as well as the elimination of the red and yellow shield from marketing material. It was with much controversy that the shield not be included in the new logo, but it was in an attempt to portray a more cutting edge image for the University. Years later, and the faculty colours have been fully integrated into marketing, and even campus culture.

On January 13, at the Federation of Students (Feds) Council meeting, a representative from the University made a presentation showing Council a proposed logo which will be used to replace the current black Gotham font logo. The new logo was not drastically different as it used essentially the same Gotham font logo, but now included the shield to its left! How could this be? Wasn't the shield locked away years ago to never be seen again? Apparently not.

The shield was brought back in an attempt to make the University logo look more like a traditional University logo similar to that of University of Toronto and Harvard University. During the presentation, it was mentioned that having a shield beside a University logo made it easier to identify as a University, and gave a greater status to it. Unfortunately, a digital copy of the new logo has yet to surface; otherwise it would have been included in this article.

Moving forward, the University is trying to consolidate its marketing efforts under one set of guidelines, logos, and colours. While the original school colours will be the face of most marketing material, it was said that the faculty colours will likely remain a component of University marketing due to strong liking by students and faculty. However, it is up to a vote at Deans' Council which will determine the fate of the most colourful aspect of campus. We can only hope that purple remains the pride of Waterloo Engineering.

Showcasing the Marvels of Istanbul, Turkey

ALEXANDER LEE
1B NANOTECHNOLOGY

CITY OF THE WORLD'S DESIRE

Byzantium, *Constantinople*, *Miklagard*, *The Sublime Porte*. Considered the greatest city in the world for millennia, Istanbul has been the capital, the crown jewel of not one, but TWO magnificent empires: The Eastern Roman (Byzantine) Empire, and the Ottoman Empire. Its strategic position on the edge of Europe and Asia meant it was also a natural place for cultures to meet, resulting in a city that possesses a rich artistic and architectural history. This also makes it a must-see destination for any serious traveller.

The Byzantine and Ottoman Emperors erected breathtaking, majestic palaces for themselves in this city with a plethora of elegant churches and mosques around every corner. Istanbul showcases the best architecture of two worlds: Greek and Turk; Christian and Muslim. There is so much to see in the city that one could spend weeks, if not months, seeing all of its sights. But if you ever get the chance to go, here are three architectural sites you CANNOT miss:

The Blue Mosque, officially named the Sultan Ahmed Mosque after its founder, received its nickname because of the countless, awe-inspiring blue tiles lining the insides of the structure. The mosque was built from 1609-1616 and was the pinnacle of centuries of Orthodox and Muslim architectural evolution. It was designed to take the best from both traditions. Featuring 9 domes and 6 minarets, it sits as one of the largest mosques in Istanbul at over 4500 square metres, and can house ten thousand worshippers at once.

The Grand Bazaar is the largest covered market in the world, sprawling out over sixty streets and covering over 3000 stalls and shops. You may know it as that building that James Bond chased an assassin within and above in *Skyfall*. The Bazaar almost has a magical quality to it because, once you step inside, it almost feels like another world. Hawkish vendors try to peddle their goods to you as you walk the covered streets surrounded by the wonders of the past. Construction of the initial building began in 1455, but the bazaar would just keep growing and growing, expanding to eat up the adjacent streets, until the eighteenth century. The bazaar began originally with the Iç Bedesten, which was roughly 1250 square metres. Later, the Sandal Bedesten was built nearby, and the two bazaars quickly joined together, much like Kitchener-Waterloo. To this day, the bazaar has at least 250 thousand visitors daily.

The Theodosian Walls are arguably the second most important walls in history behind the ruins over in China. They defended the capital of the Byzantine Empire for a thousand years. Erected from stone, they stretch about six kilometres from north to south and were manned by thousands in their time. Constantinople was never captured for 700 years and was only finally taken through trickery. Engineers can learn a lot from the builders of these walls. They were designed to be practical, defensible, yet elegant, in which the wall achieved all of these tasks. Surely this is a must-visit place for all engineers.

The Hagia Sophia is arguably the most important work of architecture in Istanbul. The current incarnation was constructed in 532 by order of the Emperor Justinian, widely considered the greatest emperor of the Byzantine Empire. It is made up of materials from all across the Mediterranean: marble columns from Turkey, stone from Egypt, green marble from Macedonia, and yellow stone from Syria. When the Turks conquered the city, they converted the Hagia Sophia into their primary mosque and, today, it is a museum. The mosque is roughly 6000 square meters and the main dome is actually of particular interest to engineers. It is supported by four pedentives which stabilizes the immense weight of the dome, but actually weakened the rest of the building. It was the first time pedentives were used in construction.

Again, this is by no means an exhaustive list, but these are four architectural structures that absolutely CANNOT be missed. Istanbul is one of the most beautiful cities in the world with a rich history and a unique culture. It deserves to be on every traveller's list.

President's Log: Congress and Elections

YASSER AL-KHDER
PRESIDENT

CFES Congress 2013

The Canadian Federation of Engineering Students (CFES) hosted their annual meeting, Congress, right here in Waterloo at the beginning of the month (well Kitchener to be exact, but close enough). In case you don't know, The CFES is an organization that consists of more than 50 engineering student societies across Canada and represents Canadian undergraduate engineering students on a national level.

The theme of this Congress was "Engineering & Sustainability: Developing Responsible Innovation", and boy were speakers interested in the theme. Most speakers, including the president of Engineers Canada, Catherine Karakatsanis, and our Dean, Pearl Sullivan, emphasized the need to be more responsible with our innovation as future engineers and consider sustainability in our designs.

The conference was not all speakers from industry. There were many sessions aimed to benefit engineering societies, such as building faculty relations, management of volunteers, and creating contingency plans for engineering societies. There were also sessions that were more tailored towards personal growth, including a leadership course that took place during Congress. And finally there were the administration sessions. Those were the sessions about the future of CFES, some of CFES's initiatives, and of course plenary. To best explain plenary, think of a council meeting that only consists of people who are interested in policies and motions. It really changes your perspective on "effective meetings".

A couple of shout-outs before moving to something else; I want to say a huge thank you to our own Melissa Deziel, the chair and organizer of this year's Congress. I've been to a lot of conferences, and this one has been one of the best conferences I've attended. I also want to say congratulations to Lisa Belbeck, also from Waterloo, on becoming the new CFES president. She's going to rock it no doubt.

If you are interested in conferences, please come talk to me and I'll let you know of the upcoming opportunities to attend such conferences.

Elections, and More Elections

Well it's elections season again. Apart from the Feds elections that run every winter term, that's elections for Feds executives (President, VP Academics, VP Finance and Administration, and VP Internal) and Councilors, there are elections for Engineering Senator, and most importantly, by-elections for EngSoc's VP External and WEEF Director. As you may have heard, the VP External and WEEF Director that were elected last term had to step down, and now we need new ones. There's an entire section for the elections in this edition ofThe iron Warrior, but I just wanted to give you a brief description of each position.

The VP External is responsible to liaise with other engineering societies and represent our EngSoc on provincial and national council (namely ESSCO and CFES). They are also in charge of cross-university events such as National Engineering Month.

The WEEF Director is responsible for the day-to-day operations of WEEF. This includes accepting submission, arranging and meetings with the Board of Directors, working with the assistant directors to promote WEEF, and decide on WEEF donations along with the WEEF council.

By the time this issue is out, it will be too late to run for these roles. But you can still participate by voting. All the info regarding the elections can be found in the elections section of this issue.

Well that's all I have for now. See y'all soon.

Six Must See EngSoc Events and Services

CATHERINE DECLARO
VP INTERNAL

Hello lovely people and welcome back to school!

Well the weather outside is frightful, but this term's events are oh so delightful! I hope you are as excited as I am for this term! The Engineering Society is here to enhance your student life, by representing you to external bodies, providing services, and running events. That's where I come in! As your VP Internal, a large part of my time is dedicated to working with directors to make sure these events run.

Do you play hockey? Or even just want to give it a shot (Get it?!?)? On Sunday, January 27 from 10AM to 12PM, there will be pick-up hockey at CIF! For more information and to learn more about future dates, look for the "Eng Soc Hockey" group on Facebook!

Want a great workout, try a new sport, afraid of heights, and want to conquer your fears? Join us when EngSoc goes Rock Climbing at the Grand River Rocks on Sunday, January 27! The cost for a full day pass, rock climbing shoes, and a harness is $25. If you'd like to attend, visit the EngSoc Office for details.

If you like trivia, silliness, and witty answers, you should come out to Genius Bowl on Monday, January 28th at 7 pm! More details will be made as the event comes closer, so keep your eyes peeled for the sign-up sheets that will be posted on the EngSoc Office doors soon!

Are you a first year? Are homework and JobMine stressing you out? Could you use some advice from extremely wise upper year students? Or are you just looking for a chance to get to know some? Then come on down to POETS between 5 and 7 pm on Thursday, January 31 to by-the-'fire' with some warm beverages to hear all the wonderful and hilarious stories that the upper years have to share with you! All upper years are welcome to come and chill!

Do you like coffee? What about houses? No? Well how would you like to spend a night with some chill people listening to some of the sweet sounds of your fellow students? Come out to Coffee House on Friday, February 1! If you'd like to sign up to perform, look out for sign-up sheets on the EngSoc Office doors the week of the event.

You can always check out all these opportunities (and countless others) by signing up for the mailing list on our website (engsoc.uwaterloo.ca), liking our Facebook page (UW Engineering Society), or following us on Twitter (@EngSoc)!

We Have a Budget!

PETER ROBERTSON
VP FINANCE

Welcome back to campus! And a special welcome to all of the fourth years, you're so close now I bet you can hardly contain your emotions! My exec report this issue wasn't hard to come up because we already have our BUDGET for the term! And another '!'? And another '!'! Thanks to everyone who was at the first Council meeting and helped things run very smoothly during our BUDGET discussions. I have a couple other things to mention as well that I'll get to in a minute.

This term, our Directors requested $23 168.76, which is almost double what we had to give them. I spent a couple late nights making the necessary cuts to get to three proposals of $18 358.37, $15 545.02, and finally $13 992.09 (Pro Tip: the more detail you put in a budget proposal, the more likely you are to get the fixed costs you require for your directorship and the happier we'll all be when I'm able to make visible cuts that everyone can agree on. Good work on that this term, guys). After some discussion, Council voted to pass a slightly modified Proposal #3 as our budget for the term. Directors will be receiving $13 896.09, which is projected to put us $3692.63 in the red. This is okay based on the data I collected from the past 4 years that shows during an average Winter term we end up $5000 ahead of where we proposed to be. The budget can be seen on the next page and if you'd like a more detailed breakdown please don't hesitate to email me at vpfinance.b@engsoc.uwaterloo.ca.

Second, Council accepted the proposed Sponsorship amount of $6500 to be allocated to student groups and teams that qualify for EngSoc sponsorship. Congratulations are also in order to Clarisse Schneider, Eric Lombardi, Brandon Van Haeren, Kal Sobel, Kristina Lee, and AJ Rosewarne, who, along with myself, will form the Sponsorship Committee for this term. If your student group or team is interested in receiving sponsorship from EngSoc, I'll be providing more details in the next edition of the IW on when the Sponsorship Committee will be meeting and what you are required to submit to us to be considered for sponsorship (it will be similar to previous terms if you'd like to get a head start on it).

Finally, ECIF proposals are always open and we're looking for new ideas this term to spend the allocated $2375.45 on. ECIF stands for EngSoc Capital Improvement Fund and is intended for capital expenditures ("expenditures creating future benefits", Wikipedia 2013) that will benefit all of UW's Engineering students. Past projects that have received ECIF funding include POETS' blinds, coat hooks for POETS (soon to be installed), new pictures in POETS of old stuff, an EngSoc drum kit, stage lights used in EngPlay, and computers for the soon-to-be-installed LCD advertising screens. If you'd like to submit a proposal please go to http://engsoc.uwaterloo.ca/services/ecif-application and fill out the online form. The ECIF Committee will be meeting later this term to decide what you, as an Engineering student, will get next!

Upcoming Events Calendar

Wednesday January 23	Thursday January 24	Friday January 25	Saturday January 26	Sunday January 27	Monday January 28	Tuesday January 29
Coverall Day 11 AM CPH Foyer EngPlay Auditions 7:30 PM Upstairs POETS		Pubcrawl #2		Rock Climbing 1:00 PM Grand River Rocks EngSoc Hockey 10:00 AM CIF	All You Can Eat Week PEO Info Session 6:00 PM POETS Genius Bowl 7:00 PM Location TBD	All You Can Eat Week
Wednesday January 30	**Thursday January 31**	**Friday February 1**	**Saturday February 2**	**Sunday February 3**	**Monday February 4**	**Tuesday February 5**
All You Can Eat Week Charity Pancakes 8:30 AM CPH Foyer EngSoc Meeting #2 5:30 PM CPH 3607	All You Can Eat Week 2015 Year Spirit Event Frosh Mentoring 5:00 PM POETS	All You Can Eat Week Coffee House POETS	All You Can Eat Week EngSoc Ski Trip Blue Mountain	All You Can Eat Week	Disorientation Week	Disorientation Week EngSoc Pond Hockey 6:00 PM Meet in POETS

Check out up-to-the-day event postings on the EngSoc website at engsoc.uwaterloo.ca

EngSoc B Winter 2013 Budget Proposal

Income				
Item		***Requested***		**Proposal #3**
Estimated Student Fees	$	*47,509.00*	$	47,509.00
Estimated Orifice Sales	$	*800.00*	$	800.00
Total Income	$	*48,309.00*	$	48,309.00

Expenses				
Item		***Requested***		**Proposal #3**
Fixed Costs				
Utilities	$	*820.00*	$	820.00
Supplies	$	*2,600.00*	$	2,600.00
Operating Costs	$	*4,300.00*	$	4,300.00
Payroll	$	*17,535.00*	$	17,535.00
Iron Warrior - 1% of Student Fees	$	*475.09*	$	475.09
ECIF - 5% of Student Fees	$	*2,375.45*	$	2,375.45
Total Fixed Costs	$	*28,105.54*	$	28,105.54
Executive				
Exec Discretionary	$	*1,000.00*	$	1,000.00
President	$	*1,000.00*	$	1,000.00
VP Education	$	*500.00*	$	500.00
VP Finance	$	*500.00*	$	500.00
VP Internal	$	*500.00*	$	500.00
Total Executive Costs	$	*3,500.00*	$	3,500.00
Directorships				
All-You-Can-Eat-Week	$	*269.00*	$	129.00
Arts	$	*137.00*	$	99.60
Athletics - Curling	$	*474.40*	$	474.40
Athletics - Hockey	$	*17.90*	$	7.90
Athletics - Rock Climbing	$	*1.40*	$	1.40
B**5	$	*895.26*	$	799.26
Bus Push	$	*1,500.00*	$	1,250.00
Charities	$	*355.00*	$	246.40
Course Critques	$	*101.40*	$	101.40
Directorship Appreciation	$	*400.00*	$	325.00
Diversity Awareness	$	*101.70*	$	101.70
EngPlay	$	*1,002.00*	$	684.20
Exam Bank Improvement	$	-	$	-
Frosh Mentoring	$	*46.00*	$	32.40
Genius Bowl	$	*500.00*	$	256.40
Historian	$	-	$	-
Jazz Band	$	*250.00*	$	250.00
LAN Parties	$	*400.00*	$	190.00
Mental Health	$	*140.00*	$	102.80
Music - Coffee Houses	$	*161.60*	$	126.60
NEM	$	*200.00*	$	175.00
Outreach Rep	$	*298.85*	$	298.85
P**5	$	*1,160.00*	$	860.00
POETS Manager	$	*1,495.06*	$	1,444.21
Resume Critiques	$	*350.00*	$	250.00
Secretary	$	-	$	-
Semi Formal	$	*1,776.00*	$	726.00
Ski Trip	$	*966.08*	$	746.08
Slush Fund	$	*5,010.00*	$	-
Speaker	$	*3,402.00*	$	2,648.40
TalEng	$	*252.00*	$	251.40
TSN	$	-	$	-
Women in Engineering (WiE)	$	*460.00*	$	410.00
Year Spirit - 2013	$	-	$	-
Year Spirit - 2014	$	*354.00*	$	252.80
Year Spirit - 2015	$	*490.11*	$	257.89
Year Spirit - 2016	$	*202.00*	$	197.00
Year Spirit - 2017	$	-	$	200.00
Total Directorship Costs	$	*23,168.76*	$	13,896.09
Total Expenses	$	*54,774.30*	$	45,501.63
Sponsorship				
Sponsorship - 15% of Student Fees (maximum of $6500)	$	*6,500.00*	$	6,500.00
Net		***-$12,965.30***		**-$3,692.63**

PDF Resumes and PD9

MEGAN MCNEIL
ORYSIA SOROKA
VP EDUCATIONS

Welcome back B-Soc and happy New Year! Hope everyone has had a good start to the term, and is getting used to their schedules. It is very important to try and set good study habits early. There is nothing worse than delaying studying and being caught off guard once midterms approach. If you review your notes every day and avoid cramming for tests, you might find yourself to be a less stressed, more organized student.

Aside from the usual class work, this is the time in the term that the most students begin using Jobmine. I am happy to announce that CECS now offers the long awaited option of using a PDF resume, so take advantage of this. Adding your new shiny PDF resume is just as easy as uploading a HTML resume. This new process has the intention of saving students a lot of time and formatting issues that would arise after uploading. It is important to note that the functionality of uploading an HTML resume has been removed from the system.

In other education news, a new PD elective was passed recently at the Senate Undergraduate Council. The new PD course, titled PD 9 will cover ethical decision making and conversations in a workplace environment. Unfortunately it will not be available this spring for those of you that will be on coop next term, however it will be offered in Fall 2013. Topics covered by the course will include the ethics of making a profit, ethical decision making in a group setting, and much more. If you are interested in reading a more about available PD courses check out the webpage at uwaterloo.ca/professional-development-program.

Finally a little educational tidbit for the week: Did you know that in January 1996, Food Services added Cheerios to the menu in Village 1 residence? Keep Smiling!

WEEF Proposal Deadlines and Interim Directors

LAURIN BENSON
WEEF

Hello friends! Welcome to another lovely term of WEEF generosity. We hope that you all had a great Fall term, and are happy to see the start of another WEEF season. As usual, we will be accepting proposals from worthy engineering student initiatives to obtain part of the $60 000 of funding. The key things that you need to know are:

- Proposals are due on February 15th, 2013 (Friday before Reading Week)
- Department Presentations on Monday, March 4th, 2013
- Student Team Presentations on Tuesday, March 5th, 2013
- Funding Council Decision Meeting on Monday, March 11th, 2013

So, mark your calendars! Also, creating and submitting your proposal has never been easier. Just go to www.weef.ca/new for the step-by-step form.

For all representatives, please check the WEEF website to ensure that we have the correct representatives listed (under "People") for each class. For those of you in 1B, or ECE, please ensure that if you have a new class you still have a WEEF rep!

Now onto more serious business. This term Brock Kopp (past Society A Director) and Laurin Benson (past Society B Director) will be sharing the WEEF mantle and executing most of the Winter 2013 WEEFtivities. As this is a disruption to the usual term structure, WEEF will be holding a by-election this term alongside EngSoc to fill the position of Society B's WEEF Director for Fall 2013. This will only be a 4-month position, after which WEEF will return to its normal executive cycle. Also, if you aren't quite up for being the Director, WEEF always loves Assistant Directors and Board of Directors members! Contact us if you are interested in getting involved with WEEF and working on your organizational, marketing, communication, and negotiating skills.

That's the dish for now - See you next issue!

To get a hold of WEEF, email weef@uwaterloo.ca, visit www.weef.ca, or just find your class representative!

Feds Votes to Leave CASA Membership

ANDREW FISHER
FEDS COUNCILLOR

On January 13, the Federation of Students (Feds) had the first Council meeting of the term. One of the major discussions of the meeting involved Feds' membership with the Canadian Alliance of Student Associations (CASA). At this time, Feds pays a membership fee of approximately $52,000 each year to be a member of this organization, whose primary role is to deal with federal issues and advocacy at the federal level on behalf of member Universities. Although post secondary education (PSE) falls under the purview of the Provincial Governments, the Federal Government still deals with: student loans and OSAP; Indian and northern affairs; citizenship and immigration; and international development, all of which affect students in PSE.

Over the past three years, Feds has been reviewing their membership with CASA to determine if the benefits of staying a member justified the membership fee. The Education Advisory Committee (EAC), the committee within Feds responsible for analysing the review, created a recommendation for Council that:

1. Feds remain Full Members of CASA
2. Feds not engage in a membership review of CASA for at least two full years
3. Feds invest increased resources towards institutional and municipal advocacy activities.

Although this was the committee's recommendation, the committee members were not unanimous in the decision. As such, there was much discussion over the recommendation, resulting in sway of opinion for Council.

Continued at FEDS on page 18

ENGINEERING SOCIETY 'B'

ELECTION

SPRING 2012

A Message from the CRO

BRIAN HOWE
CHIEF RETURNING OFFICER

Hi everyone, I'm Brian and I'll be your Chief Returning Officer (CRO) for the upcoming EngSoc executive ratifications. Unfortunately, we are currently without a VP External and WEEF Director and, as such, will be ratifying the candidates at the next EngSoc meeting. We are ratifying rather than electing the positions since there is only one nominee for each position. The EngSoc Council will have the opportunity to listen to each candidate and ask questions relating to their platforms. Council then votes whether or not to ratify the VP External candidate and WEEF will ratify their own Director at the next Board of Directors meeting. Kristina Lee will be seeking ratification as VP External and Himesh Patel is looking to become WEEF Director. If you want to find out more about the candidates, they each have a section in this edition of the Iron Warrior, or you can come out to the second EngSoc meeting of the term on January 30th.

The VP External manages EngSoc's initiatives and presence outside of the school. They liaise with other universities' engineering societies as well as provincial and national groups like ESSCO and CFES. They are also responsible for interfacing with professional groups such as PEO as well as their student memberships. They pick and lead the delegates that will attend conferences outside of the school.

WEEF Director is responsible for the general operations of WEEF from the day-to-day running to chairing meetings and talking to faculty. They also review applications for funding and lead the WEEF representatives from each class.

To get involved with the election process, be sure to stop and chat with the candidates if you see them around campus as well as talk to your class reps. Let the class reps know any questions or expectations you'd have for the candidates so that they can be brought up during ratification. Also, keep an eye out for the candidate's posters this week around the engineering buildings. Make sure that your say in who you want to represent you gets heard.

Vice President, External

Kristina Lee

2A Environmental Engineering

Hello Waterloo engineers!

My name is Kristina Lee and I am running for VP External. The VP External is responsible for overseeing all charity and outreach directors, and represents the engineering body to the community, to external organizations and to other universities.

Charities and outreach have always been a large part of my extra-curricular activities. Before coming to Waterloo, I was heavily involved with raising money for United Way and provided volunteer opportunities through the Athletic Council at my high school. Currently, I am the EngSoc Women in Engineering (WiE) director. With WiE, I run mentorship workshops and creating inter-faculty relationships with similar groups from across campus. In addition, I am currently working on a joint project with both the Ambassador Program and WiE to increase female admissions into engineering.

I would like to focus on the following points if elected as VP External:

- Develop a stronger, more positive presence on campus and in the Waterloo community;
- Increase involvement in outreach opportunities; and
- Create a central list of external competitions and conferences available to the students.

I plan to take manageable steps to implement these changes. For example, all charity activities in the month of October could go toward the campus-wide campaign for United Way. As well, I want to create a list of community events and encourage students who attend these events to wear engineering or Waterloo apparel will show our support for the Waterloo community.

Furthermore, I've represented our school at both the National Conference on Women in Engineering 2012 and CFES Congress 2013. I believe that the sessions at these conferences are valuable to our society and I understand the importance of being professional and organized at these events. I believe that this experience will be beneficial when attending future conferences as VP External.

As VP External, I will work hard to continue to improve EngSoc, and create and foster positive relationships with outside organizations for the students. If you have any questions about my qualifications or platform, please email me at k84lee@uwaterloo.ca or just stop me in the hall to talk to me. I am always happy to answer your questions!

Thank you for your time and I hope to receive your support!

WEEF Director

Himesh Patel

3A Mangement Engineering

Hello people, my name is Himesh Patel and I'm currently in my 3A term studying Management Engineering. I am running to be the WEEF Director for B-Soc. For those of you who don't know, WEEF stands for Waterloo Engineering Endowment Foundation and its main goal is to improve the educational environment for undergraduate students like YOU.

My main goal for WEEF is to increase the awareness of WEEF for undergraduate students as WEEF funding is decided by the students.

To create awareness of WEEF, I would like to make the funding information more accessible and easier for the students to access and read. This can be achieved by visual aids such as posters, and by allowing students who want get involved with WEEF more opportunities to take responsibility.

WEEF has been a part of our school since 1990 and has grown into a substantial endowment fund that gives the students and faculty the funding needed to continue performing lab experiments, participating in student teams and purchasing equipment to further enhance our reputation as an engineering school. WEEF allows funding provided by students to be distributed by students; essentially, WEEF is by run by students for the students.

WEEF has become very successful because of the generous donations of the undergraduate students. Many of the things we use everyday have been either directly or indirectly funded by WEEF, and it has allowed us to continuously create and improve our faculty with learning initiatives and student team support.

As the representative for WEEF, I want to ensure that WEEF continues supporting the students and faculty with funding for resources. I really enjoy being a part of WEEF and want to continue my involvement as the WEEF Director. If you have any questions, comments or suggestions, I would love to hear them so feel free to say hi if you see me around campus.

RATIFICATION VOTE
WEDNESDAY JANUARY 30 @ 5:30PM (CPH 3607)

Canada's Place on the World Stage

ROB REID
RESEARCH TEAM LEAD

This past week saw two major events concerning Canada's international relations which caused alarm for many observers.

First was Canada's decline to provide military support to the government of Mali. An envoy was sent on January 15 to speak to Foreign Affairs Minister John Baird and request combat support in the ongoing conflict against rebels linked with Al-Qaeda. The UN had passed a resolution supporting military intervention a month earlier in line with the Responsibility to Protect (R2P) doctrine. Canada agreed to supply one plane for use in a non-combat role to French allies, with possibilities of further contributions. Although armed conflicts are always contentious issues, one might have expected Canada to respond to the call for aid more enthusiastically, given its $500 million share of the Malian mining industry.

In international development, the best heuristic for a successful program is whether the people actually want that type of aid. It is interesting that in the same week that Canada denied Mali full support, our international development agency (CIDA), often criticized for its loyalty to partisan and corporate interests instead of solidarity with aid-receiving countries, was further implicated. Former Toronto Police Chief and current Minister for International Cooperation Julian Fantino posted a letter on the CIDA website (part of the Government not the Conservative Party) in response to the Huffington Post article by NDP MP Hélène Laverdrière criticizing CIDA, stating that the "NDP take their reckless economic sideshow to the developing world." Although now taken down, the original webpage was cached by Google and shared in a Reddit thread.

Canada is increasingly deepening its international ties. In the first months of the Conservative majority, bilateral free trade agreements with South American and Asian countries proliferated and sights were then set on Africa's mineral wealth. At the same time, the human side of internationalism is being neglected. In addition to last week's events, Canada's refusal to reexamine its position on Palestine was a national embarrassment at the UN. Its lack of commitment to global climate change as outlined in the 2012 Climate Change Performance Index put it at the bottom of OECD countries and ahead of only Kazakhstan, Iran, and Saudi Arabia. Its immigration policies are increasingly marginalizing. This is all on top of growing internal tensions over democracy, environmentalism, and economic development. For a government with the license of a majority, the Conservatives should be more mindful of their actions in their remaining three years of office.

Beijing, China: "The City that Never Breathes"

ANNAS KHAN
EWB RESEARCH TEAM

Over the course of the past few days, China has been forced to close major highways and airports in Beijing due to the thick soup of toxic air that continues to tower over the city's skyline. Citizens worrying for their safety have decided to stay indoors where they are accompanied by their expensive, yet necessary, air filters. Those who are unable to afford the company of such lavish instruments are left to wear cheap masks that do very little to filter out the harmful contaminants. As the world patiently waits for the smog to resign, there is one common question troubling Chinese and Western governments alike; can China sustain its current level of growth whilst providing a safe environment for its civilians?

Regarded as the world's second largest economy, China's growth over the last three decades has been staggering. A quick internet search will reveal thousands of articles regarding China's unprecedented economic growth and how it is the beacon of hope for global recovery. However, China's recent development has come at a steep cost.

China continues to create new factories in order to meet global demand for consumer electronics, clothes, and toys. These coal powered factories are ill-equipped and produce enormous quantities of carbon dioxide. In fact, China has overtaken the US and is currently the largest producer of carbon dioxide emissions. Air pollution in China has reached an all-time high; with pm 2.5 readings of 700+ µg of contaminants per cubic meter, where in comparison a measurement of 300 is deemed hazardous. The World Bank estimates that 760 000 people die every year in China as a result of pollution. In a country where lung cancer and respiratory diseases are widespread, it is easy to see the ramifications of environmental degradation.

However, air pollution is only one of China's countless environmental problems. Toxic chemicals spewing out of Chinese factories combine with water vapour in the atmosphere to create acid rain. Large amounts of electronic waste are imported in to China from overseas as well. Although disassembly and processing of electronic waste can create valuable jobs for migrant workers, the resulting pollutants can cause severe damage to the environment. Furthermore, China lacks stringent waste management laws regarding electronic and lead waste. This coupled with over population have led to an unprecedented water shortage in China. The World Health Organization reported that over 500 million Chinese citizens lacked access to clean drinking water in 2005.

Although recent initiatives have been made to mitigate some of the aforementioned hazards, China needs to create rigorous rules regarding proper disposal of waste. The government's confusion as to whether it should continue to grow while endangering the lives of its civilians or sacrifice growth for public safety is understandable. However, in the end China should focus on what really matters, the safety of the Chinese people.

I think we take our ability to go outside and get a whiff of fresh air for granted as we are ignorant of the fact that much like water, fresh air has become an expensive and an almost extinct commodity in today's society.

The Reel Deal with 48FPS

KEVIN VELOSO
4C SOFTWARE

Last month was the worldwide premiere of Peter Jackson's *The Hobbit: An Unexpected Journey*, the first of three movies in The Hobbit film series. This film series has been popularized as a prequel to his movie adaptation of *The Lord of The Rings* novels. One noteworthy quality coming out of these new movies is their filming in 48 FPS (frames per second). Anticipation and ambivalence have been surrounding this particular filming aspect since its announcement. For those who have yet to see it, this movie is being played in this format in select theatres, with theatres offering either regular playback (in 3D and non-3D) or in 3D 48FPS, advertised as HFR (High Frame Rate) in the box office. Before you spend your time and money watching this movie, let's look at the various playback formats, specifically the highly debated choice of 48FPS.

Before I dive into HFR, let's briefly explore the history of 24FPS, the current standard playback. Most movies that have been released play in 24FPS, meaning twenty-four pictures will be displayed for every second of screen play. In the past, film was quite expensive. Film makers wanted to present their films with enough frames to display smooth movement while using as few frames as possible. Early black-and-white films used less than 24FPS, resulting in jerky picture motions during playback. As film technology progressed, it became more feasible to film in frame rates higher than 24FPS. However, many people perceived these creations as having a "slow motion" effect when played back (as opposed to a jerky fast-motion effect with smaller frame rates). This effect has also been known as the "soap opera fact", as some soap operas were filmed using less-expensive higher frame rate cameras. 24FPS eventually became the defacto standard, providing movies with that modern cinematic look.

Enter 48FPS, also known as HFR. With this, *The Hobbit* would be played back at twice the frame rate of a regular movie. The argument that a lot of people had against this format is the "slow motion" effect, the same effect that other movies have when played back at higher frame rates. Others found the playback "too real that it looks fake", which is an interesting, considering that it's a fantasy movie. Playback has also been commented as "too distracting", with many people having difficulty adjusting to the new frame rate. I've heard it takes 30 minutes to adjust, but I've heard others complaining that it took an hour or more to adjust. Arguments supporting the new format say that the higher frame rate would provide less eye strain, as the playback would appear smoother, and thus sharper. Some argue that with 3D playback, with more frames per second, the eye and the brain would find it easier to resolve the picture, further supporting the smooth playback argument.

If you are debating about whether or not you would like to see a movie played back at 48FPS/HFR, here are my suggestions. For those who would prefer enjoying the movie without being *potentially* distracted, I would suggest watching the movie at the regular cinematic frame rate (2D or 3D, depending on your comfort levels of 3D playback). If you're feeling adventurous and want to watch the movie to enjoy the cinematic effect, or if you want to watch the movie as the director intended, I would suggest watching the movie at HFR. When I first watched The Hobbit, I watched it at 48FPS. As with others, it took me a bit of time (about 30 minutes) to adjust to the frame rate. I watched it again at regular frame rate and I definitely missed the cinematic effects that came through with the higher frame rate. Personally, I prefer 48FPS/HFR, with CGI characters such as Gollum appearing smoother during playback. However, I found the story a lot more enjoyable and less distracting during regular playback.

Take your pick: a potentially distracting cinematic wonderland, or your regular (or 3D) Middle-Earth.

Will 4K UHDTVs Matter to the Masses?

JACOB TERRY
2T NANOTECHNOLOGY
T CUBED

As with every January, technology journalists, gurus, nerds and others in the consumer electronics industry gathered in Las Vegas at the 2013 International Consumer Electronics Show (CES) to showcase and explore their passion for the next trends in mass-market technologies. Once an E3-style show where new products were announced for imminent release, it has morphed into a showcase of future technology as the Internet has allowed big technology companies to choose times and locations more convenient to them to release their products.

CES tends to have a couple themes with respect to the concepts that are shown every year. Last year, 3D was a very prominent theme, with many display manufacturers showing off giant 3D televisions. This year, 3D took a backseat to 4K Ultra High-Definition TV (4K UHDTV), which has a resolution of 3840 x 2160 pixels, or the equivalent of four 1080p HDTVs arranged two tall by two wide. The name comes not from its comparative resolution to 1080p, but from the width of the screen, which is almost 4000 pixels. This differs from the naming scheme used for current resolutions (480i, 480p, 720p, 1080i, 1080p, etc.) which were named after the height component of the resolution. 8K UHDTV, with a resolution of 7680 x 4320, is a less prominent standard that is also gaining some support and had some presence at CES this year.

The concept of UHDTV is not new, as the Japanese broadcasting corporation NHK has been working on the standard since 2003. YouTube has also offered 4K UHDTV playback on its site since 2010. What has been seen in the last year is a proliferation of 4K UHDTVs and other 4K UHD displays and projectors ready for consumer use. This trend mirrors what we have seen in mobile devices and, to a lesser extent, some traditional computer displays. Most flagship phones from major phone manufacturers today have very high-resolutions, including some Android devices that have screens that can display upwards of a 1080p resolution on a 5-inch screen, something that was unheard of only a couple years ago. Apple's high-end MacBook Pros are a notable example of recent trends towards higher resolution screens in laptop displays, and it's highly rumoured that they, along with other manufacturers, will be bringing higher resolution desktop displays in the next couple years. When you look at the profound change brought by high-resolution displays on mobile phones, a higher resolution television seems like it would bring similar changes to television if it were cheap enough for the high-end television audience.

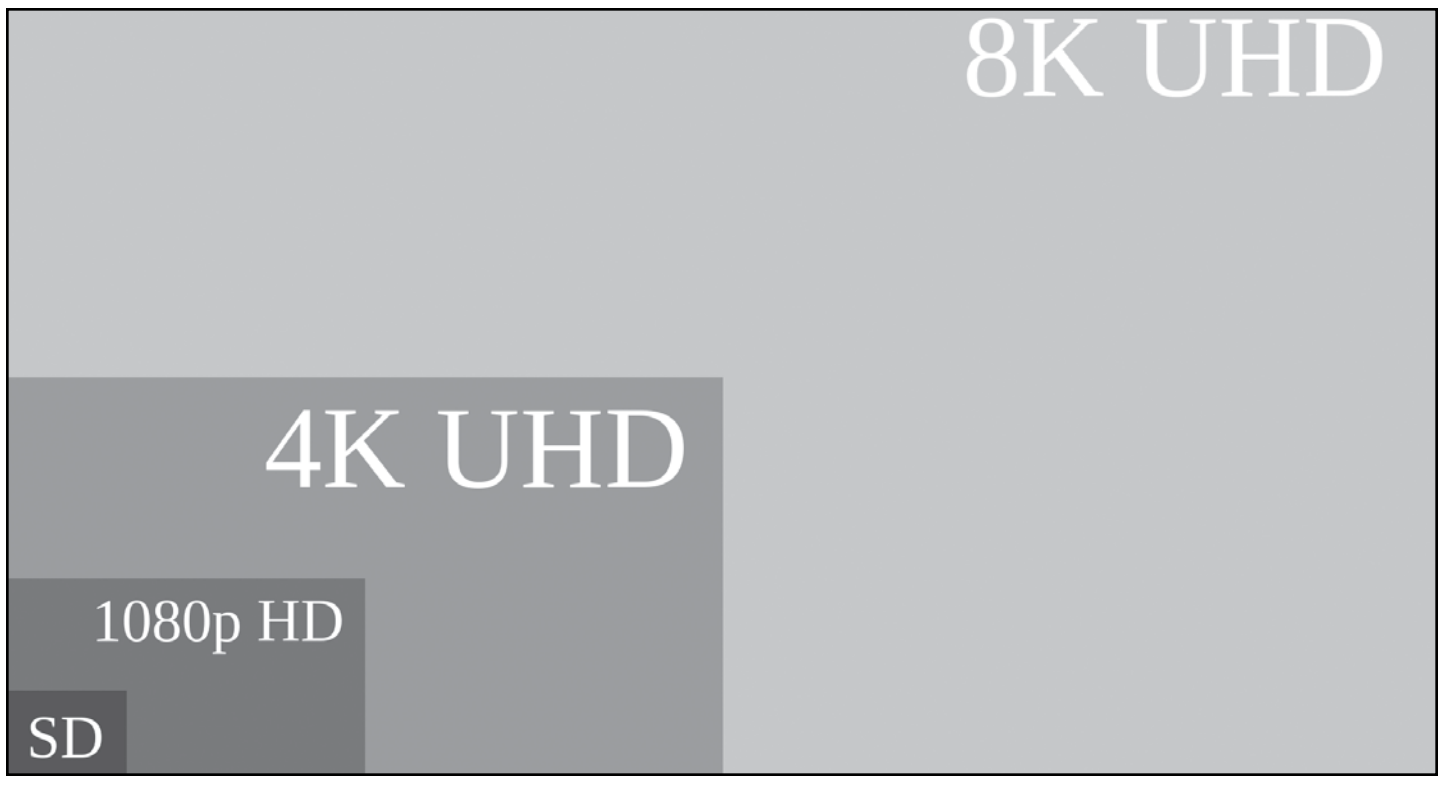
Unfortunately, while 4K UHDTVs are still in their infancy, the price of the ones shown at CES were rather expensive or had no price tag attached, leaving it up to attendees to guess how much more they would be paying for these high-resolution televisions. One glaring example of how expensive these screens are is LG's 84-inch 4K UHDTV, which sells for 25 million won in Korea (equivalent to almost $23 500 in Canada). Compare that to the expensive Sharp AQUOS 80-inch 1080p LED TV, which retails for around $4000 here, but is clearly orders of magnitude cheaper. Sony has already released an 84-inch Bravia 4K UHDTV in North America, which sells for $25 000 but also has 3D.

The 80-inch televisions are fairly expensive compared to the average $700 40-inch 1080p LED HDTV here, and one would expect 4K UHDTVs to be a lot cheaper at this price point, but there are two factors that may prevent manufacturers from selling 4K televisions at this sort of price point. One is that television manufacturers sell HDTVs at very low margins or at a loss, due to the cutthroat nature of the television business, so they have been hoping to find ways to bring the cost of televisions back up to make it a more viable business. Having a new class of television enables them to find a reason to bring televisions back up to a price where they have good margins on their selling price, and 4K and 8K UHDTVs give them this opportunity. While they will likely be cheaper during their saturation point than they are right now, seeing 80-inch 4K UHDTVs at $4000 may not be a likely possibility.

The second primary factor is that at smaller screen sizes, televisions are positioned far enough from the viewer that the change from 1080p to 4K UHD is not very noticeable at low screen sizes, or at least not to the point where a viewer would feel obligated to upgrade as they did when HDTVs first came out. They certainly have no worthwhile effect on mobile screens, which already have high enough resolutions that pixels are arguably indistinguishable to most. Basing the ability to distinguish pixels off of Apple's definition of a "Retina display", Gizmodo Australia has noted that a 40-inch 1080p television at a distance of 1.5 metres should have pixels which are indistinguishable to the human eye, and a television is usually positioned at least that far away if it's at that size. A 1080p screen smaller than that could be positioned closer and still be considered dense enough to have indistinguishable pixels.

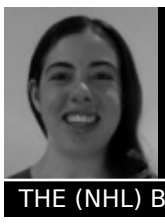
Along with these price factors, any content delivered over the Internet in 4K UHD would be crippling to most Internet connections. 1080p video is already fairly hard to stream for most people and bandwidth caps are so low that people generally avoid streaming or downloading 1080p video for long amounts of time. 4K UHD video would likely be so hard to download that it would take hours to download a feature-length film and would be impractical with today's Internet infrastructure. 8K UHD video, by extension, would be nearly impossible to deliver.

Despite these drawbacks, UHD standards could be useful in large computer displays and digital cinema. While TVs are positioned far from the viewer, desktop displays are typically very close to a person's face and a 30-inch display with a 4K UHD resolution would probably be a good enough resolution that further improvements would cause negligible differences. Digital cinema projectors are typically 2K (the cinema equivalent term for 1080p, but wider) or 4K UHD already, but an 8K UHD projector would be able to give a level of detail similar to a 70mm IMAX film. Some cameras are already made to film content at 4K UHD resolutions, and hard drive space should be large enough over the next decade to begin supporting lengthy periods of 8K UHD filming. The prospect of 4K and 8K UHD content is enticing, but we still seem to be a few years away from letting it find its niche in consumer electronics and projection.



4K UHD has four times the number of pixels as 1080p HD

Puck Drop!



ELIZABETH SALSBERG
1B NANOTECHNOLOGY

THE (NHL) BENCHWARMER REPORT

At last, the battle between the millionaires and billionaires has come to an end! What is the significance of this you may ask? Well, with this sacred peace restored comes the most important TV entertainment of the year: NHL hockey. For those of us who suffered through the terrifying 2013 IIHF World Junior Hockey Championship, there has never been better news! Now it's time to take a look at Canada's Eastern Conference teams going into this 48-game season.

It looks as though Ottawa is in good shape given their success last year. Up front notable contributors will likely be Daniel Alfredsson, Jason Spezza, and sniper Milan Michalek who each had over 50 points last season. On the blueline, we have the experienced Sergei Gonchar and the high-flying offensive defensemen, Jesse Karlsson, who lead all NHL defensemen in scoring last season with 65 points. The question for the Senators likely lies between the goal posts. With four goalies playing last year, none of them were consistent enough to be a starter. This needs to be answered before the Sens can make a deep run into the playoffs.

Though Ottawa does look like our best bet, let's not rule out the good old/new Winnipeg Jets. Last year, they had a very strong run near the end of the season and were a serious candidate for the final playoff position in the Eastern Conference. With the experience of Andrew Ladd and Olli Jokinen and young snipers Evander Kane and Mark Scheifele (providing he makes the team out of training camp), the Jets should be motoring along up front. The newly D-efined Dustin Byfuglien has proven to be quite the asset on defense. In goal is the not-so-flashy yet consistent Ondrej Pavelec. Also note that Winnipeg fans are not your usual crazed hockey crowd, they practically blow the roof off the stadium! With that kind of crowd behind you (or against your nemesis) you probably have an advantage at home.

Speaking of nutty home crowds, Toronto boasts a strong scoring duo in Phil Kessel and Joffrey Lupul along with newbie James van Riemsdyk. They also have second line strength in Mikhail Grabovski and Clarke MacArthur, however, after that, there's not much more to work with in terms of putting pucks in the net. Nazem Kadri is unlikely to make the team out of training camp and, if he does, it is doubtful whether he'd be put with appropriate linemates (the Leafs are a little short on these) to create some scoring chances. Further down the bench, Toronto's only notable defensemen is captain, Dion Phaneuf. He logged more ice time (but not more contract time, that prize will forever belong to Mike Komisarek) than any other Leafs defensemen last season, and it looks as though it'll be another one-man show/shut-down this year. The goalie situation has not gotten better either for the Leafs but if Reimer can repeat his performance from the 2011 season, the Leafs may do better than we might think.

Over in La Belle Provence, the Montreal Canadiens are in rebuilding mode, to put it nicely. Players to watch will be mouthy but high-scoring defensemen P.K. Subban and forwards Scott Gomez (Will he ever prove he is worthy of that contract?) and David Desharnais, who is a restricted free agent at the end of this year. The usual suspects up front will likely be the main source of goal scoring for Habs, as in Brian Gionta, Thomas Plekanec, and Max Pacioretty. This year will also likely be a good year for rising youngsters Louis Leblanc and Ryan White to get some NHL experience even if they don't make the team out of training camp. However, for Montreal to climb out of their hole, goaltender Carey Price will have to find his game—sometimes it seems like less pucks would go in without him in net.

Stay tuned for the Benchwarmer's Canadian Western Conference preview. Happy hockey watching!

Cycling in the Winter is a Daredevil's Dream

KEVIN LIANG
3B CHEMICAL

BOTTOM BRACKET

When roads are covered in a mishmash of salt, sand, and snow, most cyclists will retire their wheeled stallion for the winter and opt for more a suitable means of transportation. Streets are slippery, the air is cold, and visibility is poor. In southern Ontario, winter road conditions can change in half a day. Soupy-brown sludge will cover the roads by day but black ice can form haphazardly after dark. Bike lanes become snow-banks. As a winter cyclist I sometimes question my sanity.

In the summer months I can throw on a pair of flip-flops and be ready to hop on the saddle. Cycling in the winter requires much more attention. Heat transfer is an important concept in winter biking. Layering clothing helps keep you warm by creating stagnant air pockets. In stagnant air conductive heat transfer dominates; convection and radiation is negligible. Since air has low thermal conductivity, it provides great insulation in the cold weather.

Cold hands make me want to scream. That is why I highly recommend the use of thick ski gloves for winter cycling. This does, however, impede hand dexterity. I just try to keep my hands on my brake levers at all times. Nevertheless, there always comes a time each winter when ski gloves are not enough to prevent the cold wind from coming through. Products such as Moose Mitts are specially designed to combat this issue. They are handle bar mittens made from thick 1000 denier Cordura, which is both wind- and water-proof. They are lined inside with heavy fleece and have inner pockets to keep your energy bars warm. It protects your digits from the wind and creates a layer of warm air around your hands. At $65 - $90 plus shipping per pair, they'll remain on my wish list for awhile. Two juice jugs fitted on either side of your handle bars with holes cut into them large enough to get your hands in will be my make-shift Moose Mitts this winter. While this solution will not provide any insulation it will keep the wind off of your hands.

As mentioned earlier, winter road conditions are nearly unpredictable. When pedestrians are slipping and sliding on their walk to the bus stop it is hard to trust gyroscopic precession to keep you upright. This is why a helmet is essential. I wear a balaclava underneath my helmet to keep my ears warm. It is also vital to get a set of bike lights. A decent pair for the front and rear of a bike can cost less than $10 at Canadian Tire but will greatly increase your visibility at night.

The final challenge of biking in the winter is maintenance. Snow and salt will accumulate on your bike and cause severe damage to major components if not cared for properly. Snow collects on the bottom side of the down tube and under the bottom bracket. Keeping a soft brush by your door to ensure excess snow and ice is knocked off of your frame will prevent corrosion. Snow and ice can also seep into your derailleurs causing them to cease up over time. Applying a wet lubricant, once or twice a week, on the bottom and top of the chain will deter rust from forming on any major parts of the drive train. However, too much lubricant will allow salt to stick to the chain; wipe off any excess with a rag. Spraying WD-40 on non moving parts will also help keep the rest of the frame healthy.

Even after all this preparation, prevention, and layering, I sometimes consider taking the bus. The tune of humming heaters and warm morning chatter are mere siren songs. I know better. What is convenient at the moment gives way to what is better in the long run. I pull on my thermal underwear and gather my things.

Surprisingly Sad Movies

NANCY HUI
3A CIVIL

TAKE FIVE

Les Misérables won three Golden Globes last weekend. By all accounts it is a shameless production mired in melancholy. Its efforts have been rewarded with eight Oscar nominations.

Bah, humbug.

I shouldn't complain about its naked emotion and determinedly pessimistic outlook. After all, I like musicals. I like tragedies. I should like musical tragedies. But slogging through rainy sewers is a tiresome act. I can't keep my sympathy up during recurring close-ups of actors 100% committed to winning Academy Awards by being as sad and bedraggled as possible. In my opinion, the best tragedy is an unexpected tragedy.

So here's five movies that surprised me with their wretched emotional scope.

Kung Fu Panda 2 (2011)

The sequel to *Kung Fu Panda* explores exactly how Po (Jack Black), the eponymous Kung Fu Panda, was adopted by Mr Ping (James Hong), the goose proprietor of a noodle restaurant. After failing to repel a bandit attack on a small village Po suffers crippling flashbacks to his childhood. Po must find what his mentor Shifu (Dustin Hoffman) mysteriously describes as "Inner Peace" and overcome his past to defeat Lord Shen (Gary Oldman), a murderous white peacock.

Kung Fu Panda 2 is, 90% of the time, a joyous affair that speaks to my love of tofu dessert, light-hearted action movies, and specular effects. The other 10% of the time is a series of gorgeous rice-paper textured and extremely tear jerking sequences showing Po's origins.

The Mist (2007)

A local military research project forgets to convert some units from imperial to metric, causing an inter-dimensional rift to open up in a small town. The residents hole up in a supermarket while a mist settles over the parking lot, and defend themselves against increasingly monstrous beings. Among them is a father (Thomas Jane) who finds that his fellow villagers turn out to be just as dangerous as the Eldritch abominations that issue from the fabric of space and time.

The Mist is definitely a good horror movie, in that the enemy is suitably frightening and that the titular mist does a good job of maintaining an aura of uncertainty over the whole setting.

However, the ending was... frustrating. To the point where I wept at the pointlessness of the movie. Whether you'd bemoan the fate of the protagonist or the time you wasted with this movie has yet to be seen.

Kill Bill Volume 2

The day before her wedding, The Bride's (Uma Thurman) old assassination squad shot the wedding party and beat her into a coma. In *Kill Bill 1*, she dispatched two members of her old assassination team. In *Kill Bil 2*, she continues on her "roaring rampage of revenge", but it's not as simple as crossing names off a notepad with a thick black sharpie.

By the time The Bride works her way down to Bill (David Carradine), I expected an epic showdown with a small army of monks, at least two dozen varieties of weaponry and some mounted combat. But that didn't happen. The final battle is understated and intimate.

And it does take quite a man to smile and tell his killer that he forgives her, before walking to his death.

Star Wars Episode III: Revenge of the Sith

Anakin Skywalker (Hayden Christensen) worries about the safety of his new wife, Padme Amidala (Natalie Portman). He has no time to attend counselling because of galactic politics and ongoing war, thus his borderline personality disorder remains untreated. His struggles culminate in a nervous breakdown, the amputation of his remaining limbs, and transformation into Darth Vader. Shouldn't you know this story by now?

The surprise presented by *Episode III* stems mainly from surpassing my expectations of the Star Wars franchise after the failure of *Episodes I* and *II* to provide adequate entertainment. Yet I gaped in horror when Anakin duelled Obi-Wan (Ewan McGregor) on the lava flats of Mustafar. And when Anakin screamed "I hate you!" while Obi Wan maintained "You were my brother, Anakin; I loved you!" my inner fangirl wept like a baby.

Grave of the Fireflies (1988)

In World War II era Japan, a brother and sister struggle to stay alive after their hometown is bombed and their mother is killed. They find temporary refuge with their aunt, but her palpable resentment convinces them to leave. They don't succeed.

Why is this movie on the list? The opening scene, which shows the brother succumbing to starvation in a train station, makes it clear that *Grave of the Fireflies* is not gonna be a happy movie.

The movie's unrelenting insistence on putting the children through hell was a difficult endeavour to perform well. If Studio Ghibli had faltered but a little, the whole shebang would have come across as insufferably precious. Come on – the unbearably sweet fruit drop tin motif? Insect funerals presided by a preschooler? Teenage boy defying his elder and starving to death as a result? But I didn't snicker. For their chosen subject matter… that's surprising in itself.

A Highly Variable Shortbread Recipe

CAITLIN MCLAREN
1B CHEMICAL

A HIGHLY VARIABLE X RECIPE

The term is back! Help yourself to some work. Don't be shy- there's plenty. Well, it's still early, and you probably have a bit of time… This time is short. Enjoy it. This bread is also short. Enjoy it too.

To make shortbread, you need five things. You can manage that, can't you? They are: butter, margarine, sugar, an egg, and flour. If you don't have those, it's the beginning of term! Did you eat all of your food already? Seriously, those are pretty staple foods. If you don't have those, you're pretty screwed. Go out and buy some; I'll wait.

So: the butter and margarine. Mix them together- a 50:50 ratio is safe, but messing around with it is encouraged. More butter makes the shortbread slightly harder, while more margarine makes it more crumbly. Whichever you choose, make sure the margarine and butter are blended. Then add white sugar; the ratio of sugar to the butter/margarine mixture should be about 1:2. Again- play around with it, and quantities don't matter. Make a lot of cookies. Make more than nine thousand. You got the ingredients!

Stir up the sugar, butter/margarine, and the egg. One egg, unless you are making a truly massive number of cookies. Make sure this whole glob is well and truly scrambled. Then, add flour. Add little bits of flour as you mix until the dough is at the right consistency- this occurs when you can shape it into little balls.

If you want to make cookies, shape it into cookie shapes, not balls. These cookies don't spread much in the oven. You can make other shapes, or large shapes, but those are trickier to bake- try cookies first so you get the feel for things. Place your cookies on a cookie tray and bake at 300°F until they start to turn brown around the edges. Be careful with these- it is very easy to burn them.

Now, what are these plain-looking things good for, you ask? Well, you can eat them by themselves, but that's boring. Suggestions:

1. Classic strawberries and cream. That's what shortbread was made for! Go all out, and wear a bonnet and a petticoat, while reciting nursery rhymes.
2. Drizzle chocolate on top of a bit of either ice cream or whipped cream. Speak in a bad French accent and take a 50% bourgeoisie bonus. Ooh la la!
3. Dip them in chocolate. This can be followed by dipping in sprinkles of your choice.
4. Crumble, and use as a base for a cheesecake.
5. Nibble on them while studying- you'll be too busy to care about the blatant lack in self-indulgence.

The Finer Beginnings

MEAGAN CARDNO
1B NANOTECHNOLOGY

THE FINER THINGS OF FINE ARTS

My piano teacher once told me that the beginning and the ending are the most important parts of any piece. If you had to make a mistake, let it be in the middle; a mistake at the end would leave a foul aftertaste to what could otherwise have been an enjoyable piece and a mistake at the beginning could make your audience unable to take you seriously for the remaining time as they just wait for you to mess up again. Middles are far more lenient in this respect - your audience already trusts you to do well, and there is time remaining to rebuild that trust once you shatter it with that completely horrendous thing you did.

The nice thing about the fine arts is that there is much to be gathered and learned from them, and - if executed with enough finesse - their lessons can be applied to so much in your own life. Say, for example, a co-op term is hastily approaching, and interviews are at bay. One would only have to look to their piano teacher for guidance towards success with the boss: 'Give a good first impression, and don't piss them off on your way out the door'.

Or, say, you are writing a column for your faculty newspaper. You would have no fear of the daunting task, for as long as your first piece was filled with great humour, interesting observations, and irresistible wit, you would undoubtedly gain many adoring and loyal fans to see you through the end. If not, you had comfort in knowing that no one would probably read it after your first terrible article and you were free from the looming fear of criticism and failure.

Yes, beginnings are the first major milestone in any piece of fine art, and they almost always serve the same purpose: to get people ridiculously excited for what is to come, maybe let the artist show off a little, and to let everyone know what in blazes is even going on (Note: Some artists still struggle a little with the last point).

It is useful to set up a simple classification of these arts, for convenience. There are the musical arts, the performing arts - which may or may not come with a side serving of music - the visual arts, the written arts, as well as the arts formerly known as film (new digital name pending).

The nature of fine arts in their vastness merits that becoming a so-called "expert" in any of these subsets a very lengthy process with much commitment involved — and using the c-word in any sort of positive context seems blasphemous. However, I do not claim to be an expert about any of the subjects. Nor does one have to be an expert in order to appreciate the wonders of fine arts. Much like understanding the inner workings of a machine or program, simply understanding some of the finer points can be a beautiful and delightful experience. The more you understand about the processes and details, the better of an appreciation you will have for the value of the art. It also makes you look pretty damned sophisticated, which is never a bad trait to have.

Although I know little on certain subjects (such as the visual arts, despite the immeasurable amount of respect I have for the talents of such artists), there is much I enjoy. And, when it really comes down to it, its the enjoyment that makes the fine arts so… enjoyable. So tune in next week, when we stop beating around the bush and get down into the nitty-gritty of the fine arts, and investigate just what makes each of them tick. Or tock, depending on your perspective. Metaphorically speaking, of course. Excuse the idioms.

Songs That Work It

NOUHA JAVED
3A CIVIL

MUSICAL MUSINGS

Need to lose that insulating layer left over from the holidays? Just woke up from winter hibernation? No worries, these tunes will shape you up in no time.

Progress – Stars

The first time I heard this song was in my car, driving down a quiet suburban street. It made my car shake and my entire body bob along with the beat. Amy Millan's vocals could easily be a lullaby by themselves; her voice is like a soft, dark thread weaving through the haze of synth, keyboards and bass. If you're the kind that loves to go for a late night run, this song will match your beat perfectly.

I'm Just Me - Diamond Rings

Its hard to imagine a follow up to the Diamond Rings', aka John O'Regan, debut album *Special Affections*. Luckily, he decided to turn up the bits of his previous record that made it so good, layering his recent *Free Dimensional* album with synth, amazing vocals, and large quantities of lasers. 'I'm Just Me' sounds like it could be the backdrop to a neon-coloured 80's exercise video, complete with towering hair and leg warmers.

Stronger (What Doesn't Kill You) - Kelly Clarkson

You know a song is appropriate for working out when the music video features various groups of people around the world (supposedly) dancing and fist pumping the air. 'Stronger (What Doesn't Kill You)' is a great example of power pop; thrumming keyboards in the back and Clarkson's high octane vocals with just the right amount of bitterness in the front. The highly comforting refrain of 'What doesn't kill you / Makes you stronger" doesn't hurt either.

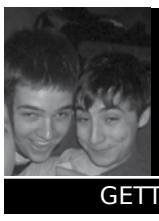
Pop Culture - Creature

Creature is not a band to be listened to while sitting down. They induce random, spontaneous dance and the wiggling of body parts you didn't know existed. Strangely, the minute after I heard this song, I started checking eBay for pogo sticks. And if that's not a testament to how fun and upbeat this song is, then I don't know what is.

Honourable Mentions

- Icky Thump – The White Stripes
- In Search of The Youth Crew – Cadence Weapon

Getting Oaked Head



GRAEME SCOTT
3T CHEMICAL
ERIC EVENCHICK
3T ELECTRICAL

GETTING GOOD HEAD

So we were at the Kickoffice, the official headquarters of Getting Good Head, and we realized that we had to write an article. This was quite convenient, since the Kickoffice serves good beer, and we can talk about it. Joining us today is Colin "I'm Back in School" Macpherson, Matt "Rolly, Polly, and Agile" Hunt, Sean "Didn't Win VP Graeme Scott" Walsh, Kayla "Graeme Made Me Come" Sheremeta, and Megan "I'm Still Not Drinking the Same Beer As Everyone Else" Pollock. Once again, Megan had been asked to leave, but somehow managed to thrust her way into the article.

This week, we chose to discuss Innis Ampersand Gunn Porter. We mostly chose this because it's a cask beer, which means that Bill must pump it out of the cask every time we order one. This is the most physical labour per dollar that we can get from Bill.

It was also conveniently the beer we had when Megan pointed out that we have an article due, which was nice of her. I guess that's why we let her in this week. Now I suppose we should start talking about the beer.

Before we get to that, we'd like to clear something up. Innis Ampersand Gunn is spelt with an ampersand. This is the symbol that looks like this: "&". We'd like to remind our highly educated readership that ampersand is pronounced amper-sand, not amp-er-stand. Like, come on!

Now back to beer for reals. The main thing that's neat about Innis Ampersand Gunn is that it's aged in oak barrels like whisky. There's a great story behind this: the brewery was trying to make scotch whisky with ale flavours, so they put beer in the oak casks to give them a beer taste. The beer that came out of the barrels was darn good, so they said "screw whisky, lets just make beer!" Ever since then, they've been making beer.

So how about the Porter that we're drinking? It's a lighter Porter, is very smooth and has very little carbonation. This makes for a nice smooth mouthfeel (coincidentally, mouthfeel is the best word to describe anything ever). It's also pretty strong, at 7.4% ABV, which is always a treat. It should be noted that higher alcoholic content increases the quality of our articles.

And now a word from our sponsor: Alcohol. According to Waterloo Policy 21 (Alcohol Use and Education): "Promotion or advertising that refers to alcoholic products, brewers or distillers, is restricted to [...] and in magazines or newspapers distributed on campus." For this reason, we'd like to promote alcohol in general. After all, these articles wouldn't be possible without the continued support of alcohol.

Read this article often? Let us know by emailing getting.good.head@gmail.com and you could win a prize!

And now, what has become somewhat of a tradition...QUOTE TIME!

Colin says "It's good. It's not like a full porter, but it's something before that, but it's good."

Matt says "What is that flavour?...Because it's not charcoal. I'm Matt! I'm Matt! I'm Matt! [He's Matt...]."

Megan wants a quote..."I like this beer, because it tastes like wheat beer so you can drink it fast, but it doesn't look like wheat beer so it doesn't fill you up." As you may have figured out, Megan isn't drinking the same beer as us, but is instead, reviewing Weihenstephaner Kristall. She says that next week she'll review this beer.

Sean and Kayla are playing cards and we decided not to bother them, we also hit our word count.

So, we've decided to give the Innis Ampersand Gunn 3.75 Surly Bartenders. On that note, you can check out Youtube to see our favourite Surly Bartender, Bill's talk at TEDxUW on November 17. We're not even kidding. Next time, we'll discuss the Reverse Cowgirl.

Arsenal, The Broken Hero

DANIEL OSORIO
2T NANOTECHNOLOGY

UNSUNG HEROES

SCREENRANT

Arsenal, also know as Roy Harper Jr., in battle with Killer Croc

To start off this term I thought I would write about a hero who hit the absolute bottom. I don't mean that they were defeated by their arch nemesis, or lost an ally in combat. I'm talking about a hero that destroyed themselves and ruined their entire reputation.

But this isn't a hero, technically. It's a sidekick. I like the sidekicks better because they're the diamonds in the rough that everyone overlooks. So what happens when you take a self-destructive man and put him in a position where he lives in the shadow of his mentor? Well you get Roy Harper Jr., otherwise known as Arsenal.

Roy Harper Jr. was the son of a forest ranger who died in a forest fire, and was found by a Navajo medicine man named Brave Bow. Brave Bow raised Roy as his son and taught him archery. Brave Bow eventually died of old age and Roy was left to fend for himself. Roy went to a nearby city, Star City, to enter an archery contest with a cash prize that was being judged by Green Arrow. After winning the contest he assisted Green Arrow in halting a nearby bank robbery. Green Arrow was impressed and adopted the young boy, who became his sidekick Speedy. At first Roy was an exceptional sidekick. He was part of the second iteration of the Teen Titans, and even dated Wonder Girl. But then the Titans disbanded, he broke up with Wonder Girl, and Green Arrow lost his entire fortune.

Green Arrow became distant from Roy and immersed himself in his super hero duties. Roy felt neglected and unwanted and went into a dark place in his life and eventually became addicted to heroin. He began to turn to petty crime. Green Arrow, not knowing how to control his emotions in the situation, nearly beat Roy to death, and threw him onto the streets. Green Arrow denounced him as his sidekick and his adopted son. Being taken into care by fellow hero Black Canary, Roy tried to get his life back on track. But having his father figure abandon him in his time of need threw Roy into a deeper depression.

During this time Roy bounced between being sober and addicted. He tried joining the Outsiders, until eventually almost being killed in combat with Deathstroke. Roy also tried to become an agent of the government agency Checkmate, but was fired when they discovered he shared ancestry with the terrorist Vandal Savage. Entering a deep depression, he tried to commit suicide by getting into a fist fight with Killer Croc. Upon finding out what he was trying to do, Killer Croc stopped the fight and put Roy into rehab, becoming his sponsor. With Killer Croc's help Roy finally became clean of all substances. Currently, Roy has undertaken the name Arsenal instead of Speedy; he became part of the Red Hoods vigilante group of heroes The Outlaws and has become a better hero than he was before. Roy now knows that he is a hero and strives to become a better person each day, constantly putting his life on the line to save his comrades Starfire and Red Hood.

The point that I'm trying to make here with Roy is that he is another example of a non-textbook hero. He embodies how easily corruptible a human's heart can be, how the mighty can fall from their pedestal of power, and how tempted the body is for a dark pleasure. Roy was on top of the world and had it all taken away from him in a hard way, with nobody to blame but himself.

Constantly, Roy tried to get himself into shape but he didn't have the willpower that we see so much of in comics, and that's the best part about him; he is truly human. A human cannot be so simply defined in the comic book universe as someone without powers, it has to be someone susceptible to temptation and darker urges. We rarely see that in well known comic book heroes. We normally see the pinnacle of what people are inspired to be, but in Roy we see a mirror image; a man who is easily broken. But Roy went to the edge of the abyss and was consumed, and in a way is still consumed. He might be a hero again, and a valiant one at that, but he's still throwing himself into danger head first putting himself between the barrel of a gun and his allies.

The truth of the matter is that Roy is a hero in progress, but the fact that he is trying even after failing is admirable and a key element to being a real hero. He may not be perfect, but he wants to be. How many of us can say we're doing that after being completely broken? At the end of the day what makes Roy a hero is the fact he's fighting for something, even if it's proving himself to others.

Nintendo Did Something New?

JON MARTIN
OBI JON11338

FUTURE OF GAMING

Hey everyone, and welcome back to another term, whether that is on campus or on co-op. I hope your holidays went well, and you were able to get some gaming time in there. This article, I'm going to be focusing on a couple of things; the holiday season for the Nintendo Wii U, the evolution of the LEGO games into the most recent *Lord of the Rings* entry, and the most amazing thing – Nintendo has actually done something new with Pokemon. I know, it is kind of scary but I checked and I don't think the world has ended, at least there wasn't a zombie apocalypse or something.

To start things off, this holiday season saw a huge growth in sales for the Nintendo Wii U, with the console flying off the shelves as the hottest Christmas gift this year. Oh wait, it didn't? Oops, my mistake. This season was a real red flag in my appraisal of the Nintendo Wii U, as I don't think there should ever be a question of what is going to be the 'must-have' gift in a year when a console launched. When the original Wii was released stores couldn't keep them in stock and people were driving across the continent in order to find that last forgotten Wii in a Radio Shack in Punkeydoodles Corners that no one thought to search (I'm just kidding, there is no Radio Shack there, though the hamlet does have to deal with people stealing their sign frequently).

The advertisements for the Wii U really only started picking up in frequency after the holidays, which seems like a really weird marketing move, and these ads don't even do a very good job of selling the system. Showing how you can play your part of a game on a little screen while your friends are all having a great time staring at your TV really doesn't sell the system to me as a good party system. When I did get a chance to play around with the system a bit, I found it really awkward and disjointed. Of course some of this will be due to lacking familiarity with the GamePad controller, but I found it really weird to stare at a TV screen and have a really bulky controller, I would much rather use the standard kind of controller. Then comes the really weird points of some games where you are suddenly stuck in an area and have no way to proceed, before you finally look down from the TV to the GamePad and realise that you need to take your hands off the controls to make a gesture on the touch pad, then go back to looking at the screen. Overall I don't think it is a very compelling console, especially when it is only marginally better than the Xbox 360 and PS3, both of which will be replaced soon anyways.

Another interesting thing happened a week after my last article where I mentioned that Nintendo had not released a mini version of the Wii – Nintendo released the Wii mini. The new model features a smaller form factor in a matte black and red case. Interestingly the system is exclusive to Canada – which seems like a really weird choice. Also the size and cost ($99) are kept at a minimum by removing all internet capabilities from the console (meaning you can't go online at all or play multiplayer), dropping support for GameCube games, and removing memory card support. So basically the system can only play disc based Wii games, all alone, and it is only $50 less than the full system (which includes two games in most retail bundles). How is this a deal?

So, away from Nintendo for a bit, and over to the newest installment in the LEGO franchise, *LEGO Lord of the Rings*. I have now finished the story missions for *The Fellowship of the Ring*, *The Two Towers*, and *The Return of the King*, and am only at about 30% completion. The really interesting thing about this LEGO game is the complete departure from a 'menu world' structure, where you were located in a lobby style world and selected which story mission you wanted to play from a set of posters or a hallway of doors. Instead, the entire world of Middle Earth is one giant map, and each story mission is located around the world to correspond with its starting location – want to play as the Ents and tear down Isengard? Then you can walk to Isengard and start the mission. The world is a kind of condensed version, so don't worry about walking anywhere taking very long. Another interesting component is the full voice acting, which does a great job of supplementing the physical comedy. While I have liked the silent character in the past games, there is just something great about hearing John Rhys-Davies call out "That still only counts as one" after you take down an Olliphant as Legolas (I think they made this game just to be able to make the LEGOlas pun). The LEGO games have evolved a lot over the years and I can definitely say that *LEGO Lord of the Rings* is my favourite so far.

Guess what? Back to Nintendo! The company has recently released some huge news about the Pokemon franchise, which has definitely been stagnant for many years. After the release of Pokemon Black and White 2, as the first numbered sequels in the series, many people were wondering when the next real Pokemon adventure would be announced. Well Nintendo has announced the release of Pokemon X and Y – apparently they have run out of colours or gem stones – for October of this year. The release trailer caught many people off guard when it revealed that the game will actually be 3D, with fully polygonal rendering rather than the traditional 2D top down view we have been used to since Pokemon Red and Blue debuted in North America in 1998. The trailer seems to show platforming type elements to the game, and full animation of Pokemon battles. The game is also being released for the Nintendo 3DS, so it looks like it really will be a whole new experience from the games that have come before. I think this is definitely going to push sales of the 3DS, especially the 3DS XL, as you are not only going to get the kids market but the nostalgic young adults as well.

While I am sure that the game will follow the same standard plot that all the games have followed since Red and Blue, there is no denying that this is a fundamental change to the Pokemon genre. So I guess the biggest question is – if the game is now a full polygonal world, are you still going to get stuck at those stupid little ledges?

So there is my rant for now, with Nintendo showing up on both the good and bad sides of the discussion, for a product that is forgettable and boring, and a game that is a total redesign of one of their most famous franchises. Check out *LEGO Lord of the Rings* if you want a fun adventure/collectible finding game – and seriously consider the PC version, as it retails for $30 instead of $60 on consoles and portables. See you next issue, and Keep on Gaming.

F(u)LL of FUN

KRISTINA LEE
2A ENVIRONMENTAL

Emotions were running high in the PAC on January 13 as forty teams from across Ontario gathered at the University of Waterloo to compete in the 2012 First Lego League (FLL) West Provincial Championships. Stakes were high as the winning team would represent Ontario in the World Championships in St. Louis, Mo. The FLL competition requires teams to compete in four distinct areas: competition, values, design, and project. These four areas expose the participants, aged nine to fourteen, to engineering and technology as well as develop teamwork, creative thinking, and problem-solving skills.

Each year, the FLL competition has a theme that is incorporated into the competition; this year's theme was Senior Solutions. Senior Solutions required teams to create or improve an idea to help seniors and present it to a panel of judges.

Senior Solutions was visible on the obstacle table as robots were required to complete tasks such as quilting, bowling, gardening, and turning off an oven. Students had 12 weeks to create programs to complete as many obstacles as possible in order to score points. This portion of the FLL competition was high stress as teams subbed out teammates to reassemble robots and run new programs. Although high stress at times, the competition's main focus was fun! Teams could be seen celebrating and congratulating each other throughout the day, something that would bring a smile to anybody's face.

The other three areas of the FLL competition were held in MC. These areas focused on values, project, and design. Teams presented their Senior Solutions to a panel of judges and were asked a series of questions. Some teams opted to perform a skit while others kept to a science fair-style presentation.

Teams were also required to show the four core values of the FLL by completing an unknown task. Upon entering the values judging room, teams were presented with the task to retrieve a Lego square from the bottom of the tube. There was a catch, however: teams had to work with a box of Lego odds-and-ends and could not stick body parts down the tube.

The final area of judging was the design portion. This judging session allowed judges one-on-one time with the young participants. The participants were questioned about their code while they presented their robot's capabilities.

After judging was completed, teams paired up and competed in the Alliance Activity. This action-packed activity combined teams to compete against other duos in a tournament-style competition.

At the closing ceremony, Lego trophies were awarded to teams who prominently stood out during the day. The Socialites were the lucky team who captured first place and were followed by the Shopaholics in second place. The Explosive LegoBots came in third. Although three teams stood out in the four main categories, all the participants returned home with a medal and two new HexBug friends.

Feds Moving Forward with New Advocacy Plan

Continued from FEDS on page 9

As a result, a motion was brought forth to have Feds drop to Associate Membership status in CASA with the intent to leave entirely after one year. As background information, part of the CASA membership policy states that any member wishing to leave CASA must drop to Associate Membership for at least one year before leaving entirely. The membership fee for Associate Membership is half of the regular fee, approximating $21,000 for the year. The motion also recommended that Feds Executive use the extra resources made available by leaving CASA towards institutional and municipal advocacy. The motion passed with a majority vote.

One of the negative drawbacks from leaving CASA is Feds will have to advocate federally on its own. This is very difficult for an individual school, especially when there are already many organizations that advocate on behalf of Canadian Universities. However, Council believed that the issues at the federal level were not a high priority for students, and those more local topics such as exam schedules, study space, GRT bus routes, etc. were more important, and should thus have a larger share of resources. It is important to note that although Feds will no longer have a say in CASA's advocacy direction, CASA still represents a large majority of Canadian Universities who have a similar outlook to Waterloo as to how the Federal government should run.

If you would like more information on this decision, please contact myself (awfisher@uwaterloo.ca) or your fellow Councillors, Chanakya Ramdev (chanakya.ramdev@uwaterloo.ca) or Breanne O'Grady (beogrady@uwaterloo.ca).

Top Reasons Engineers are Better than Arts Majors

WADE WILSON &
EDWARD BLAKE
3Z HANDSOMENESS
TOPZ (WITH A Z)

Note: Topz (With a Z) is a regular column in the Iron Warrior which employs cynical and absurd sarcasm in a paltry effort to be entertaining. We understand that this week's topic may be a sore spot for some, so we would like to explicitly clarify that this is for us as well. This article's intention is to demonstrate the flaws in what we find to be a disappointing, widespread, Engineering superiority-complex often directed at Arts majors. To reiterate, we have no issue with Arts majors, rather, with those who are unreasonably hostile towards them in the name of petty and overused comedy.

As an Engineer, there are a few basic principles for which you must stand: integrity, responsibility, and humility. And it is in that spirit of humility that you must make an effort, each and every day, to humiliate anybody who has chosen a field of study different from your own. Like all forms of blind patriotism, there is a common enemy against whom we rally. Bush-era America had the French, Canadians have Americans, and Engineers have Arts majors. Now, some may claim that our attitudes are unfounded and immature, but they're just big buttheads. To counter these jerks, we have compiled for you a comprehensive list of the ways in which Engineers are better than Arts majors.

Arts doesn't produce anything useful: From the creation of the wheel to that phallus you drew on AutoCAD, everything useful has been created by The Engineer. Engineers actually do things, right?? Arts majors are just wasting their time. When was the last time an Artsie made a bridge? A car? An IED? No: Arts majors just diddle around making stupid junk that nobody needs like abstract art (it's just a bunch of dumb lines and stuff!), Human Resources departments (they're just full of Tobys!), poetry (Hey T. S. Elliot! Does that sound for "Too stupid"?? More like "Leaves of Crass"!), music, literature (what has Rudyard Kipling done for us lately?), theatre (Shakespeare doesn't even make any sense! Where art thou, sense?), cinema, and legislation (More like the Magna Farta!). While dumb Artsies are out "philosophizing" about Diogenes, Engineers are unzipping jeans … or at least watching it happen on an OLED monitor with way-sweet image contrast. Who needs an Artsie-produced entertainment industry, when we can just be entertained by Engineers. After all, nothing is funnier than plagiarizing Reddit, and recycling racist, misogynistic, and homophobic humour which would make Cosmo Kramer blush.

Artsies Waste Their Time: So Artsies are wasting their time while "working", but what's even more appalling is how much they waste their time while not working (no, not sleep, "free time"). Arts majors will engage in such ridiculous endeavours such as "dating" (it's kind of like private browsing, but more interactive and requires taking a shower), "clubbing", cultivating "hobbies", "reading" (for fun?!), "exercising", and "getting to know themselves". Every engineer understands that your early twenties are a time for hard work, sleeplessness, building a skills inventory, networking, and LoL. Having fun can wait until you're retired. The dating scene is so much more scandalous when you're single with shingles.

Stereotypes Exist for a Reason: Everyone knows that our stereotypes are accurate. I mean, we know this one guy in Arts who totally fits the stereotype: he wakes up in the morning feeling like P. Diddy, grabs his glasses, and is out the door going to hit the city … of Waterloo. Naturally, this alone validates the sweeping generalizations made against all Arts students. If you could find a person in Engineering who lived up to some hypothetical negative connotations with the Faculty (for the sake of our little Gedankenexperiment, let's say traits such as social awkwardness, arrogance, and a condescending attitude) it would be fair for other majors to ascribe these attributes to Engineers in general. Fortunately, we cannot think of anyone in Engineering who is socially awkward, arrogant and condescending; of course we're too intelligent and mature for such childishness that would be more likely found in an Arts major … or so we would assume, we don't really make friends outside of Engineering (save for the occasional token Science or Math major).

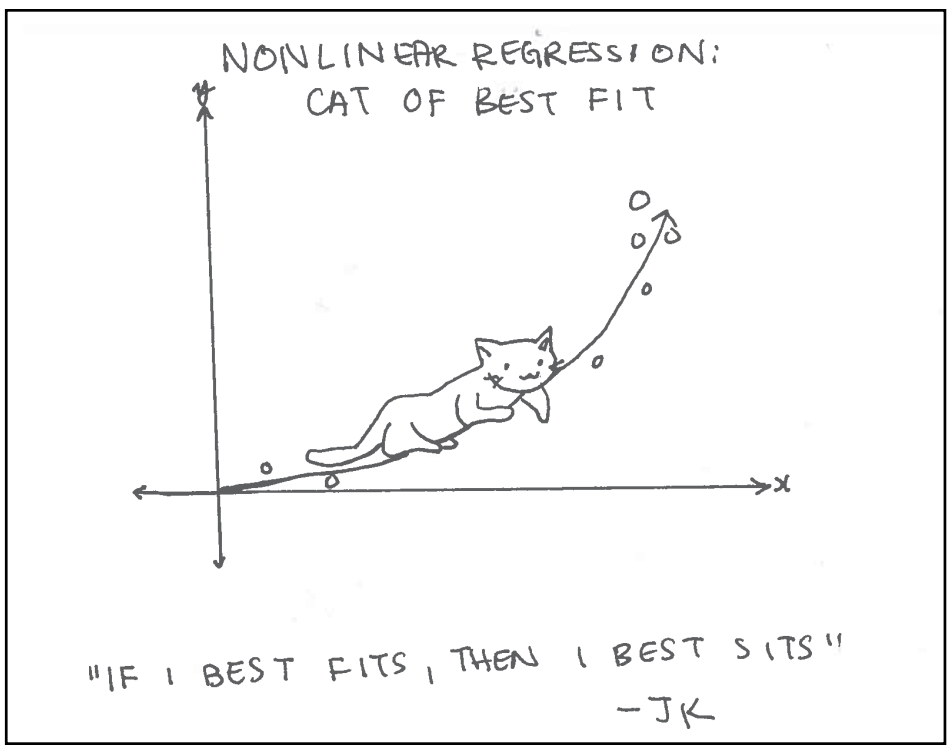
Arts Majors Suck at Math: Arts majors can't tell the difference between a polyglot and a polynomial (and this is no hyperbole). Without a solid knowledge of advanced calculus, how are you supposed to take someone seriously? If you're an adult who has yet to master mathematics, how are you able to even hold a conversation? If you have seven chocolate bars and your friend eats eit chocolate bars where t is time in minutes, how will you know how soon it will be until she gets diabetes? Trick question: you don't know any girls. That's engineering intuition, and something Arts majors lack. What do you they have that we don't? A basic competency in language and communication skills? Well who the heck cares about that? The only language you need to know is C++.

Arts Majors Have Weird Flavours of Toothpaste: We know this isn't the most "politically correct" thing so say, but seriously, what is up with Arts majors and their wacky flavours of toothpaste? I mean we've all heard it before, it comprises no less than seven stanzas of Lady Godiva's Hymn, but it's as true as always. It's like, you walk into an Artsy's bathroom and they have Orange Citrus and Vanilla Bean, but where's the Peppermint? Where's the Spearmint? Where's the basic human decency?

Jokes making fun of Arts will never cease to be funny, ever! Especially not after first year. There's a reason that Engineers are telling the same jokes that they were telling 20 years ago. People who have different ambitions, passions and interests in life are patently wrong to do so, and hence are deserving of our scorn and mockery. After all, it's only a joke and totally cool because it's just jokes: we're just choking your chicken a little, pulling your chain, undermining your goals in life, getting at your goat. And we have no intention of stopping… ever. ERTW.

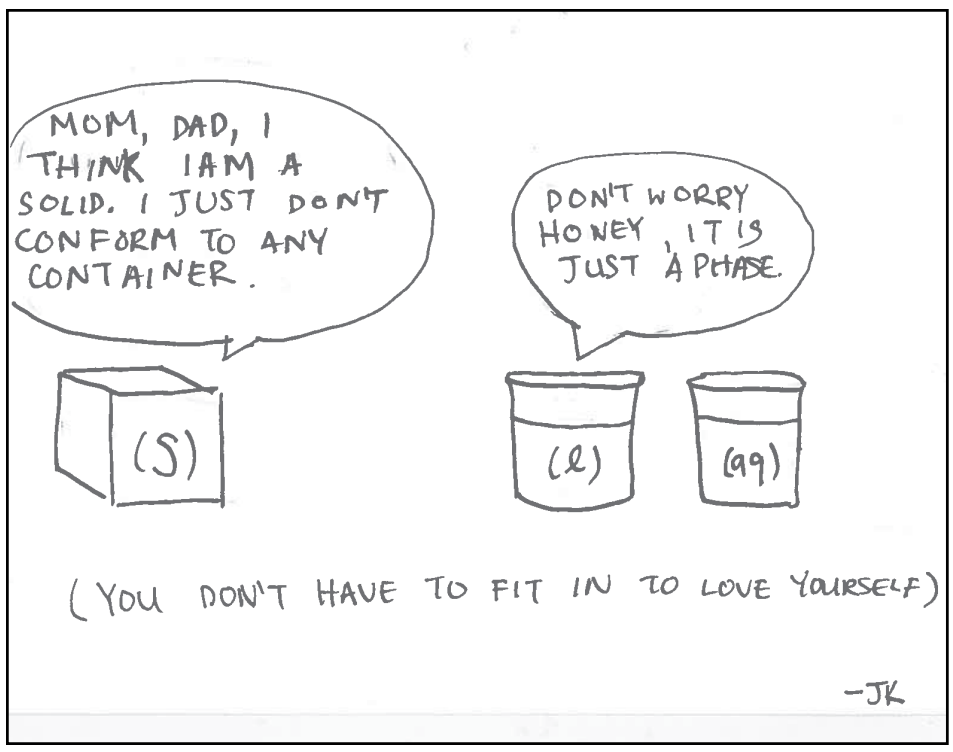
The Iron Comics

There Are Now Three Copies of This



Jessica Keung

Homogenous Compounds

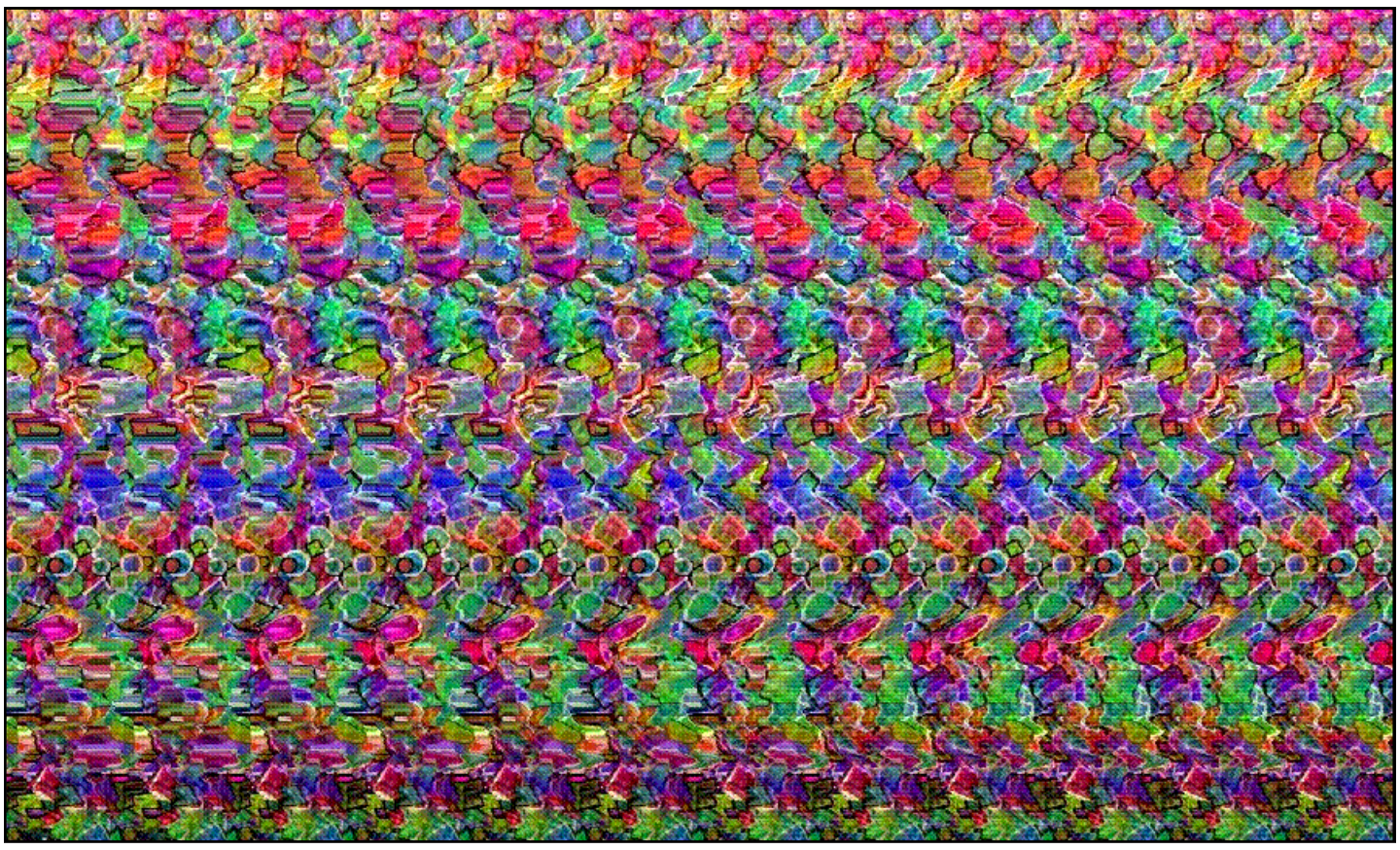


Jessica Keung

The Iron Stereogram

The Iron Warrior Helps Improve Your Ability to Focus

ANDREW FISHER
4B CIVL



Word Jumble

A Random Set with a Predictable Outcome

ANDREW FISHER
4B CIVIL

S	A	T	K	B	E
					○

I	C	W	H	T
				○

A	I	R	N	T
			○	

H	A	C	E	G	N
○				○	

○ ○ ○ ○ ○ ○

Stereograph Instructions

1. Put your face close to the image above. Pretend to look through the paper.
2. Now, very slowly move back from the image and as you do so the image will come into view.
3. This may take several attempts.
4. Please be patient, and you will be rewarded with the hidden image.

Word Jumble Instructions

1. Unscramble each of the given words in the boxes provided.
2. Take note of the letter in each circle.
3. Unscramble the letters in the circles .to get the final word or phrase.
4. Hint: This can impact a professors ability to teach.

Sudoku

#2013-01

ANDREW FISHER
4B CIVIL

Easy

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

Medium

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

Hard

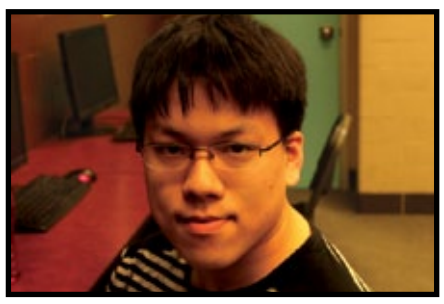
3		1				8		
	9		4				2	7
				8	9	3		
		2		4	8			6
	3			7			5	
6			3	2		7		
		3	8	1				
9	8				2		1	
		4				6		5

Issue #2 Deadline:
Friday, February 1 at 5:00 PM
Send your submissions to:
iwarrior@uwaterloo.ca

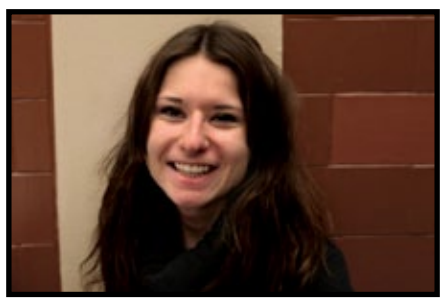
THE IRON INQUISITION

Kevin Veloso, 4C Software
Yola Harsono, 1B Mechatronics

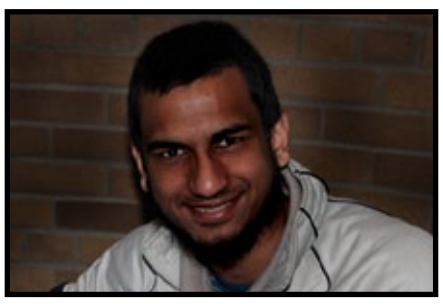
"How do you take care of yourself when you're sick?"



"Wait until it gets better."
Stephen Chou, 3A Computer



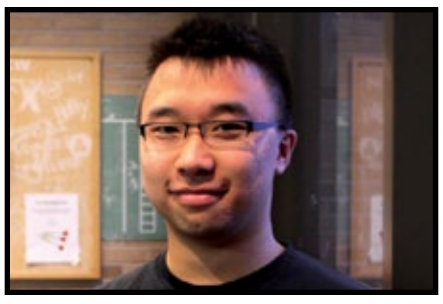
"NeoCitran (the best thing in the world!), drinking herbal tea, and watching Just For Laughs Gags!"
Iryna Zhyrnova, 2B BioMed Science



"Praying works for me."
Umer Abdullah, 1N Electrical

"I sleep it off. I literally go home and sleep for 15 hours."
Dominic Cheng, 4B Electrical

"I, uhh, sleep it off too."
Jie Won Ryu, 4B Electrical



"Dim sum! Ancient Chinese Secret!"
Allan Lo, 4B Electrical