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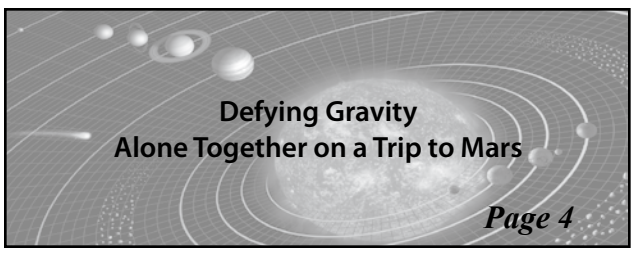
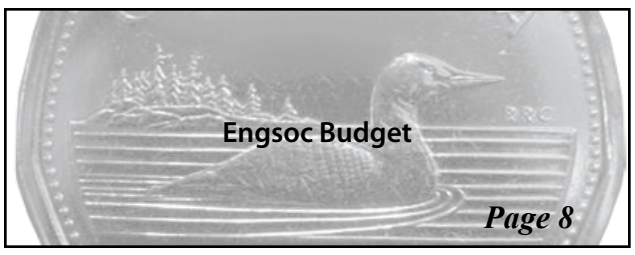
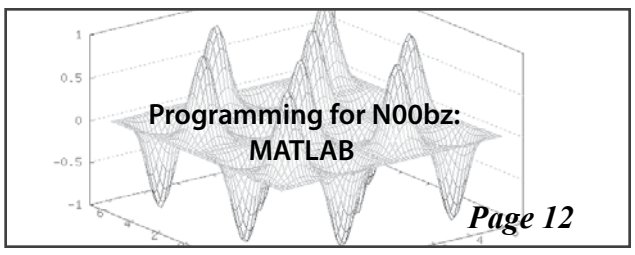
THE IRON WARRIOR

THE NEWSPAPER OF THE UNIVERSITY OF WATERLOO ENGINEERING SOCIETY VOLUME 33 ISSUE 2 | WEDNESDAY, FEBRUARY 1, 2012







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Softies Invade Montreal for CUSEC

JOSHUA KALPIN
1B SOFTWARE

From January 19th 21st, a delegation of students from the University of Waterloo plus over a hundred other people from schools around the country gathered at the Delta Centre-Ville in Montreal, Quebec for the 11th annual Canadian University Software Engineering Conference (CUSEC). The delegation, led by Kevin Veloso, a fourth year Software Engineering student and contributor to *The Iron Warrior*, consisted of Software Engineering students from all on-stream classes and one Computer Science student.

This year's conference, titled "Turing Complete", was named in commemoration of the 100th anniversary of Alan Turing, one of the founding fathers of computer science's birth. However, the conference featured speakers from a multitude of backgrounds speaking on an even wider range of topics. These speakers were divided into three categories: tutorials, academic & corporate, and keynotes.

The tutorials were an opportunity for delegates to be able to learn about new areas and aspects of software engineering design. For example, Microsoft's Susan Ibach conducted a tutorial on how to build Windows Phone apps. During the talk, she built an app in front of the audience and showed the steps that one needed to take in order to build, test and publish an app for Windows Phone. Another tutorial conducted by Alex Dashkalov focused on concurrent programming and how to effectively implement that into software.

The academic and corporate speakers presented on topics that they either were currently researching or deeply involved with at their respective school or company. Many of these talks were highly technical but still an amazing insight into how some of our favourite software actually works. Two of the favourite corporate speakers were Vic Keenan a Senior Engineer from Riot Games, the creators of the extremely popular game League of Legends, and Rian Hunter from Dropbox.

Vic Keenan's talk centered around how the spectator mode for League of Legends works and how it was designed. This talk included details on how Riot implemented this mode from both the in-game perspective and from the back-end server perspective. Furthermore, he went into great detail on how this mode is able to scale in the future and how the company handles privacy for its users.

At the Dropbox talk, Rian Hunter explained how Dropbox was able to integrate into the Mac OS X finder and the hoops that they had to jump through to implement this feature. The technical aspects of the talk were centered on how the engineers used very-low level C code to trick the operating system into thinking that the Dropbox client was a part of the finder when it actually was not. An unexpected but enjoyable surprise was the presence of an Apple engineer who worked on the OS X operating system. It was almost if trying to break the software was a game of cat and mouse between Apple and Dropbox but in the end both Rian and the engineer created an extremely informative and enjoyable discussion.

The keynote speakers were by far the most popular and drew the most visible response from the audience. These speakers focused on topics ranging from the bizarre to awe-inspiring. The first keynote was presented by Jeremy Ashkenas, the creator of the CoffeeScript programming language and a member of the Interactive

Alice Yuan

Alexis Ohanian (co-founder, Reddit.com) with Waterloo Software Engineering undergrads

News team at The New York Times. His keynote was a thought provoking exposition on why we should treat code as art. He focused on examples from programming languages with elegant, clean syntax such as Python and Ruby and showed that when written properly code can truly be art.

The second keynote was presented by Manveer Heir, a senior designer working at BioWare Montreal on Mass Effect 3. His keynote was titled "Tighten up the Graphics on Level 3" and tried to convince the audience why they should not work in the video game industry. This was one of the more bizarre talks because no one really ever expects to have an industry veteran try to convince an extremely talented group of software engineers to avoid their field.

The third keynote was presented by Andrew Rothbart, a software engineer at Facebook and explained how the like button actually functions from both a front and back-end perspective. This keynote was the most corporate of the bunch but showed how massive Facebook's influence on the internet is.

The fourth keynote, which arguably was the most beneficial to those from the Waterloo delegation, was presented by Gayle McDowell, the author of two bestselling books on how to get and succeed in technical interviews. She went into great detail on how a resume should look, how technical interviews usually work and what type of questions to expect when you do go into an interview with a company like Google or Amazon.

The fourth talk was an unexpectedly awe-inspiring presentation by Bret Victor, a former engineer in Apple's research and development labs. He presented multiple demos where he freely manipulated images, animations and algorithms that instantly displayed results on another screen. After each demo was completed the audience gave applause for over ten seconds and at the end he was the only speaker to receive a standing ovation.

The fifth keynote was presented by a leading contributor to the Linux kernel, Greg Kroah-Hartman and explained the process on how the kernel is modified and updated. He also went into great depth on which companies contribute time and money to developing the kernel and how the audience could become involved in the largest open source project on the internet.

The last and possibly most politically relevant speaker at the time was Alexis Ohanian, one of the co-founders of Reddit and strong anti-SOPA/PIPA activist. This talk was especially relevant because only few days prior he was instrumental into coordinating the blackout of Reddit, Wikipedia and many other websites across the internet. He discussed why we should pay attention to all political issues relating to the internet and the logistics behind the actual blackout that occurred on January 18th.

The organizers of CUSEC did a fantastic job of organizing this all-star lineup of speakers; however, the career fair was even more amazing. At the career fair there were over 15 companies looking to hire students for both full-time and co-op jobs. Companies such as Amazon, Microsoft, Apple, IBM, and Adobe were all present and excited to be socializing with the next potential set of employees. Furthermore, one of the companies, Morgan Stanley, held a coding competition where a team from Waterloo came in third place out of over 30 submissions.

For those that were unable to attend CUSEC that are highly interested in Software Engineering and computer programming, I highly recommend that you seek out the head delegate for next year's conference and look into going. You will learn more in the span of three days about jobs, technology and opportunities than you would in many of your terms at Waterloo. Also don't think that us Softies sit around and code all day, we can party too, especially in Montreal.

Letter From the Editor: Speak Up!

CHRIS LETNICK
EDITOR IN CHIEF

Welcome to February.

By now, the term has picked up and deliverables are flying by as we struggle to balance our time. If you are struggling, try taking some of my advice about scheduling from the January 18th Issue of The Iron Warrior. This production weekend ran close to being on schedule. Most copy editing was completed by Saturday afternoon, the layout was mostly done by the end of Sunday afternoon, and a draft was sent out at a reasonable time on Sunday evening. Unfortunately, due to space constraints, some articles had to be postponed to a later issue.

As living beings, communication is very important. In the basic sense, most creatures communicate in some way or another. Wolves communicate socially with body language and audible noises to establish social dynamics. Even bees communicate through dance and odour to recruit other worker bees to collect nutrients.

Human communication is becoming increasingly important in modern society. The current era is considered the information era. Since information must be communicated, communications skills are required for career success. As the average person increases their communication abilities, it also makes communication more important than ever for societal success. Communication has become so important to humans that a large amount of resources is spent developing ways to help those who have impairments that hinder their ability to communicate. It is no longer acceptable in human society for a person or group to avoid communication with others.

The ability for professionals to communicate technically accurate information is imperative. Many accidents happen every year due to failures in communication. Several space vehicles have failed to land on mars due to either a specification inconsistency or a failure to correctly convey units of measurement among people. Plane crashes can be caused by communication failures between pilots and ground control or between different maintenance personnel. Failure to correctly communicate building instructions has resulted in structural failures and near misses.

There are several reasons why communication failures occur. One reason is due to technical misunderstanding. If information is presented to somebody in a technical manner beyond their understanding, that person may misinterpret the information. For example, a student may write down an algorithm to solve a problem but not understand the limit to the set of problems that algorithm works on. To solve this, the communicator should explicitly indicate the target audience, and the person receiving the information should ensure they are within that target audience. Similarly, an inability to understand how to communicate a certain thought can result in a person to simply ignore communicating it. The person transmitting should work with the receiver in order to gain feedback and refine their communication until it can be accurately understood by the receiver. A person should not give up in communicating or receiving information. They should, simply, work to be receive and communicate effectively.

Willingness to communicate or receive information is one of the most difficult barriers to communication. The unwillingness to receive is primarily due to the information being communicated conflicting with the information the receiver already believes to be true. A person should not believe all information presented to them. However, a person should take the time to consider all the information presented to them. Unless this person can prove that the information they know is more accurate than the information that is being distributed to them, this person should consider accepting the information until they can prove it is incorrect. Politics and personal beliefs are acceptable reasons to personally believe something, but should never be used as a component of professional reasoning. Is ignoring reasoning for personal and political beliefs a good decision? (Send your opinions as a letter to the editor.)

Willingness to communicate is also a large barrier in communication. A person often believes that they should not communicate their thoughts because the receiver already knows more than them. A person may avoid communicating important information because they don't want to offend the person they are communicating with. A person may also not want to communicate unimportant information because of time constraints to deal with the problem or financial constraints in dealing with fixing it.

Questioning information you are uncertain about is important. You may be unsure because the person communicating it to you made an error. If it is important to your work and you don't understand it, you should ask questions to improve your understanding. Providing input of any sort into a discussion will, if nothing else, stimulate other people who are thinking of new ideas.

If one is worried that questioning or providing information to another person may result in tension, there are ways to reduce this. Part of good communication skills is knowing when and how to communicate. When is easy. Communication should occur at the next natural break in the incoming information stream (eg. when the person pauses). If there is no break within a short period of time, motion that you have information to present. This can be done by putting up your hand or just asking if you can make a comment. If this is a large room, make sure you ask if you can make a comment before actually doing so. This will give the person presenting information a sense of control, whereas blurting out a comment will make the presenter feel like s/he is losing control of the audience. This is part of the how. Remember that communicating the information is more important than telling the other person that they are wrong. By doing this, and letting the other person feel like they are in control, they will often be more open to listening.

A good method of conveying concern about a certain item is by doing so indirectly. Ask the person who is responsible for the information if they can explain it to you. This will often bring them to discovering their own mistakes. If they still don't see their mistake, a person should narrow down the scope of what you are asking them to explain. For example: A person should ask a math professor how he gets from line two to three instead of how he gets the solution.

The final tool to use when questioning a person's information is to use sentences that start with 'I'. An example of a sentences that doesn't start with 'I' is, "you missed a '2' in that step." A good example is more like, "I think there might be another '2' in step three." Make sure to notice the complete lack of the word 'you' in that example. A sentence like, "I think you missed a '2' in step 3," is not nearly as good of an option. For best results, one should avoid 'you' whenever practicable. By wording sentences like this, one shows interest in collaborating toward a solution and not placing blame for any mistakes along the way. Sentences worded like this are also a good tool to solving personal arguments.

By using these communication strategies in real life, a person can reduce conflicts and improve their contributions.

Best of Luck to those starting midterms.

THE IRON WARRIOR

The Newspaper of the University of Waterloo Engineering Society

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Mail should be addressed to *The Iron Warrior*, Engineering Society, E2 2349A, University of Waterloo, Waterloo, Ontario, N2L 3G1. Our phone number is (519) 888-4567 x32693. Our fax number is (519) 725-4872. E-mail can be sent to *iwarrior@engmail.uwaterloo.ca*

Keystone XL - a Piping Dream

GRIFF FERGUSON
4B CIVIL

Imagine you are a farmer in Nebraska - you wake up one morning to find that your crops are sick, no longer producing the yields they used to, and the water has a tinge to it and smells awful. As a concerned citizen you approach the municipal government about it only to find out that ten years ago the company responsible for maintaining and operating a pipeline a hundred miles away experienced what is considered to be a minor leak of several thousand gallons of heavy crude. The company responsible is gone and there is no way for you to collect damages; remediation in the next year is unlikely since your farm is outside the protected zone. Although funding is available, you would still have to apply for it and that process takes months. Meanwhile, your crops are failing, your income is dropping, and winter is coming.

If this scenario sounds re-fetched, it probably is, but there is no denying the impact of poorly managed oil drilling and transportation operations on the economic, social, and environmental structure of polluted areas. As one of the top commodities of our industrialized world oil has the potential to bring wealth to those who control it or are employed by those who do, yet the devastation wreaked by oil contamination is a stern reminder of the risk in bringing profits to investors and resources to market.

The Keystone pipeline is one such project that has the potential for massive benefits amid horrendous consequences. The pipeline started construction in 2007 and finished in July 2010 amid the Deepwater Horizon disaster in the Gulf of Mexico. Canadian crude is the primary cargo of this pipeline and is carried 2700 kilometers to the Gulf via a series of smaller pipelines that pass through 3 provinces and 8 states. On the way the pipeline networks passes through many areas sensitive to environmental contamination and economies whose health is directly linked to the health of the environment, particularly the availability of fresh water for agricultural and cultural purposes. For the most part the existing network bypasses a region in Nebraska which is situated atop the Ogallala aquifer. This aquifer is one of the largest in North America and is the primary source of groundwater for almost 2 million people. This aquifer is plentiful and aids in the economic productivity in the region, estimated to be somewhere close to $20 billion. Surprisingly, they want to build a pipeline of the worst pollutants imaginable right on top of it.

In early January, President Obama announced that TransCanada Pipeline's application had been rejected by the US government. Particularly, the extension of the project called Keystone XL was rejected since the previous phases of the project had already been built. He invited TPL to reapply after a 60-day reassessment period, after which it is expected that the new application will address the environmental concerns that blighted the first submission.

As part of the US's plan to reduce dependency on foreign oil, particularly from the Middle-East, their government has decided to import oil from the Canadian oil sands project in Alberta. This meets some of their foreign policy objectives since relations between Canada and the US are generally good and both parties have a lot to gain from the project. The US can reduce their dependency on oil derived from less politically stable regions of the world and focus on Canadian Oil. With the planned expansion over the next several decades this could mean more jobs in the oil sands. However, some of the benefits proposed would only benefit American consumers, for the most part in terms of short and medium-term job creation. Although Canadian suppliers have much to gain by increased sales over the next two decades, the pipeline extension for the most part is in the United States and therefore will not benefit the Canadian construction industry, not nearly as much a the American industry.

What ever may be the benefits and consequences, a better environmental assessment should take place before building the project. The Keystone project has the potential to benefit Canadian producers and American consumers; it also has the potential for environmental degradation and contamination if not managed and controlled effectively and responsibly. The effect on the lives of people in areas that the pipeline passes through should be taken into account before the pipeline is built.

Responsibilities in the Costa Concordia Ship Sinking

LEAH KRISTUFEK
1B CHEMICAL

Almost a full century after the Titanic sank off the coast of Newfoundland, a new maritime disaster is causing questions about passenger ship safety. Despite the possible magnitudes of maritime disasters, Cruise ship crews are not adhering to the safety guidelines created in the wake of Titanic's fateful demise, and it has since claimed many lives.

Late in the evening of January 13th, 2012, the cruise ship Costa Concordia hit a reef near the Italian city of Giglio, tearing a 50m long hole in the ship's hull. The fact that the source of the hole was submersed just below the surface is just one of many parallels slowly emerging between the Costa Concordia and RMS Titanic. Some other similarities include the fact that both ships were traveling too fast for their surroundings and that the hull material was inadequate in such frigid waters (the Costa Concordia's hull was not as flexible as in warmer weather, causing it to tear instead of bending). In the wake of the Costa Concordia's misfortune, the public is calling for reforms.

Many questions arise from this disaster: Why was such a large ship so close to shore? Why did the ship leave her normal route to do a "salute" that few would see in the dark of night? How did the deaths occur? Statistically speaking, 32 is not a significant number; only 0.75% of the 4,229 people who were onboard perished, compared to 68% of passengers and crew aboard the Titanic who died. However, loss of life could have been completely avoided if proper procedures were followed. When the collision with the reef first occurred around 9:45 pm, the ship lost power. Rather than notifying the passengers of the potential danger, the captain attempted to guide the wounded ship to shore. Famously, Titanic crew members assured passengers that nothing was wrong. Since it was the first evening of the cruise, passengers unused to life at sea were remained unaware of their true danger. Without dedicated engineers to constantly shovel coal into furnaces, the ship had lost its ability to direct itself as the engines had ceased to function. It wasn't until an hour later when it was dark and the ship was beginning to tilt dangerously to its starboard that the true situation emurged and passengers began to be evacuated.

The greatest faux pas in the ship's final hour was the unfortunate incident when the captain "tripped into a life boat" and abandoned ship before many of the passengers. A captain should go down with their ship, or at the very least, they should be the last one to leave it. In theory, they would be the most knowledgeable about her layout and possible places where people could become trapped. Some news sources claim that Schettino carried a laptop with him off the ship to the cruise company's lawyer, while others assert that it was not just the captain, but strategic members of the crew who abandoned ship early. The coast guard demanded that Schettino return to the ship to assist in evacuating, which he refused. He is currently under house arrest and will likely be charged with manslaughter charges.

As the search for survivors becomes a mission to recover bodies, the environmental repercussions of this disaster are becoming a pressing issue. Giglio is surrounded by the Tuscan Archipelago National Park, one of Europe's biggest marine sanctuaries. The ship lies on a rock shelf near enough to slip over the edge and sink completely in to the sea, but if that were to happen, the fuel which remains onboard could cause a significant problem for the natural ecosystems in that area. Buffeted by waves, rescue efforts have been abandoned several times due to safety fears. The constant waves are also exasperating the pollution problem posed by the wreck. Absorbent booms are being used to contain the fuel while the Dutch salvage company SMIT works to remove the fuel from the ship, a process which could not be carried out effectively if the ship falls to a lower level of the ocean. The recovery efforts, which involve blasting holes in the ships sides to allow divers to search for bodies, are not aiding in the effort to limit pollution in Europe's most beloved marine sanctuary.

Scandals are piling up heavily in the wake of the accident, including the presence of unregistered passengers whose professions include "dancer" and "entertainer." As an engineer looking at this problem, I see how far technology has come and how blindly we choose to rely on it. Regulations only solve problems if they are followed by the people they are put in place to protect. In this case, human error does not even touch the tip of the iceberg as far as gross incompetency and irresponsibility goes. How we are coping with the recovery process, searching uninvasively for survivors and corpses using robots, isolating spilled fuel with absorbent booms and recovering fuel from within the ship itself bodes well for our ability to maintain a clean environment for future generations.

Finally, a reminder to all of you heading out on co-op in a few short months: All rules exist for a reason. Let's set a good example for ourselves and our co-workers. The worst thing I could think of would be finding myself responsible for the death of another person, much less the deaths of 32.

Management Engineers Win at IIE Halifax Conference

AMANDA LEDUC
4B MANAGEMENT

From Wednesday, Jan 18th to Sunday, January 22nd, the UW department of Management Sciences sent their first ever delegation of Management Engineering students to attend and compete at the annual Institute of Industrial Engineers Conference. The management engineers performed exceptionally well. For those not aware, management engineering is essentially a contemporary industrial engineering degree; we learn many of the same theories of optimization. However management engineers are trained more to apply these techniques to services, whereas traditional industrial engineers apply these concepts to manufacturing. A total of 16 UW students attended, including 10 fourth years and 6 third years.

The conference featured 4 competitions and despite having one of the smaller delegations, UW was the only school to compete in every competition. The competitions included Technical Paper, Simulation, Case Study and Theoretical.

The first competition was Technical Paper in which students submit an appropriate technical paper 1 month before the conference, and then make a 15 minute presentation, followed by 3 minutes for questions, during the conference. This is the only competition in which students compete for both cash prizes and the opportunity to represent Canada at the internal IIE conference in Orlando, Fl in May 2012.

The next competition was the Theoretical competition in which teams of 4 students write a 3 hour exam focusing on industrial engineering concepts, particularly mathematical optimization techniques.

The third competition was the Simulation competition. 1 month prior to the conference, teams of 3-4 students create a simulation model with preliminary information for a given process. During the conference, the students are provided with the final information to complete their model and are given 5 hours to finish their model and create a 15 minute presentation. Each team presents their simulation solution before a panel of judges and is questioned on their approach.

The final competition is the Case Study, in which teams of 4 students are presented a real world problem and are given 5 hours to determine a solution and make a presentation of their findings. This year's case study was sponsored by Garrison Brewery so each team toured the brewery and had to identify and propose process improvements. The teams create a 15 minute presentation and are given 5 minutes of questions by the panel of judges, including the client (Garrison Brewery).

Management Engineers showing off their victory

At the awards ceremony, UW's management engineering competitors stole the show:

- Amanda LeDuc, 1st Place Technical Paper. Amanda is going on to represent Canada and compete in the Internal IIE Conference in Orlando, Florida in May 2012
- Chris Smellie, 2nd Place Technical Paper
- Yousif Al-Khder, Pranav Sampat, Helen Liang, Molly Beckel, 2nd Place Theoretical Competition

Furthermore, UW brought home the Golden I trophy which is awarded based on competition performance and participation, conference speaker attendance, team promotional video, and overall spirit. Considering that this was UW's first time competing at an IIE Conference, winning so many awards was a testament to the quality of the management engineering program. It also speaks to the fact Management Engineers are far superior to Industrial Engineers in many ways (just kidding, Industrial Engineers are awesome too).

The students who participated would like to thank the department of Management Sciences for sponsoring in full our trip to the conference. Particularly, we were thrilled to have Prof Duimering attend and support us in all of our competitions, as well as Shelley Vossen (management engineering undergrad coordinator) for helping with the administrative details surrounding the trip.

I2E: Pitch Night Social

MIKE ROLFE
PITCH NIGHT SOCIAL-COORDINATOR

We've all had an idea at some point or another, but how many of us have ever taken it to the next level and actually tried to bring that idea to life? How many of us can truly say we are own boss? A new student-run initiative, Ideas2Entrepreneurship (I2E), Powered by VeloCity, supports students in developing their ideas into businesses and growing the existing culture of entrepreneurship at the University of Waterloo and the Region. On Tuesday, January 24th, a group of six student entrepreneur teams gathered in the Student Design Center of Engineering 5 to take one of the first steps in reaching that reality, by pitching their ideas to an esteemed panel for not only feedback, but also the chance at winning one of three cash prizes of 250 dollars.

With a time limit of five minutes, the six participating teams presented their pitches to the panel and crowd of approximately forty fellow students, local entrepreneurs, and interested E5 inhabitants. They then took part in a question and answer portion of the pitch, where the panelists grilled the students on their business models, marking strategies and more, all in the hopes of discovering what "big problem" the students were trying to solve and what keeps them passionate enough to solve it.

In keeping with I2E's goal of serving a wide range of students from all backgrounds here at UW, the pitches presented to the panel were from students with varied backgrounds, and were solutions to a wide variety of problems currently facing society (with a special focus on students). The projects consisted of (in order of pitch) **TeeGuise Inc**, an online community for t-shirt design and distribution; **Kingpin**, an online service for men that allows you to shop for personal care items online and have them delivered regularly; **Fused Recycled Glass**, which wishes to build low cost countertops from recycled glass; **Student2Future** an interactive online network that connects high school students to college and university students across Canada; **Anti-Theft CD**, a compact disc containing a RFID tag and software that, when inserted into your laptop, protects against thefts in the library; and **Eustache Financial**, a website to allow for students to manage their financial portfolios better.

The panel awarded two awards of 250 dollars, the first going to **Kingpin**, and the other to **Anti-Theft CD**. The audience also awarded a People's Choice to **Anti-Theft CD**. After what was a successful first event, I2E plans to continue to support and grow the culture of entrepreneurship here at UW through a variety of events throughout the term and beyond. Stay tuned for future pitch nights, networking events, workshops, and lots of other fun stuff from them. For more information, email *i2e@uwaterloo.ca* , or follow them on Twitter @uwi2e.

Frosh Fun at First Year Integration Conference

BRANDON O'HANLON
1B NANOTECHNOLOGY

Eleven UW engineering frosh, three days, and six hours sleep added up to a great time at the First Year Integration Conference at McMaster University.

Five first-year students from B-soc and six from A-soc (including myself) attended the event Jan. 20th-23th in Hamilton. The goal of FYIC is to promote leadership, teamwork, and spirit to help students throughout their university experience.

The conference got off to a great start Friday night with improv comedy, engineering mini-challenges and Scunt, encouraging first years to get to know one another. My team won the rope challenge by building the strongest rope (we used only newspaper!), earning us some nice McMaster swag to take home.

A variety of informational seminars followed on Saturday and Sunday, covering topics such as conflict resolution, PEO, engineers and public policy and engineering traditions. It all concluded with Michael Seliske's "What I wish I knew in First Year".

Some of the important ideas and lessons I gained from the conference:

1) If you want something to happen, do something! Write a letter, vote, make your voice heard.

2) Upper years aren't scary; spending a weekend with the VP-Externals helped us realize they are just students like us.

3) We learned the meanings of engineering organization abbreviations such as ESCO, CFES, CEC, and OSPE, and what purpose they serve.

4) There are many engineering traditions, which can positively or negatively represent the image of engineering students. We need to consider the pros and cons of our traditions.

5) University is as much about developing socially as it is about education. A decade from now, are you going to remember that time you got a 98 in calculus, or that time you drank beer and… had a great time?

Sami Rahman from B-Soc had this to say about his experience at FYIC: As amazing and inspiring as it was, the conference wasn't just about the speakers or the presentations. I wish I could have brought all the frosh with me on the bus rides around Hamilton. The forty something fresh faces, all strangers, yet we all cheered, and screamed to our heart's content. We were all representing different universities yet we were united by our discipline's rich and deep rooted traditions. It was a weekend entrenched in learning what engineering in Canada's all about: the camaraderie we share. It opened my eyes and I gained a new found respect and understanding of what our EngSoc does on campus and off. Dear fellow frosh at Waterloo: let's laugh, run, yell, play, and make our mark on the school.

Some of the other highlights of my weekend included writing a parking ticket to a parking ticket officer, winning the jackpot at the arcade, and surviving three days with only six hours of sleep.

Everyone at FYIC had a great time, learning about the engineering society and sharpening their leadership skills. I look forward attending it again in the future as a volunteer or VP-External. I would like to thank Dean Sedra, Michael Seliske, Yasser Al-Khder, and Lisa Belbeck for making it possible for us to go - and while I'm at it, how about a standing ovation for Scott Rankin.

VP-Externals Mike and Lisa with FYIC attendees **Alessia Danelon**

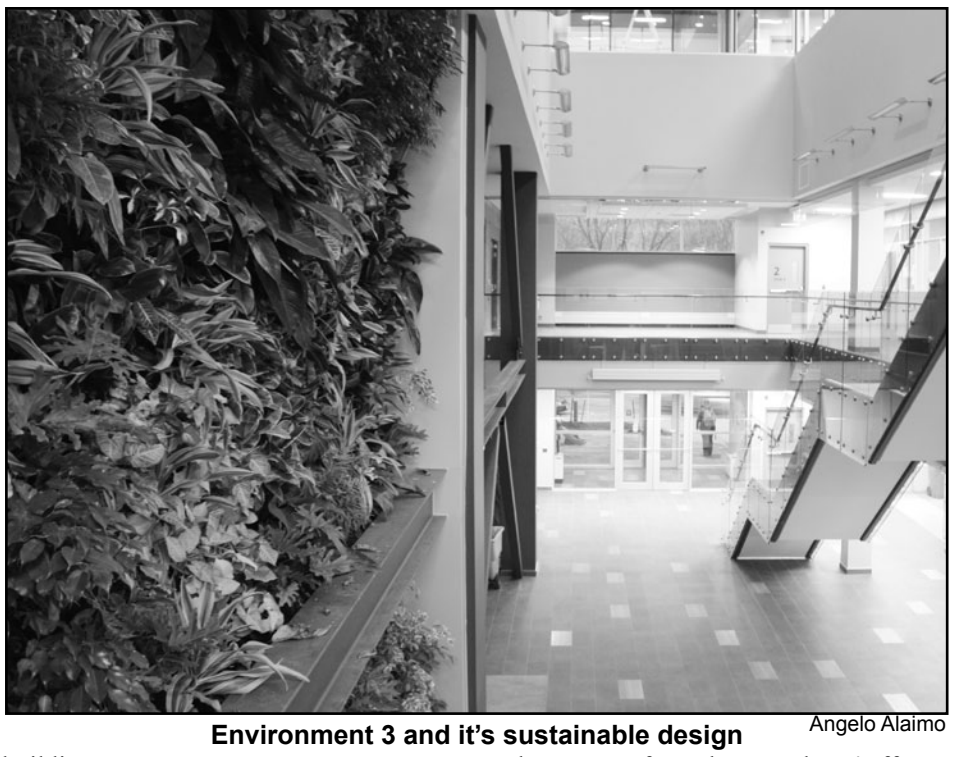
Barriers To Sustainable Building At UW

CONNOR ALLABY
4B ENVIRONMENTAL

It makes a lot of sense to build sustainable buildings: lower environmental impact, lower operating costs, higher occupant satisfaction, healthier work environment, and higher worker productivity. Between the faculty and research students, there is substantial expertise in sustainable buildings at UW. So the question becomes (in true Waterloo fashion) why not? Why aren't we building them?

A 2005 thesis project entitled "Institutional Incentives and Barriers to the Construction of Green Buildings at the University of Waterloo" by Gregory Richardson, a former UW student in environmental studies, sheds some light on the issue. The paper deserves a close read but the main conclusion is that Waterloo has "strong academic prowess in sustainable buildings but weak university leadership for sustainability, no sustainability targets, only minimal collaboration between UW academic experts and Plant Operation employees, and little financial incentives for either faculty or Plant Operations to improve energy efficiency in the design of new buildings and operations of existing buildings." In addition, the key finding was the "lack of communication between the university and students, staff and public regarding new building construction, guidelines and goals."

Strong leadership on sustainable buildings has proven effective at other institutions of higher learning, and was identified by UW faculty to be a key contributor to the construction of sustainable buildings. Environmentalist and professor David Orr organized the design of the Center for Environmental Studies at Oberlin College. His research suggests that having a project champion as well as the support of university leadership is essential for the construction of sustainable buildings.



Angelo Alaimo
Environment 3 and it's sustainable design

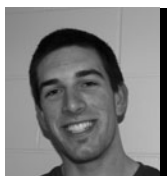
Following from high level leadership, sustainability targets are also important prerequisites to sustainable design. This lack of entrenched sustainability targets at UW has been identified by numerous students, some writing about the need and approach for such policies ("The Path to Institutionalizing Sustainability" by S.Kiang) and others creating the targets themselves ("Greening the University of Waterloo's Building Standards" by K. Gregory et al. and "Green Building Guidelines" by R. Askew et al.). These research papers were all written more than seven years ago, yet nothing seems to have come from these students' efforts. Indeed, the WATgreen initiative, inspired by David Orr, which sought to transfrom UW into a "showcase of environmental responsibility, an ecosystem in harmony with its environment", is no longer active.

Integrated design is an approach to designing buildings that requires collaboration among all actors to ensure a holistic approach is taken. Traditionally, a building is designed by an architect, the plans are handed off to the builders, and the building is then occupied and maintained by people who had no say in how it was built. By bringing together the faculty (i.e. the occupants), Plant Operations (the maintainers), the contractors, and the architect with a goal to maximize sustainability, individual expertise can be combined in an elegant way.

The involvement of all actors in the design of campus buildings should extend to students, another major occupant of campus buildings. Instead, the building process lacks transparency and makes it extremely difficult for interested individuals to get involved. Just the simple act of publishing building-related data would make the process publicly accountable, increase energy performance, and advance student and faculty research. Furthermore, student consultation and collaboration in building design could be sought out early in the design process.

The 2005 research paper quoted above lists four recommendations for catalyzing green building design and construction at UW. 1) Create strong university leadership through a Green Building Task Force, 2) Establish guidelines and targets using UW researchers as information sources, 3) Facilitate collaboration and partnerships, especially between faculty and Plant Operations staff, and 4) Foster increased communication by publishing all building data online. These recommendations may be seven years old but they are still as applicable today as they were then. What are we waiting for?

Sporting Culture



ANDREW MCMAHON
2A ENVIRONMENTAL

When asking students on campus what their thoughts on the differences between the NCAA and the CIS, one may run into responses like "What are those?" and "Can you repeat that?" and those questions represent exactly the kind of things that need to change on Canadian campuses. The NCAA (National Collegiate Athletic Association) and the CIS (Canadian Interuniversity Sport) represent the American and Canadian governing bodies of athletics. Both were founded in the early 1900's, but the NCAA has since left the CIS in the dust. Anyone who has been to a college sporting event in the States or watched one on TV (you'd be lucky to find a Canadian sporting event on a major network) has noticed the substantial crowds that games draw and the enthusiasm the fans have.

The culture surrounding the sport is one of the defining factors to the success and popularity of a team. After making a trip to East Lansing, Michigan a few weekends ago, my eyes were opened to how much people love their university sports in the US. On the way to a basketball game, every second car within ten minutes of the campus had a green Michigan State Spartans "S" on its license plate or on its rear bumper. A community fan base like that is not something that happens overnight; it requires generations of fans to come together at each and every event. Things like Alumni from 40 years ago coming to a game just don't happen that often, but when it does, it is something special.

Certain events in history like the sale of University Stadium (currently the home field of Wilfred Laurier) from UW to the City of Waterloo in 1974 because the University could not afford to renovate it just would not happen if there were more of a fan base and more revenue generated from athletic teams at UW. Our school recently put in Warrior Field, which doesn't even have a track around it. While we now have a home field, there is still a difference between a stadium and a field. Fields are facilities that belong at high schools that seat hundreds, while stadiums are monuments that seat thousands and represent the identity of a school that costs thousands of dollars to attend. Some may argue that a stadium that large would be pointless because it would never fill up, unlike schools in the States who worry about not having enough seats as opposed to having too many.

Modern university applications include sections for extra-curricular activities and hobbies/interests, supposedly in an attempt to ensure that the students they accept will be well rounded individuals. This is important because so much of what happens on campus is organized and run by students; sure it is nice to boast high entrance averages and high academic success rates, but there should be more to your four or five years here than school, school, school.

There are teams on campus that require huge time commitments, yet you will still see fellow engineers proudly representing their school at the highest level of student athletics. Varsity athletes are gleaming examples that through hard work and time management, you can represent your school and succeed as a student at the same time. Performing in front of a crowd always adds to your experience as an athlete, so as a "thank you" to them for the time and effort that they put into their respected sports, go out and show your support for one of our active teams this winter term, which includes men's and women's volleyball, basketball, and ice hockey.

Interview Skills

ALEXANDER HOGEVEEN RUTTER
4B ELECTRICAL

Note: The author is in 4B and has been coaching others on interview and resume skills for years. There is an interview skills workshop tonight (Feb. 1) @ 5:30 in CPH 3607

So you have an Interview…

General Preparation

Google techniques like "PAWS" and "STAR", or use the "5W's" when answering situational type questions. CECS provides a list of commonly asked questions—practice with yourself, friends, family, anyone who will listen. Google yourself to see what first impressions employers might have and make sure you reflect on your strengths, weaknesses, and interests. Remember that you are the one choosing the job, and not always about them choosing you—if you genuinely know what you want, don't be afraid to let your passions shine through. Whenever you learn something insightful or do something impressive, write it down to keep a log of anecdotes about yourself. Think of stories that you are proud of, or demonstrate particular skills that can be applied to the job in question.

Before the Interview

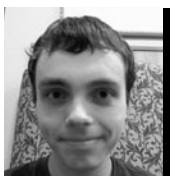
Congratulations! It's okay to be a little excited, but make sure you channel that excitement into preparation. Before you even go to the interview, you should do a little research on the company, the job and yourself. Yes yourself—think about how your skills and experience match up with the job. While you should leave yourself room to be spontaneous and flexible, you should have prepared answers to some questions like "why do you want this job" and "what makes you the most qualified candidate for this job", as well as some (non-obvious) questions about the company and the position. Dress to impress and when in doubt, over- rather than under-dress. Be punctual and start with a firm handshake.

Speaking Tips

The most important rule of speaking is to use pauses. Taking a few seconds to reflect and answer confidently is a sign of strength, not weakness. Stumbling, "umming" and "awwing" just looks unprofessional. Don't be afraid to ask questions if you don't fully understand the question. In the real world, people who are assertive and inquisitive get ahead and interviews are no exception. Try to keep eye contact, and flip between multiple interviewers where applicable. Keep your tone professional, but don't be afraid to have "real" conversations—they are looking for a colleague, not a robot. If they are looking for a robot-do you really want to work there? Don't freak out about little mistakes, but stay on message.

Try to "road-map" (introduce what you are going to talk about) and summarize (eg. "and that is how I demonstrated…") for every question. It's nice if you can analyze the "point" of the question, but you can rarely go wrong assuming there are no tricks and simply answering as cleanly and as straightforward as possible. If you are making an assumption about the question, state it clearly. Drawing on personal experiences, like clubs and pet projects can actually be more relevant in an interview than academic credentials (remember that everyone in your class has the same academic history). If there is something you really wanted to share that didn't come up, use the time at the end to share it. Finally, practice, practice, practice. Like any other skills, good interviewing skills take time to develop.

T Cubed: Solar Cells and Tablet PC Virtualization



JACOB TERRY
2T NANOTECHNOLOGY

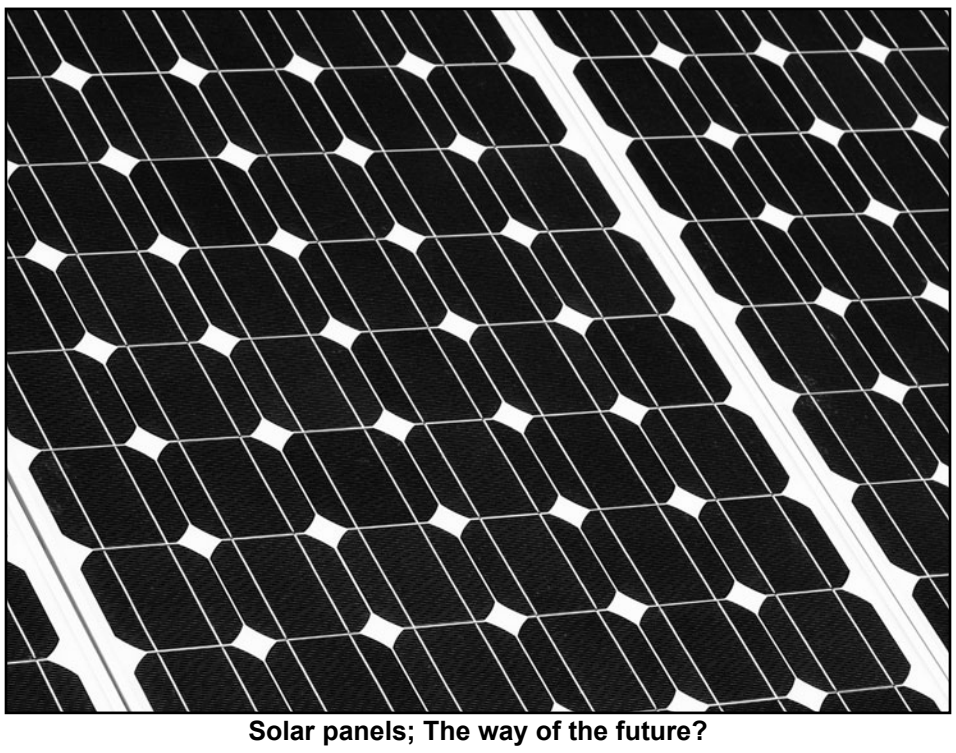
Higher resolution, more power, better software and more features are all selling points we hear about when smartphone and tablet manufacturers are selling us their new shiny devices. We hear a lot about how phones can last a whole day or sometimes up to a couple days, but we don't hear a lot about these devices lasting longer. A week is almost unheard of when it comes to the life of smartphones and tablets, but wouldn't it be incredible if you didn't have to charge them at all?

Arokia Nathan and his team at the University of Cambridge have been working with the goal of resolving the need to charge devices more often. Arman Ahnood, who is a researcher on the team, told scientists at the Materials Research Society meeting last fall that they may have begun to find a way to prolong the battery life of smartphones using solar cells.

The team created a prototype that turns ambient light into electricity, using solar cells made of thin, hydrogenated amorphous silicon that sits in the screen of the phone. In most OLED displays, the end user only sees about 36 percent of the light generated, with the rest of it escaping from the edges of the OLED. By placing thin, photovoltaic cells on around the edges of the display, this energy can be captured and used to power the device.

Using this energy to charge the device could be an issue, since the solar cell would be feeding varying levels of energy to the battery, which could ultimately damage the battery. The researchers found a way to get around this by using a thin-film transistor circuit to dampen voltage spikes. The solar cells also don't directly charge the battery, but instead feed to a thin-film supercapacitor for intermediate storage.

Currently, the system has an efficiency of 11 percent on average, so for a smartphone with a 3.7-inch screen, it generates about 5 milliwatts. While that's only a fraction of the power smartphones use, the team's next goal is to find other designs and materials that can push efficiency up to 90%, which could allow the phone to last a few hours longer. In time, they hope to be able to create phones that don't need to be charged. In my view, this could be used in tablets as well, which usually have 7-inch or 10-inch displays.



Solar panels; The way of the future?

Tablets are an excellent segue into my vaguely-related but still technical second topic for this issue, which was announced a couple weeks ago. OnLive, a cloud service company currently offering streaming video games to the masses, wants to try expanding to virtualized Windows desktops on tablets with OnLive Desktop. While the service has been released in the United States, it is not yet in Canada, and I also don't have an iPad, so I've gathered impressions from Americans who have been able to use the service so far.

OnLive Desktop comes in two tiers: free and $10/month. The free version, which is the only one available at the time of this article's release, allows you to remotely operate Windows 7 with 2 GB of storage and access to Word, PowerPoint and Excel. The paid version gives users 50 GB of storage and allows installation of extra applications.

Since the version of Windows 7 used is Windows 7 Touch, which is specifically designed for touchscreen devices, it comes included with Microsoft Surface applications and games in addition to the aforementioned Microsoft Office package. One of the primary applications not included, which was a major gripe for some users, was a web browser. While there's always the option to go back to the iPad home menu and launch Safari, then go back to OnLive Desktop when you're done, it takes you out of the virtual desktop experience and will be unsatisfactory for some users of the service. Even without the web browser, users can still transfer files to the virtual desktop through OnLive's website, which places the files onto the virtual machine.

Another major issue users had was the streaming quality. One reviewer claimed that it was not necessarily the Internet connection that determined the video quality but how much data you were sending at one time. One-way tasks, such as watching videos and viewing documents, had high quality levels since data is not being sent both ways. When a user is typing however, or heavily interacting, the quality streamed back to the iPad was substandard. The Windows on-screen keyboard (not the one that iPad users usually use, but the one you use in OnLive) was generally disliked and many reviewers suggested using a Bluetooth keyboard instead to interact with the application.

Even with these issues, many people found that the service showed promise and was able to do some things quite well. While the streaming quality wasn't ideal, this is still the only major application doing anything like this, and the service's potential could be even greater. With support coming to Android tablets, Windows, OS X and even smartphones in the future, it's not unrealistic to see a service like this being the only way many people interact with traditional desktop operating systems in the future. If you have a decent Internet connection, why buy a laptop if your tablet can run the few desktop-class applications you need?

Defying Gravity: Alone Together on a Trip to Mars

GRIFF FERGUSON
4B CIVIL
MIKAYLA MICOMONACO
4B ELECTRICAL

Personally, we couldn't do it.

We see two different issues: the inability to get away from the other crewmembers, and loneliness. There are different schools of thought on this matter. Some researchers think that introverts would be better at handling loneliness, since they're less dependent on social interaction to sustain them in their day-to-day lives. However, we find it hard to believe that introverted people would be able to deal with prolonged interaction with other crewmembers better than extroverted people. One of the challenges would be to build a team that could live together in close quarters for two years without conflict or tension. After the team has been assembled, the challenge is then to prevent and mitigate the impact of conflict between group members.

There are also thoughts of testing a group together before sending them off. The purpose of the tests are to get a good idea of what group interaction will be like aboard the ship. So, the question is how do you build an experiment to test the astronauts? There is always the potential that the tests might make the strain even worse, since it prolongs the time they have to be together, but such tests are also necessary. The controllers of the experiment will probably not send people into space if they could not work together, so that is less of a concern. The next natural question is, 'what if the tests go well, but a problem crops up when they're already on their way that didn't show up in testing?' This would indicate that the test is imperfect, but it's the best we have currently. This raises some questions about the participation of people back on Earth - will psychologists be needed and how would they intervene if necessary? Like you have engineers to diagnose and fix mechanical and computer problems, future crews will probably have a psychologist to address the human problems on a space ship.

The idea of privacy will be intrinsic to the design of crew quarters. Having personal time to reflect on Earth is important to learning and personal growth. Therefore, maintaining that space for personal activities will be essential to the mental health of the crew. Having your own cabin might give you some privacy, but maintaining a spacecraft and a functioning command structure requires that everyone fulfills their duties. There would be no vacation, no respite from daily life aboard your craft. You would have to be present and working most days, save for regularly scheduled personal time, if any, or emergencies that prevent you from doing your part. It's not all bad though. You would be constantly provided with a vantage point that few before you would have. Not only that, but anyone who has been on a good sports team or lived with a good group of friends knows the benefits of having close bonds with your crew mates. This turns living with people from a difficult challenge into an exciting opportunity to bond with others.

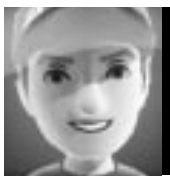
In the last decade, real-scale tests have been conducted on people in simulated space habitats. Three experiments have shown that living with people in simulated space conditions is complicated and has a large number of variables that need to be understood and controlled before embarking on a journey. Particularly, one early experiment revealed that human sexuality can cause tension between crew members and result in deviation from the mission objectives. For instance, a Canadian astronaut was harassed by a crew mate during a simulation, which culminated in a fist fight between two Russian cosmonauts and resulted in ending the experiment early.

The latest in a series of Russian experiments included a 520-day stint aboard a mock-up capsule. This experiment simulated the journey to Mars, exploring the surface, and returning the crew back to Earth. The experimental crew was comprised was a multi-national all-male crew that were part of the experiment and conducted over 100 experiments themselves. The crew was made all male to prevent sexual tension from affecting the mission scope or outcome. However, this does not necessarily prevent sexual tension from occurring on the mission. Who is to say that only heterosexual males or females should be allowed to go into space? These questions raise ethical concerns since it would be unethical to screen people based on sex or sexual orientation. But if an advance is made by anyone between crew members, who is to say how that will be received - will it be reciprocated or rejected, and how will the crew manage the fallout from that rejection? It was thought that sending married couples into space will result in a more stable crew social dynamic. Why? Having married couples will reduce sexual tension, which removes a wild variable from the equation. However, what happens if two people are dating or married during the mission and their relationship goes sour? This would present a very serious threat to the viability of the mission, given the volatile emotions that surround those events. It's unfortunate that the first experiment did so poorly, but this should not deter women from becoming a part of the astronaut program, especially with respect to the Mars mission. Perhaps lessons learned in both experiments can prevent similar situations from arising in the future. This also opens up opportunities to learn how the sexes will interact in confined environments, removed of all familiarity from what we know on Earth.

Instead of immediately coming to the conclusion that the crew needs to be made up of all one sex and sexual orientation in order to prevent these kinds of conflicts, more research and experimentation should be conducted. This would help design the social aspect of future crews not only in space, but on Earth as well. Think of situations here on Earth in which this research would be beneficial. For instance, on ocean-going civilian or military ships that do not see port for weeks or months at a time. They would essentially have to live under the same conditions as astronauts would on extended space journeys. Discipline is a part of it - being able to separate work from play will be essential - but knowledge and awareness of the social aspects will help future astronauts handle important social issues among their crew.

Future of Gaming

One Disc, Every Gaming Platform: The Way of the Future?



JON MARTIN
OBI JON1138

The hardware and software front has been pretty quiet for gaming recently, which is to be expected in the winter lull between the big-name holiday releases and the summer blockbuster games. For this reason, this article will be focused on a topic that has interested me for a while: the potential for intercompatibility between gaming platforms, both consoles and computers.

I have written before about the reason why I personally switched to gaming predominately on a console instead of a PC. The main reason was the seemingly never-ending need to continually upgrade computer components to be able to play the latest games, as well as the associated costs. A console offers a gamer the guarantee that any game released for that system will run on that system. While this is a great benefit, it also limits the games made for the system over its lifespan. In the early years of the system, the games increase in quality rapidly as developers learn how to program for the system and take advantage of the technology provided. Unfortunately, as time passes and the system gets older, the games eventually reach a plateau where the console has reached its software and hardware limits. At this point, the ever increasing capabilities of PC gaming really begins to look appealing, as developers can continually make use of the newest graphics engines, designing for the best processors and fastest systems.

Now this presents a dilemma for a PC and console gamer every time a new game is released: Should you buy the game for PC or for the console? From a pure performance standpoint, the clear choice is PC (unless a game is a platform exclusive, in which case there really is no question at all), but there are cases where it may not be as simple as that. When a game is under development, it is normally created for a specific system, then ported to others. While this works fine for systems like the Xbox 360, which uses a processor architecture extremely similar to PCs, it results in difficulties when developing or porting games for the PS3 and Wii, both of which have very different programming requirements. When this transfer happens between systems, you may end up with drastic changes in control - Gamepad vs. Wiimote vs. keyboard and moutse. There can also be limitations based on graphics capabilities. A game developed for the PC can easily be capped at a certain graphics level to run on the Xbox 360 or PS3, but the Wii has very different graphics capabilities than the Xbox, Playstation, or PC, so what do you do there? Often, a Wii-specific version of a game is created just because the control scheme and processing/graphics capabilities are so different.

Besides all this technical stuff, there is the issue of online gaming and the ability to interact with other gamers. Some games have bridged the gap between systems online, allowing people to compete against whoever they want no matter what platform they are playing on. But most games do not do this - if you are playing a game on Xbox Live, you are not going to be going up against a player on the Playstation Network.

The big thing that I want to see in the future is a way to solve all of these issues: complete interconnectivity between platforms. What if you could play a co-op section of a game on your console (and it didn't matter which console you had, or even if you had multiple consoles), then switch to your computer or tablet to continue solo in the same game and continue from the exact same point?

There are already some technologies out there that are stepping in the right direction, specifically OnLive and the Xbox's new cloud storage capability. While OnLive doesn't seem to put much attention into offering their services within Canada, they do have a very promising technology. I have talked about OnLive before, but basically it works by running a game off of company servers then connecting you via the Internet. This tech allows you to play an extremely advanced game on a computer that wouldn't be able to play it normally because the game is running off the company servers, not your system; you will need a good Internet connection though. OnLive technology is available through a "console system" which just looks like a little USB hub, and is now being built directly into some "smart" TVs. Recently, OnLive released a mobile app for smartphones and tablets which allows you to play PC level games on these systems, again with the games running off the company servers, not your device. The great thing about this system is that your game progress is stored in the cloud as well, so when you switch devices, you can just continue to play from the same point.

Microsoft has also taken steps towards interconnectivity with the release of Xbox 360 cloud storage. Now your Xbox Live profile can be stored in the cloud and quickly accessed from a friend's console and you can use the storage space to save your games. This means you can go to any other Xbox 360, put in the game disc, log into your account, and continue playing from right where you left off.

Another interesting new feature, but may just be a rumour, is the upcoming ability of Windows 8 to be able to play Xbox 360 games. For a yearly fee (hopefully included in a Xbox Live Gold membership), you will theoretically be able to put an Xbox 360 disc into your DVD drive and play it on your PC. This could solve the dilemma of whether to buy a game for an Xbox or a PC, assuming that games will be developed to run at the higher graphics performance capabilities of gaming PCs.

So that is it for this week. Who knows what the future will bring? Hopefully it is greater compatibility and freedom to move between platforms without buying four different copies of the game. In the meantime, Keep On Gaming.

Behind The Aperture

All about the Image Sensor: From Photons to bits to photograph

ANGELO ALAIMO
4B ELECTRICAL
MICHAEL SELISKE
3B COMPUTER

In the last issue of *The Iron Warrior*, we talked about how the human visual system works and how industry attempts to mimic the eye in order to produce digital images. In this week's article, we talk about one main component in creating a digital image - the image sensor.

In analog times, light sensitive films were used as the transfer medium from the physical world to a 2-dimensional continuous representation. This meant that the majority of photographic film development was performed by chemists rather than engineers. Due to the electronic and materials nature of modern "film," engineers have taken over its research and development. Today, millions of individual light sensitive pixels are used to convert light to an electrical signal which digitizes them as a matrix of intensity values. These intensity values are then converted to the final colour image through an "Image Signal Processor," otherwise known as an ISP.

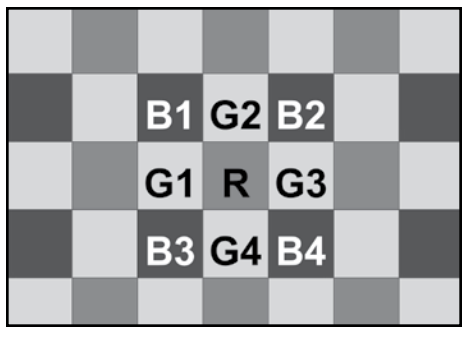
Complimentary Metal-Oxide-Semiconductor (CMOS) sensors are the most common sensors today for consumer digital still cameras and mobile phones. CMOS sensors are typically built on a silicon substrate where, through a series of thin film processes, millions of sub-micron (smaller than one micrometre) electrical components are built to create the actual sensor. The major components built upon the silicon substrate are the array of pixels and the readout circuitry.

The array of pixels filters light into 3 different colours - red, green and blue. For the most common CMOS image sensors, not all pixels receive all three colours that comprise light. Instead, a sensor's pixel distribution is broken up into the following colour quantities - 25% red, 50% green, and 25% blue. If you remember from last issue's imaging article, this corresponds closely to the number and sensitivity of long, medium, and short cones in the human visual system.

When light falls on the sensor, it is passes through a colour filter in front of a pixel, only allowing one colour of light through. This light is absorbed in the photodiode of a pixel which creates an electrical signal proportional to the light's intensity. The sensor will read the generated electrical signal from each pixel in a per-column or per-row basis. At this point, the sensor has what we call "raw" data or a "raw" image. If one was to view this image, it would more or less look like a dull black and white image likely containing many defects which will be fixed in the Image Processing Pipeline within a ISP.

Many image processing operations happen within this ISP which will be discussed in next's issue imaging column. One of the most important operations within this ISP is converting the "black and white" raw image to a colour image. Using which colours were filtered at each pixel, interpolation algorithms (also known as demosaicing) can be used to create a full colour image. Mathematically, through these interpolation algorithms, we are converting a grayscale M-by-N matrix of intensity values to a M-by-N-by-3 colour image matrix where the 3 represents the individual colour channels of red, green, and blue.

The most basic interpolation algorithm which we will discuss is called "bilinear interpolation." This algorithm looks at each intensity value of the colours surrounding another pixel and averages them to approximate the other colours that should be at that pixel. Consider the sample colour pattern array image shown with this article. The red pixel R is neighboured by 4 blue and 4 green pixels. Using the average intensity values of these pixels, the colours of green and blue can be interpolated. For example, the red value at pixel R is set to the intensity value found at that pixel. The green value at pixel R will be ((G1+G2+G3+G4)/4), and the blue value found at pixel R will be ((B1+B2+B3+B4)/4). Continuing a similar algorithm for all pixels will generate a colour image. Note that this interpolation method is very basic and does not produce great results, so more sophisticated and proprietary methods are used in most pipelines. Since there are roughly double the amount of green pixels available to the demosaicing algorithm, these are often used as the information for the luminance (brightness) of the image.



Typical bayer pattern colour filter arrangement of an image sensor

Image sensors also come in a variety of physical sizes depending on the requirements for the system for which it will be included. Larger consumer cameras can use a larger sensor due to the amount of space available, but smaller devices like cellular phones require much smaller sensors. The size of the sensor has various effects on the quality and cost of the final product. The size of a sensor and its pixel quantity will determine the surface area of each individual pixel. Pixels with a larger surface area can collect more light than smaller pixels. Think about it like buckets in the rain - if one was to put 10 buckets into a square, they would each collect a certain amount of water. However, if the number of buckets are increased, the radius of each bucket will need to be decreased in order to fit the increased number of buckets and in turn, each bucket will collect less water. The same is true for pixels on an image sensor - the more megapixels a sensor has, the smaller the size of each of its pixels. Reducing the size of each pixel will lower the amount of light each pixel can collect. With less light that a pixel can collect, the more the resulting signal needs to be amplified, which causes increased noise in the resulting image.

Pixel design can also play a large role in the resulting quality of an image. The "quantum efficiency" (QE) of a pixel is ratio between how many photons enter a pixel and how many of those photons generate an electron-hole pair within the sensor. Obviously, a higher QE is preferred to maximize one's image quality - especially in low light. Over time, QE has been improving steadily through optimizations in manufacturing processes, material science and overall design of the pixels, causing small, high resolution sensors to improve in quality while maintaining the same physical pixel size. One of those major improvements is a "Back Illuminated Sensor" (BSI). See Angelo's article regarding BSI image sensors in the November 16, 2011 issue of *The Iron Warrior* to learn more about these kinds of sensors.

Although this article has presented much information, it is only a small piece of the puzzle which comprises an imaging system. In the next issue of *The Iron Warrior*, we will discuss the Image Signal Processor pipeline and the important role it plays on bringing all of the different components together to produce great images.

New Upgrades to POETS

LEAH ALLEN
PRESIDENT

Colour Me Educated - Last week was the official kick-off for the Colour Me Educated campaign. The campaign supports the Kitchener branch of Pathways to Education, and raises money and awareness for education efforts in Kitchener. I, as well as 6 other representatives from the other faculties on campus, was involved in the event, getting thrown into a dumpster and trying to raise enough money to get out. The event ended with over $1000 raised, with Engineering raising $130 of that. The campaign will be in full swing until April, so look out for events across campus! If you want to donate now, just head to the CnD or the Engineering Society office and there are paint can donation bins located there.

FedS Campaign - The FedS election campaign has officially started. As an engineer, you are going to want to get informed on the FedS Executive campaign platforms as well as the Engineering Counsellor campaign platforms if you will be voting in the election. In an effort to help you meet the candidates, EngSoc is planning a meet and greet event with all the FedS Executive and Engineering Counsellor candidates. This event will be on February 8th from 11:30 am - 1:30 pm in the CPH foyer (outside POETS).

Upgrades to POETS - POETS is going to be getting some new features in the next couple of weeks/months. First off, the blinds will be re-installed in POETS so that we can actually see the TV when it is a nice, sunshiny day outside. Second, there will be new tables and chairs for the upstairs (where you can overlook the inside of POETS). For both of these, we are in the process of determining which styles/companies we will order from, but expect to see some new shiny things in POETS in a couple of months.

If you have any questions/comments for me, please contact me at *president.a@engsoc.uwaterloo.ca*. As always, check out my blog at *http://engsoc.uwaterloo.ca/blog/presa.*

CFES: Our Week in the Yukon

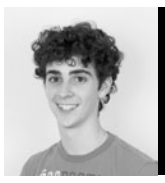
MATT MITCHELL
2N MECHATRONICS

In early January, while everyone was starting class, I had the opportunity to travel to Whitehorse, Yukon to take part in the Canadian Federation of Engineering Students Trainer Certification Course running in parallel with CFES Congress. 2012 Congress was the first year CFES has offered this course which can be simply described as training for trainers. The course originated from the idea that students would be more receptive to training given by other students, who are of a similar age and have similar experiences. To prepare students to be able to deliver effective training, the course covered topics from training design models and learning methods to presentation and facilitation skills.

The training got off to a rocky start with most of the participants expecting leadership training and getting the bare bones of how to design a training sessions. This left many of us lacking the confidence to actually carry out a session on topics we had little to no knowledge on. After a mid-week feedback session, the course trainers spent their night revising some of the sessions to focus more on the building our facilitation skills. We learnt methods to provoke and manage discussions, as well as how to control our body language to engage our audience. Time was given to exercise each of these skills individually before our full length practice sessions. Then our big test was presenting to other delegates attending congress. As it was my first time training more than two people and anyone outside of the training course, it was nerve-racking. Our sessions ran with some success and plenty of constructive feedback to note for future sessions.

Overall, the CFES Trainer Certification Course may not have been what all the delegates expected but offered benefit in the end. After taking this course, I feel more comfortable presenting and have greatly improved my communication skills. The course has taught me to understand how to develop a training course that assists all types of learners and engages the audience. All that is needed now is a little more practice, and the VP External and I are currently investigating ways to use these teachings to better the Engineering Society.

Eng Gear and Budget



DAVID BIRNBAUM
VP FINANCE

Hey everyone,

So, since the last issue of *The Iron Warrior*, quite a bit has happened! There have been a lot of great events so far this term including the amazing ski trip, hot yoga, Enginuity and cardboard bobsledding. Last week was also a brand new event, All-You-Can-Eat Week, which went surprisingly well. This past weekend was Scavenger Hunt, which was also a good time. TalEng was great, so if you missed it, come out next time!

Stay tuned for a bunch of great events coming up in the next two weeks. Genius Bowl is on Thursday, Feb. 2nd, there is another awesome ski trip on Saturday, Feb. 4th, and next week has more Enginuity and the Year Spirit Showdown. Check out the calendar for all of the upcoming events.

On the Novelties front, our first Fire Sale went very well, and we sold a lot of our old stock. If you weren't able to make it out, be sure to come to one of the ones that will be in the near future. We will have some great new items coming out as well. Also, last Wednesday was COVERALL DAY!!! It went superbly well, as we sold THIRTY FIVE pairs of coveralls and over ONE HUNDRED patches. I hope you came out to buy your covies, but if not, be sure to stay tuned for the next coverall day in the Fall. Will the prices be even cheaper? Only time will tell.

Last, but obviously not least, is the budget. Last Wednesday, the budget got passed at Council Meeting #2. It can be found somewhere in this EngSoc Report. If you have any questions, just send me an email and I will be glad to clarify. Also at the meeting, a motion was passed to form a committee to allocate each term's sponsorship - more information will be available on that on my blog soon.

I would like to end by apologizing to the IW editors, and all of you, for how badly this article was written. Hopefully the next will be better. For more poorly written information, check out my blog at *http://engsoc.uwaterloo.ca/blog/vpfina*. And if you have any questions, shoot me an email at *vpfinance.a@engsoc.uwaterloo.ca*.

Directorship	Budgeted
Estimated Income	
Photocopies	$1,000.00
Student Fees	$46,572.09
Total Income	**$47,572.09**
Fixed Costs	
Bank Charges, Payroll, Utilities, Office	$17,000.00
Total Fixed Costs	**$17,000.00**
Expenses	
Exec	$1,000.00
President	$1,000.00
VP Finance	$500.00
VP Education	$500.00
VP External	$500.00
VP Internal	$500.00
Total Expenses	**$4,000.00**
Directorships	
Prez	
Historian	$50.00
Speaker	$2,343.00
Prez Subtotal	**$2,393.00**
Education	
Academic Rep Advisor	$200.00
Education Subtotal	**$200.00**
External	
Bus Push	$1,868.05
Charities	$200.00
National Engineering Month	$809.00
Outreach Commissioner	$73.00
UAE Outreach	$300.00
WIE	$630.00
External Subtotal	**$3,880.05**
Operations	
Advertising	$20.00
Class Rep Director	$30.00
Interfaculty Rep	$50.00
Mental Health Awareness	$150.00
POETS Managers	$900.00
Resume Critiques	$255.00
Scholarship Bank / Awareness	$235.00
Student Workshops	$650.94
Operations Subtotal	**$2,290.94**
Finance	
Archineering	$300.00
All You Can Eat Week	$200.00
Arts	$143.00
Athletics	$235.00
Curling	$488.00
Eng Play	$933.00
Enginuity	$425.00
Frosh Mentoring	$120.00
Frost Week / Snowlympics	$148.16
Genius Bowl	$290.00
Hackathon	$126.00
Hot Yoga	$160.00
Jazz Band	$1,230.00
Music	$660.00
P**5	$1,350.00
Pi Week	$234.00
Ring Road Grand Prix Classic	$0.00
Scunt	$574.00
Semi Formal	$510.00
Ski Trip	$993.50
TalEng	$454.00
Treasure Hunt	$154.50
TSN	$0.00
Year Spirit 2012	$350.01
Year Spirit 2013	$350.00
Year Spirit 2014	$225.01
Year Spirit 2015	$350.01
Year Spirit 2016	$350.01
Finance Subtotal	**$11,353.20**
Directorships Total	**$20,117.19**
Donations	$6,500.00
Eng Capital Improvements Fund	$2,378.60
Net	**-$2,423.70**

Inspirational Story!

DEREK THOMPSON
VP EDUCATION

Good Morning Waterloo! Your friendly neighborhood VP-Education, reporting in again, this time with MOAR NEWS FROM THE CO-OP FRONT! This article will also feel somewhat disjointed, so I will do my best to keep it flowing.

Now, for all students who do not yet have any jobs or interviews, follow the number one rule in the Hitchhiker's Guide to the Galaxy: DON'T PANIC! I don't have any interviews or jobs as of the writing of this either, so it's all good. In fact, I am going to tell a story about a first year student (who will remain nameless, but I promise I have his permission to print this).

There once was a first year student who had some excellent work and school background. He got his resume critiqued by student and graduate alike. He ignored video games and distractions. He even missed out on a day of Diablo 2 (a classic game by Blizzard®). He applied to jobs that looked awesome, jobs that looked interesting, and even jobs that were just labeled as "Junior." He applied to 103 jobs that term. In the end, after some awesome interviews in the continuous round, he got a job at a well known international consulting firm.

TL/DR? Keep [Job]mining your hardest; it will likely work out.

More on Jobmine! As students on-term, a large number of you are likely using Jobmine (and likely are still checking for interviews every 10 minutes or so). Now, many of those using Jobmine may have noticed something completely new, completely out of this world; Jobmine DID NOT crash this year on the final day of first postings, as it has in many previous semesters. Rejoice! This is due to an update to the backend of Jobmine, rolled out by CECS.

Now some questions for the readers. You are likely fully ingrained with the co-op experience. What do you wish you knew prior to starting your trek through the rough waters of job placements? What would you like to impart upon incoming students? How does the co-op process enrich your education? Send your replies to *vpeducation.a@engsoc.uwaterloo.ca* with "IW Answers" in the subject line!

Cardboard Toboggan Races of Winter 2012 Nicole Jiang

Externals

MICHAEL SELISKE
LISA BELBECK
VP EXTERNALS

This term is flying by and there are lots of awesome things going on. I wanted to cover some main ones that require a little bit of help from all of you.

Canstruction – Canstruction is a charity event for the Waterloo Region food bank that solicits companies and groups to put together a creative and awesome structure made entirely out of cans of food. The event this year is taking place on March 10*th*, but we need people to plan and design our structure starting soon. Send me an email if you are interested in getting involved.

National Engineering Month – Three events are happening for NEM: a Rube Goldberg machine creation, a K'nex building event at THEMUSEUM in Kitchener and a movie night in POETS. We are currently looking for volunteers for both the Rube Goldberg and the K'nex event, so send me an email at *vpexternal.a@engsoc.uwaterloo.ca* or head on over to my blog at http://engsoc.uwaterloo.ca/blog/vpexa to find more detailed information.

Student Ambassador Program – The Student Ambassador Program has launched and is now recruiting volunteers. Amanda LeDuc, our outreach commissioner, has been working with the faculty to establish this program which will allow prospective students to browse the profiles of engineering student volunteers and to contact them for any questions or advice.

FYIC – On January 20-22 I accompanied 6 first-year students from A-Soc to the First Year Integration Conference (FYIC) hosted in Hamilton. The purpose of this conference is to introduce future leaders to the external aspect of their profession as well as teach them personal leadership skills that they will hopefully be able to use and pass on to others in their future positions as leaders in our school. I am very proud of my delegates and look forward to seeing their leadership roles grow over time. If you want to learn more about what happened at the conference, check out page 4 for their article.

For any additional updates, keep an eye on my blog as I already have a few posts waiting to be posted, including a guest blog from our UAE campus contact.

WEEF WEEF

BROCK KOPP
WEEF DIRECTOR

Well it's already a third of the way through the term and everything is moving along quickly! First order of business is refunds. The refund period has now closed, but to anyone reading this who got their refund: Please send me an email and just let me know why. WEEF does so much for the university but it is no where near perfect, so we need your help to let us know what we can fix!

PROPOSALS ARE OPEN! That's right, it's that time of the term again. Proposals are how you can get funding for projects that affect you. Anyone in the world can submit a proposal to WEEF! ...but there are a few conditions. First, the project must be for the benefit of UW undergraduate engineers. There also must be someone available to present the proposal to funding council the week of February 27th. Those aren't all the rules, but if you are interested, check out our website under "funding" for more details.

Finally, there will be some by-law changes affecting how student groups must request funding, as well as tightening up rules that have been a little lax lately. Concerned? Don't be. But seriously, come out to the Annual General Meeting to find out more and give your feedback.

You can get a hold of me any time at *weef@uwaterloo.ca*, or by checking out *weef.uwaterloo.ca* for more details.

VP - Internal

ANGELA STEWART
VP OPERATIONS

Update from PMCRC:

At Joint Council Spring 2011, the Policy Manual and Constitution Review Committee (PMCRC) was established, consisting of the VPs-Internal of A-Society and B-Society and four student members. This committee is responsible for the on-going review of the Society documents and for presenting these documents to Council.

Changes proposed by the PMCRC:

- Aim to improve formatting, grammar, or flow
- Remove contradictions
- Clarify to reflect current practices

The PMCRC has completed the review of the Society documents. We collected feedback from the A-Soc and B-Soc Executives, and have incorporated these changes. Now we need your input!

All of the documents are available on the EngSoc website, and are linked in my newest blog post at *http://engsoc.uwaterloo.ca/blog/vpopa*. Review the documents and send your feedback to B-Soc VP-Internal, Andrew Fisher (*vpinternal.n@engsoc.uwaterloo.ca*), or myself at *vpoperations.a@engosc.uwaterloo.ca* before February 6*th*, 2012. Don't hesitate to contact us if you have questions or require clarification on any topic.

Sushi workshop: Feb. 1*st*, 5:30-7:00 pm in POETS

Get ready for the third EngSoc sushi workshop! All supplies are provided, and there are plenty of vegetarian and vegan options. No previous experience is necessary. Come out, learn a new skill, and have a great meal.

Interview workshop: Feb. 1*st*, 5:30-8:00 pm

Sign up on the front page of the EngSoc website. There will be three 45-minute sessions where you will learn the basics of interviews and practice these skills with an experienced peer leader from your department.

Engineering Society Events
January 29 - February 11

Sun - Jan 29	Mon - Jan 30	Tues - Jan 31	Wed - Feb 1	Thurs - Feb 2	Fri - Feb 3	Sat - Feb 4
	• Enginuity - CPH Foyer - *11:30 a.m. - 1:30 p.m.* • Running Club - CPH Foyer - *5:00 P.M.* • Iron Warrior Meeting - E2-2349A - *5:30 P.M.*	• Taleng - Huether Hotel - *7 P.M.*	• Interview Skills Workshop - CPH 3607 - *5:00 p.m.* • Cooking Workshop - Sushi! - POETS (CPH 1337) - *5:30 P.M.*	• Running Club - CPH Foyer - *5:00 P.M.* • Genius Bowl - EIT 1015 - *7 PM*		• Ski Trip - Tickets in Orifice - *7:30 A.M.* • Rube Goldberg Building Event - E5 SDC - *8:00 AM*
Sun - Feb 5	**Mon - Feb 6**	**Tues - Feb 7**	**Wed - Feb 8**	**Thurs - Feb 9**	**Fri - Feb 10**	**Sat - Feb 11**
• Rube Goldberg Building Event - E5 SDC - *8:00 AM* • Hot Yoga - Moksha Yoga - *3 PM*	• Art Contest #3 opens - Pickup in Orifice, CPH 1327. • Enginuity - CPH Foyer - *11:30 a.m. - 1:30 p.m.* • Running Club - CPH Foyer - *5:00 P.M.*	• Novelties Fire Sale - CPH Foyer - *11:30 AM* • Year Spirit Showdown - *7 PM*	• FedS Election Meet and Greet - CPH Foyer - 11:30 AM • Engineering Society Meeting - CPH 3607 - 5:30 - 7:00 p.m.	• Running Club - CPH Foyer - *5:00 P.M.*	• 1 DAY 'TIL IRS! - Everywhere - *All Day*	

To see an electronic listing, visit **http://engsoc.uwaterloo.ca/events**
To have your event added, E-mail details to **agoddard@uwaterloo.ca**

Join the Engineering Society Google Group
https://groups.google.com/group/engsoc_a_general

Point Vs. Counterpoint

Provincial Health Care Transfer Payments Should be Tied to the GDP

POINT

MICHAEL LAANVERE
2A MECHANICAL

Recently the provincial and territorial leaders traveled to Victoria to discuss health care funding. The thing is, once they got there they realized that there was nothing to discuss. That is because the federal government had already decided how much they are going to throw at the provinces and they are not negotiating. Despite all the huffing and hawing and quotes of "dictatorial federalism" from the Premiers the thing is: health care is a provincial responsibility and therefore should be funded by the provinces. Now don't get me wrong, the federal government still has some responsibility to ensure that all Canadians get sufficient healthcare provided by the government but they have definitely fulfilled that responsibility. This is done through the Canada Health Act, a law that all provinces must abide by in order to receive their funding for health care. Ultimately, though, the provincial governments have to realize that it's the federal government's money and they get to choose how much of it they give away, plain and simple. They way the Premiers are acting is almost like getting money for Christmas or you birthday from your grandparents and saying "Hey that's it? You have to give me more!" Although instead of money you would be using on beer it's money used for cancer treatments and the like. Still, the provincial government should be grateful for what they are getting.

Harper's plan isn't even that unreasonable. The federal government will increase payments by 6% every year until 2017 where afterwards it will be pegged to inflation and the GDP (estimated to be about 4% and never lower than 3%). How can the premiers expect any more from that in a time where the government is trying to save every penny they can? There is no way the government could keep increasing healthcare payments by 6% every year without doing something drastic like raising taxes, I mean, 6% is roughly twice as much as the economy is growing and definitely unsustainable for the government in the long term, the federal coffers just are not that deep.

Pegging healthcare payments to the GDP and inflation makes perfect sense; it ensures that the government is making payments that it can afford and that they increase payments as they get more money. Matching at inflation ensures that the government is always paying at least the same amount that they did the year previous and the addition of matching the GDP will let them increase those payments at a sustainable rate. By tying the healthcare payments to the national GDP the Conservatives have ensured Canada's economic prosperity through these troubled times; much like what the Liberal's did in the 90's when they slashed $6 billion in healthcare transfers. That cut made by the Liberals was one of the reasons why Canada has one of the better economies right now, not a major reason but still a contributing factor and the Conservatives aren't even slashing funds, they are just increasing them at a lesser rate.

Now, I know some nay-sayers would say that people's health and lives should not be linked to the economic situation and I would tend to agree with them, but that is not what is happening by linking the GDP to transfer payments. By linking the medicare transfer payments to the GDP the federal government has forced the provincial governments to actually work together and reduce the cost of medicare. You see, just because the federal government is reducing the payment increases doesn't mean that the health care system is going to get any less money than if it stayed at 6%. It just means that the provincial governments are going to have to foot the rest of the bill. Basically, this means that people aren't going to die from not having enough money.

Now that the federal government isn't throwing money at the provinces they have realized that they have to start saving money and should look at solving all the inefficiencies in the health care system. The premiers are now forming a joint commission to investigate ways to save money and improve patient care. Things like switching to electronic health records and moving responsibilities from doctors to nurses would be ways to save money while maintaining the same level of patient care. And why haven't the provinces tried to be more efficient the last couple years? Simple. They didn't need to take the time and effort if the federal government was just going to throw more money at them.

When the liberals essentially froze provincial and territorial health spending in the 90's they showed that they could maintain adequate healthcare for all without spending lots of money. But in 2004 Paul Martin had a surplus and needed the NDP support to keep his minority. Jack Layton's bottom line was increasing healthcare spending and that's exactly what Paul Martin did which led to the standard 6% increase annually. But this is a different time, one where there is no surplus and the Harper majority doesn't need to appease anyone; which leads us to the reduction of annual increases to federal health care payments. Obviously the healthcare budget has to increase over time to accommodate the increase in population and new more expensive treatments, but that still doesn't justify an increase from $49 billion in 1995 to $130.3 billion in 2011 overall spending of the provinces on healthcare. Harper's decision to tie the federal payments to the GDP is a smart, sensible and economical one. Before 2004 the healthcare system did just fine without 6% increases from the federal government so why can't that be the case now? By pegging the annual increases to inflation and the GDP; Harper has ensured that the payments are increasing every year but at a reasonable rate that government can afford. Conservatives have given economic stability to the government and more efficient healthcare to the people.

COUNTERPOINT

MIKAYLA MICOMONACO
4B ELECTRICAL

In 2014, the Canada Health Accord needs to be renegotiated. The last time it was negotiated was in 2004, when it was set that the government would increase the transfer payments to the provinces by 6% per year for the next ten years. With 2014 growing ever close, healthcare was a big topic during the recent federal election. While on the campaign trail, every major political party promised that, should they be elected, they would maintain the 6% per year increase in transfer payments to the provinces for health care spending.

Apparently, the Conservatives felt that, like so many other election campaign promises, this one wasn't worth worrying about actually keeping. Rather than the usual round of negotiations with the provinces, the Federal Finance Minister, Jim Flaherty, announced that the 6% per year increases will continue until 2017, and then further increases will be tied to the GDP, at a minimum of 3%. The Federal Government says that this is not negotiable, and did not consult the provinces at all, even though they are the ones who are responsible for providing healthcare, and are therefore the most knowledgeable about the costs of maintaining it. The provincial premiers went to a conference which, they thought, was for the opening talks of negotiations, and were instead presented with a fully laid out, non-negotiable, plan. There was no warning that the Federal Government would make such an unprecedented and unexpected move.

Now, let's think about tying healthcare payments to the GDP. As we have seen in the recent past, recessions happen, people lose their jobs, and the GDP goes down. It doesn't make sense to reduce the amount of healthcare funding when people are in difficult circumstances, and less able to pay for their own care. Do we really want the health care funding to be jeopardized in the same situations where unemployment is rising, and people are less able to care for themselves? Quality of care should be the first priority. Reducing care just to cut costs is just not acceptable in any way. If the government is so desperate to save money, why don't they stop buying fighter jets and building jails? Surely a strong public health care system is of more use to a society than the ability to wage war and throw more people in jail.

This also has a profound impact on the province's ability to plan. With no set amount of money coming in, how can a hospital decide if they can afford to hire more doctors, or increase the number of beds? The health care system is already plagued by long waiting times and doctor shortages. Unpredictable funding, with smaller increases, will only serve to make these problems worse.

When the provincial premiers met to discuss their response to the Federal Government's choice to decree, rather than negotiate the funding for the next Health Accord, Harper's response was to tell them to "put the funding issue aside" as there was no chance of the decision changing. The premiers have publically stated that they are hopeful that things can change before 2014, but with a majority Conservative government, it may be difficult to put enough pressure on them to force that change.

Canadians across party lines say that the health care system is one of the most important things about being Canadian. Harper will sacrifice the integrity of this program, which cares for the health of all of us, in his attempt to balance the books at any cost.

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

Activism and Politics: Lifestyles and Activism

UMAIR MUHAMMAD
4B ENVIRONMENTAL

A large amount of modern-day activism is based on the promotion of wiser individual lifestyle choices. By making changes in the way we live and becoming conscious consumers, this kind of activism suggests that individuals can make positive changes in the world. We are encouraged to consume organic, fair-trade certified, and locally produced goods, along with lowering our overall levels of consumption. Making wise consumer choices, we are told, will be beneficial for the environment, for the poor producers in the developing world, and for our individual health and spiritual wellbeing.

"Be the change you want to see in the world" is a statement often invoked in support of lifestyle-centric activism. Although these words find themselves regularly being attributed to the wise Mahatma, there is no documented evidence that Gandhi ever uttered or wrote them. Even if the statement could be attributed to Gandhi, it can easily be demonstrated that it was not meant to be a prescription for activism.

While it could be said that Gandhi's lifestyle choices were a big part of who he was, he understood that simply adopting a minimalist lifestyle would not bring about the change he wanted to see in the world. Creating social change, Gandhi recognized, required social organization and political action. If Gandhi had limited his actions to living a humble life in an ashram and establishing a small self-reliant economy, it is easy to contend that he would not have contributed to the betterment of the world in a very meaningful way. On the other hand, if he had forgone the adoption of a minimalist lifestyle, there is no reason to think that he could not have been a successful social activist. In fact, he began his career as an activist in colonial South Africa, long before returning home to British India and embracing the simplicity for which he is now known.

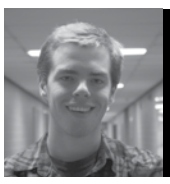
Gandhi leading protestors against taxes on salt

Becoming an "ethical consumer" does not do very much to challenge the structures which lead people to adopt such a lifestyle in the first place. Purchasing fair-trade certified coffee, for example, may help a small number of farmers in poor countries receive slightly higher incomes, but it does nothing to change the unjust nature of international trade, which forces such farmers to grow cheap cash crops and impoverishes them. It does nothing to challenge the fact that while rich countries loudly proclaim support for free trade, their protectionism in agriculture results in an estimated $50 billion in lost annual income for the developing world. $50 billion is about the total amount of development aid given to the developing world annually.

There are many good things to be said about cutting back on what we consume and living in a way that is not grounded in petty materialistic values. As Henry-David Thoreau put it: "Most of the luxuries, and many of the so-called comforts of life, are not only not indispensable, but positive hindrances to the elevation of mankind." Living a clutter-free life is wonderful, but it is not the same as working to create change.

It should be recognized, rather, that our ability to make token changes in our lives while retaining, or even enhancing, our standard of living is the result of our position as a privileged minority in a system which overtaxes the environment and exploits the poor. It is not enough for us to simply look inward and change our individual actions while continuing to benefit from the overall arrangement.

The USA: The Last Pillar of Freedom



SPENCER GOOD
2A MECHANICAL

There is no shortage of America-bashers around the globe. In fact, one of the few uniting ideals outside of America itself is a general distaste towards the most powerful country in the world. The idea that America has done more harm then good is very popular globally. I am not referring to pure hatred, as demonstrated by jihadists and North Korea, but instead a general disregard for the accomplishments of America and by and large, a feeling of satisfaction in watching its slow but sure fall from grace. We must hold the USA accountable for its mistakes, but on the same note, we must take note of what it has given the world. Most importantly, we must hope that it does not lose its place on centre stage, for in a world full of corruption and irresponsibility, America defends some of our most important values as Canadians. The globe has more to lose from the crippling of America than most would think.

As many readers may have already heard, last October, a two-year-old girl was killed in a traffic accident. Sadly, this may sound like a fairly regular occurrence in even the world's most developed nations. However, this was no regular traffic accident. The toddler was at first run over by a van in a busy marketplace, which, after realizing it struck the little girl, drove away without providing aid. After this occured, a dozen people walked by without offering help to the child. Then, a second van ran her over. Finally, after 18 people had passed by the bleeding little girl, a street cleaner pulls her limp body off the street and calls for help. The two year old died in hospital in November. Of course, the question that many people would ask next is, "Where could this happen?"

The answer to this question is not Saudi Arabia or North Korea, but instead, China, one of the world's fastest growing and most power-hungry regimes. It is a place where free speech, religious gatherings, homosexuality and anti-government protests are still punished to some degree, often violently (using documented torture methods such as body stretching, fingernail pulling and sleep deprevation, among others). Many may make the valid point that one cannot connect the intentions of society to those of the government. However, this is also a place where people pay top dollar to drop live chickens into lion pits at zoos, where bears are kept in torture cages to extract bile for Chinese medicine, and as described above, little girls are left bleeding to death on the street. I am not condemning the Chinese as a people, but one must remain weary of a society in which a two-year-old girl in agony is ignored by 18 passers-by for a total of 20 minutes before someone comes to her aid. A point that is widely made by people watching that video is that many of the passers-by may have faced legal consequence for helping the toddler. However, the fact that this serves as justification for ignoring her situation is repulsive. These actions definitely reflect a more individualist society, at the very least. Before condemning American society, we must keep in mind that it would be very difficult to find 18 Americans who would ignore that little girl, regardless of what legal consequences they would be facing. What kind of society would you prefer as a global leader?

China still remains a long way off from global dominance. Its military might is far from matching the US, its economy still remains underdeveloped, and poverty is still abundant. However, it is on an upward rise while the US is sliding down a slippery slope. Even more frightening is the vast amount of other irresponsible and corrupt regimes seeing their levels of global influence rise. Leading the pack is Russia, whose vast amounts of natural resources and market economy has made it a global player. The inability of Russian society to demand a democratic, free government is disturbing. From the czars to the USSR to the dictatorial Vladimir Putin, the Russian government remains an international and domestic bully willing to crush those who stand in its way. Torture directed towards dissenters remains widespread, all while the government continues to support destructive regimes around the globe, most notably, Mahmoud Ahmadinejad's Iran.

Although the USA will remain the undisputed world power for a long time to come, there is no denying its downward spin. Growing class inequality, overconsumption, military spending, soaring healthcare costs, spiralling debt, and above all, political deadlock, are all taking a toll on the USA. However, America is still a shining example of freedom in an increasingly dictatorial world. Every empire falls eventually, but instead of enjoying the collapse of America, the world should instead be weary of those countries eager to replace it.

Programming for N00bz: MATLAB

JOSHUA KALPIN
1B SOFTWARE

Hello readers, I'm here to present you with a brand new column, Programming for N00bz. The goal of this column is to try to explain to non-programmers many of the programming languages they or their friends could encounter during their university career. Furthermore, these articles will attempt to clear up many of the "What in the world are you talking about" questions that arise when many non-programmers hear programmers talk about school, jobs or side projects.

This week, I'm going to be exploring one of the most commonly used programming languages at the University of Waterloo, Matrix Laboratory, also known as MATLAB. MATLAB is a programming language that pretty much all engineers will have exposure to at one point or another. Specifically, Chemical and Nanotechnology engineering students take it in first year, Electrical and Computer Engineering students take it second year and Software Engineering students take it on many technical electives. Outside of engineering, almost all math and many science students will have exposure to the language as well.

So now that we've covered who uses MATLAB, the question of what it is exactly arises. According the MathWorks, the developer of MATLAB, "MATLAB® is a high-level language and interactive environment that enables you to perform computationally intensive tasks faster than with traditional programming languages such as C, C++, and FORTRAN." In less technical terms, MATLAB is a programming language that allows the user to more efficiently compute the results of complex mathematical equations than many other programming languages.

So now the question is, "why do we learn MATLAB" and/or "why should you learn to use it?" MATLAB is one of the most important programming languages that engineers can learn because of its ability to handle extremely complex mathematical calculations. As a result, many of the simulations that engineers run can be programmed in MATLAB. This makes learning MATLAB a huge benefit to any engineer, mathematician or scientist that needs to conduct a simulation or complex calculation before building a prototype and/or doing an experiment. For example, one of the more well-known first year math lecturers, Eddie Dupont, extensively used MATLAB to perform extremely complex integrals. There are also many other cases of current and former faculty members using MATLAB in their research at the university.

All of us, at one point or another, have had to take linear algebra and deal with matrix arithmetic. MATLAB has built in functionality to easily handle all of those horribly tedious and complicated calculations required to do everything from finding the determinant of a matrix to row reducing stupidly large matrices.

One of the other cool features of MATLAB is its ability to produce a graphical representation of functions. You may be thinking, "Wolfram Alpha does this for me without having to program anything." However, Wolfram Alpha has limitations to how complex of a function it can graph and even calculate. MATLAB will graph pretty much all functions that you can throw at it and is a good tool for checking if you properly calculated the integral of some nasty function.

Another benefit of using MATLAB is that it is not platform specific. In other words, it doesn't matter if you are working on a Mac, PC or even Linux; MATLAB works on every single one of them. Moreover, MATLAB interfaces with many other commonly used languages such as C and Java (both of which will be covered in later articles). This allows users to pull in other features that MATLAB does not include and/or support while making it more accessible to those that know other programming languages.

So to conclude, MATLAB is one of the most important programming languages that engineers, mathematicians and scientists can learn because of its ability to perform complex mathematical equations in an extremely efficient manner. Furthermore, MATLAB provides many tools to make calculations easier and can provide a visual output for complex functions. Hopefully MATLAB is a little more accessible and a little less frightening after reading this article. Moreover, I hope many of the confusions surrounding the programming language have been resolved making many of your courses more enjoyable.

Stay tuned for next week's column on Visual Basic.

The Future of Human Collaboration

NACHIKET SHERLEKAR
1B NANOTECHNOLOGY

You've all heard of CAPTCHAs, haven't you? Those annoying, squiggly letters and numbers you've had to make sense of and then type out so as to verify you're a real person and not a malicious string of code? Well, did you know that besides serving the purpose of proving you're a human, you're also creating a digital archive of several books, word by word, along with millions of other CAPTCHA users across the globe?

Luis von Ahn, professor at Carnegie Mellon University, is one of the brains behind this novel and useful idea. CAPTCHA was initially started to serve just the purpose of web security. However, after realizing that all CAPTCHA users taken together were collectively spending thousands of hours every day to type out CAPTCHAs, von Ahn and his team came up with the brilliant idea of utilizing CAPTCHAs for digitizing books without compromising internet security. This project, called reCAPTCHA, works like this: Now, instead of typing out just one word for the CAPTCHA, you are made to type out two. One of them is already known by the system, while the other is unknown. The user is unaware as to which word is known by the system and which word isn't. The system verifies that you have typed one of the words correctly, and thus assumes you're human, and that you're capable of getting the other word right. In this manner, through ten seconds of your time, another word is added to a digital archive. The overall rate at which this digitization takes place is quite impressive; about 2.5 million books are digitized in a year! The reCAPTCHA project has also resulted in the creation of a meme called captcha art, where the two words of the CAPTCHA are taken and a funny picture associated with the words is attached to it.

After the success of the CAPTCHA project, von Ahn realized the true potential of collective human efforts via the internet. He decided to take it one step further by posing this question to his graduate student, Severin Hacker: How do we get a hundred million people to translate the web into every major language *for free*? This seems to be a very far-reaching vision, but they came up with an answer.

Translating the web would require the contribution of a large number of bilinguals, and there are not a large number of them. Also, why on earth would anybody want to do this seemingly tedious task for free? These two serious hurdles were found to have one elegant solution: language education. People wishing to learn a new language can now do so for free, using Duolingo, the idea that was born from von Ahn's vision. You first start off by translating simple sentences given the meaning of each word. As your level progresses, you are given more and more complex sentences and are asked to translate them. Your translation is then compared with other users' and a reasonably accurate final translation is obtained. This strategy has been tested and found to work quite well, with people translating web pages almost as accurately as a professional translator, but free of cost. Users are also motivated to learn as they are given real content to translate such as Wikipedia pages and news articles. Also, a new language can be learned without even having to pay a single dollar! C'est formidable, n'est-ce pas?

7000 Miles from UAE to Canada

HASSAN AHMED
3A CHEMICAL

As the flight was nearing Toronto's Pearson International Airport, a dream was coming true for a dozen of students. After two years of hard work and determination, history-in-the-making was visible from an aerial view of the city of Toronto. This was a new chapter in a story that has yet to be completed. In August 2009, University of Waterloo inaugurated its satellite campus in the city of Dubai in the United Arab Emirates, with fewer than 25 students initially enrolling in Chemical and Civil Engineering. The Dubai campus has a 2 + 2 mechanism. The students complete the first two years in Dubai and the remainder of their terms in Canada. For most of us, it was a new experience as the class size was fewer than 15 and for some courses, 8. The ultimate objective was to complete the 2B term in due time and proceed to Canada; this was often the motivation and the compulsion, as that was all that mattered. Upon completion of the 2B academic term and the subsequent co-op term, the countdown had begun for us to board our flight and join our colleagues here at Waterloo.

And here we are, living the dream (well at least for the initial weeks of the study term)! This has been a one-of-a-kind experience, to witness and understand different cultures, to meet new people and snow. Summers in UAE and neighboring countries raise the mercury up to 45°C and higher. Winters are at 10-20°C and sometimes lower. Experiencing Canadian winters was something we all were looking forward to, although sadly, it hasn't been that cold yet this year (or at least that's what we are told). Adapting into a new environment brings new challenges which are not easy, but the excitement of being here and essentially achieving the primary goal was enough to help us overcome those phases. We also had the full support of the UW administration that co-operated with us at every step possible.

Canada is different form UAE and each one of the 12 of us have our own views on that. For some, it's the university's atmosphere and the thousands of students with big class sizes and great hangout spots. It takes time to socialize and to get to know people, and to remember the names of your classmates. The libraries are always full, which gives me the impression that there are no slackers! And walking to different buildings for different lectures is something we're getting used to. The Engineering faculty and EngSoc have also done their parts in organizing events and sessions in order to welcome and prepare us for the hectic term ahead! I, in particular, am a regular at the CnD due to some delicious croissants and morning coffee. All in all, this has been a dream come true and a new beginning. There's still a long way to go and history to make.

UAE Meet and Greet Justin Yu Jiang

Your Bi-Weekly Challenge: Cut the Expenses

KATE HEYMANS
2T CHEMICAL

Hopefully you read the last column of the Bi-weekly Challenge (if not, please go read it *puppy eyes*) and so you've been carefully tallying up your spendings and tracking them. As a result, I hope you have a good idea of where your money's been disappearing to, but now it's time to take it to the next level: Let's start saving some money!

To analyse the way you're spending your money, I suggest splitting it up into categories. Personally, my spending spreadsheet includes the following: car/travel, groceries, restaurant expenses (i.e. "going out"), clothes, medical, housing (rent, utilities, new furniture), school fees and special (gifts, etc.). I don't use all of those categories all the time, but by listing them that way, they're available and I just hide the ones like "school" during the terms that I don't need them. If you would like a copy of my spreadsheet, just send me an email, or you can also take a look online for other models.

Once you've got your spending all nicely categorized, look at the categories in which you're spending the most money. Are you happy with the idea of spending a lot of money in the "restaurant" category for example? Or do you think you should cut down on the partying a bit? It's important to reflect on what your long term goals are and decide if your spending really reflects those goals. If you want to travel the world, you should be spending more money in the "travel" category; if your thing is being fit, then perhaps you want to spend more money in the "gym" category. Obviously there are categories where I wouldn't skimp, such as "medical" and others where the amounts are fixed and you can't reduce them like "school fees," but there are definitely ways to cut back in other areas. Don't go cutting back in areas that are going to be bad for you later. No cutting back on the fruits/veggies. You still need those nutrients. You should also keep buying toothpaste because it will save you dentist money in the long run. **I am challenging you to find one thing to cut back on. If you find more, great, but all I'm asking for is one itty bitty tiny thing**.

Maybe it's time to start skipping those daily trips to Tim Hortons and making your own coffee at home or, if you can't do that, at least get the really cheap coffee from the CnD. Maybe you can stop buying those chips you usually buy during your grocery trips (plus it's good for your health). If you bought a gym membership at the beginning of the year because this was going to be the year where you finally got fit and you haven't been using it, maybe it's time to reconsider the expense. Even if you have been using the gym membership, can you do the equivalent amount of exercise without the gym? Perhaps it might be better to find a friend to go running with. Instead of getting that exclusive (read: expensive) Valentine's Day restaurant reservation, wouldn't it be better to splurge on discounted, heart-shaped chocolate the day *after* Valentine's? Write your significant other a steamy letter and it can be just as romantic. I'm going to try reducing the amount of gas I use (side note: car = very very very expensive). It's impossible for me to get around without a car since there's no public transit in the area (I'm on co-op in the middle of nowhere). I am trying to carpool and at the very least reduce the number of trips I make to the grocery store.

A good way of giving yourself goals in terms of saving your money is to predict before hand how much money you want to spend in each category a month in advance. Once you've spent it, you can no longer spend any money in that category until the next month. This works the same way as when you run out of minutes on your phone plan, except with money, you can also carry over your "minutes" to the next month. So if you've spent less than the predicted amount, you can spend the extra over the following month. This is a simple and easy way to set goals for yourself.

Remember, when you're trying to save up money, every little bit helps. Whenever and wherever you make an effort to cut back, you should give yourself a pat on the back. Next issue we will go over the basics of how you can starting *making* money. The life of a struggling student is hard but it's not impossible to make ends meet.

Engineering and the World: Sciences

LEAH KRISTUFEK
1B CHEMICAL

This bi-weekly period we will investigate one of the more gender neutral faculties, Science! (Is it just me, or does science with an exclamation mark immediately make you think of Bill Nye the Science Guy? Funny because he's a mechanical engineer) Scientists are responsible for many of the new technologies that we then put into action in the world at large or at least in larger parts of the world. Often we will even work with scientists in our work teams.

Bio/Native Habitat/ Lifestyle: Science students have lives outside of school. They have a neutral position on many things and so go largely unnoticed by us engineers. There is no single hang out place where most of them can be found at any one time. Having said that they seem to divide and conquer interests wise and they do have offices in the earth sciences and chemistry building. Their C&D is located just across the breeze way in Bio 1. Physics students may also check out the physics club which has its own room and comfy couches. While the chemistry club inhabits a large room near MC. (You may know it, the window has a distinctive Einstein image on the window.) Though most science students have their eyes set on even more education to further diversify them from their class mates the one thing they do share is a love and patriotism towards their (not so) secret science dance. This gives them a chance to celebrate their year of entry (it changes every year so the more you remember the older you are) and of course pelvic thrust in public.

How We Interact: I have heard very little of large scale engineering pranks on science, the goggles are tough to transport and let's be honest, if we annoy them too much we will be barred from any fun explosions that might be going on around campus, and that would be a shame. (I am referring to the post Halloween pumpkin explosions using liquid nitrogen.) Science students enjoy a high compatibility with engineers due to the overlap in some courses, though their classes have a far less rigid structure. To science students Eulers number is a close personal friend while linear algebra is a nightmare they have been lucky enough to be spared from....so far

Common Areas of Interest: Schooly things, we may have it all packed in to short periods of time but science students are in it for the long run with aspirations of medical school or a PhD in their future.

Verdict: Those who study science are a unique breed of student whose schedules allow them to behave like normal people who have a full time job. Really, it's surprising we don't see more of science, they have the potential to be a guiding hand to us engineers in to the wiles and ways of society. If you want to learn the secret of blending in to a fashionable crowd ask science, they probably know how.

The Monster Jam in Toronto!

AMANDA LEDUC
4B MANAGEMENT

Pickup trucks, and the occasional hearse, invaded the Rogers Centre with all of their loud and jumping fury. They raced, they flew and they destroyed things in a stunning dance. Yes, I am referring to Monster Jam!

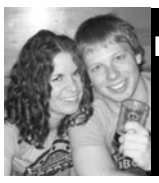
The first part of the show is monster truck racing. In each heat, only 2 monster trucks can race at a time because they take up a lot of room and have a tendency to flip over on the turns or pull the occasional unintentional doughnut. The first truck to fly (or jump) over the finish line wins. Now I love a race, but monster truck racing isn't really exciting. Monster trucks were never meant to be quick.

The second part of the show is the freestyle competition. In this part, each driver gets 90 seconds to do as many tricks and destroy as many old cars/vans on the course as possible. If the truck is still running after 90 seconds, they get a bonus 30 seconds. In my opinion, if monster truck is still running and has all pieces attached after 120 seconds, they clearly have not given it their all. The drivers that manage to knock the body off the frame have the right idea.

The final part of the show is the demolition derby. In this part, junk cars are put on the floor and are given 15 minutes to destroy each other. At the end of the time allotted, any cars that still run, win. Think of it like bumper cars but with old rear-wheel drive cars and parts falling off. It was quite a sight to see; cars literally driving until the wheels fell off.

If you have never been to a Monster Jam, I recommend it. Monster Jam comes to the Toronto Rogers Centre every January and the good tickets sell out quickly starting in November.

Beer Buzz: The Cider House Rules

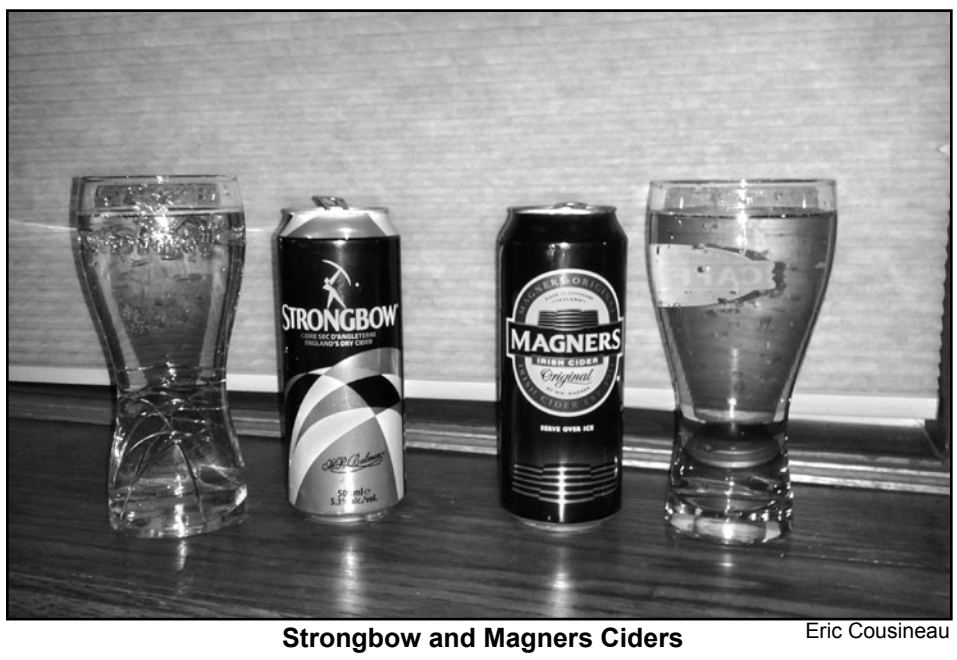


REBECCA CAMERON
4B GEOLOGICAL
ERIC COUSINEAU
4B ELECTRICAL

Hello readers! We hope class and co-op have been treating you well. We are both enjoying 4B and are excited to be graduating at the end of this term. However, it means that this is our last term writing the beer column and we need new people to continue it in the spring term onwards. If you are interested, please send an email to Jacob Terry at jrterry@uwaterloo.ca (he's The Iron Warrior Editor-in-Chief for the Spring 2012 term). Writing the beer column is an excellent way to learn more about beer, with the added bonus of drinking becoming your research! This week in Beer Buzz, we will be taking a look at (and tasting) alcoholic cider.

In the 1840s, alcoholic cider was the preferred alcoholic beverage of the working class. Even though beer has now stolen the spotlight, alcoholic ciders (also known as hard ciders, but will just be calling them ciders for the rest of the article) still enjoy popularity in the United Kingdom, Canada, Australia, and France. Cider was brought to North America by settlers from England - they brought apple seeds with them and planted orchards. They quickly determined that drinking cider was safer than drinking water (water treatment methods were crude and unreliable at the time), and it was easier and cheaper to produce than all other alcoholic beverages. Surprisingly, in those times, ciders were breakfast drinks and even children had cider as their first drink of the day.

Ciders are made from fermented apples and have alcohol contents ranging from 2% abv to 8.5% abv or more in some English ciders. Though not technically beer, ciders are marketed and sold in the same manner as beer. Ciders have a large variance in taste - some are very sweet while others are dry. Ciders also vary in colour, from very pale yellow to orange to brown, and in clarity, from cloudy to clear. The more traditional ciders are darker and cloudier in appearance, usually have higher alcohol content, and taste more like apples than their modern, mass-produced counterparts. Other fruits can also be used to make cider drinks, such as pears (the drink is then called perry; we highly recommend giving Sir Perry a chance if you see it in the LCBO, it is delicious).



Strongbow and Magners Ciders Eric Cousineau

Today we chose to review two ciders, Strongbow (5.3% ABV) and Magners (4.5% ABV). Strongbow is the most popular cider in the world, manufactured by H.P. Bulmer, which is owned by Heineken. Magners is a brand of cider from Ireland produced by the C&C Group. Magners is marketed under the brand Bulmers in Ireland, but is no longer affiliated with H. P. Bulmer as a result of a legal battle. We've chosen these two ciders to represent both mainstream and niche ciders (even though Magners is somewhat mainstream). Strongbow pours a pale gold colour with virtually zero head. The aroma is light but conforms to what many expect of any cider: sweet apples. Strongbow has a light taste and an apple flavour similar to granny smith, though it should be noted that it is very dry. The carbonation is quite heavy, and is characteristic of most ciders. Overall, Strongbow leaves more to be desired, but does the job when looking for something widely available and outside the norm. Magners pours a deep gold, with zero head retention. The aroma is stronger than that of Strongbow, and should pique the interest of the novice cider drinker. The taste is notably sweet, not much dryness, and very refreshing. The carbonation and mouthfeel is less dense than that of Strongbow. Overall, Magners is very enjoyable and we would recommend it over Strongbow to anyone looking for a sweet and enjoyable cider.

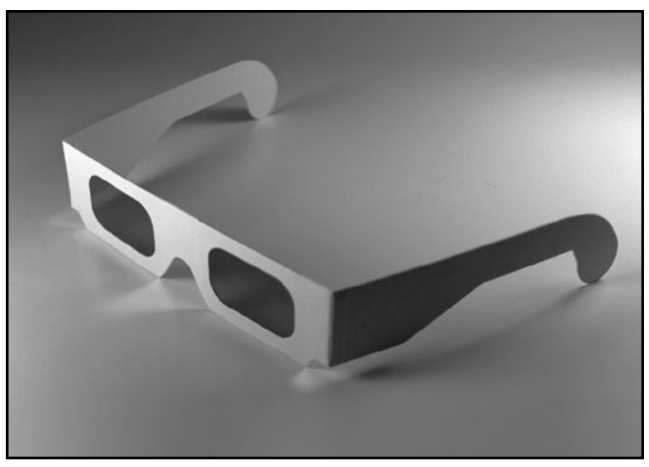
vAll in all, even though it is not technically a beer, cider is one delicious beverage. We highly recommend giving ciders a chance - especially if they are traditionally brewed! As we always say Fear No Beer (or in this case, cider), and don't forget to take some time out of your busy schedules for some delicious brews!

A Review of 3D Movie Effects

HANNAH HIGGINS
1B NANOTECHNOLOGY

Over the past few years I've noticed a growing trend in the world of feature film; everything seems to be shifting toward 3-D. A genre-spanning phenomenon, 3-D technology is changing the way that we, as a culture, view films. Personally, I don't fully understand the appeal of 3-D. Although I don't really find 3-D effects to be damaging to a film, I don't always perceive them as beneficial either. Most of the time, I find my movie-watching experience completely unaffected by the addition of 3-D enhancements to modern productions.

But what interests me more than the increasing number of films being created in 3-D is the wave of classic box-office hits being re-released as such. Last fall, the Disney Corporation accompanied their release of *The Lion King* from the Disney vault with the film's theatrical release, enhanced with 3-D. Following the relative success of this venture, which generated about 80 million dollars, a plan to re-release a further four box-office successes in 3-D format was formed. Currently in theatres is *Beauty and the Beast*, which opened on January 12th. Set for release are *Finding Nemo*, *Monsters Inc.*, and *The Little Mermaid*, in September of this year, January 2013, and September 2013 respectively.



Anaglyph Glasses

And it appears that Disney is not alone in this conspiracy of re-releases. On April 6th, James Cameron's 1997 film, Titanic, will be back in theatres, and in 3-D no less. Once renowned as the highest grossing film ever, Titanic has only been surpassed by Avatar, a 3-D picture which Cameron released in 2009. Like the Disney Corporation, Cameron is hoping that the 3-D effects will appeal to current fans (according to Facebook there are over 14 million) as well as anyone who was unable to see the film in theatres when it was originally released in 1997.

The primary reason I take issue with the current 3-D mania is that it involves the conversion of films which were not originally intended to be featured in 3-D. I generally find that a lot of scenes don't translate especially well as 3-D pictures, especially when the original picture is animated. Although at times the 3-D aspects integrate well within the original picture, these occurrences are limited. In fact, the only such scene which occurs to me immediately is the stampede in The Lion King. It is far more frequent for the 3-D effects to be non-apparent at best. At worst, they just appear to be awkward and interfere with the rest of the scene.

Despite my dislike of 3-D movies, I'm ultimately torn on whether the re-releasing of past box-office hits in 3-D is a force of evil or of good in the world. I don't think that the 3-D conversion of a movie that was shot as a 2-D feature can fully measure up to its counterpart. However, the addition of 3-D features also rationalizes a theatrical re-release of an older film, allowing new audiences the experience of a theatrical viewing. I couldn't help but see both 3-D adaptations that Disney has released since September. The Lion King was the first film that I saw in theatres, and I was overpowered by my own nostalgia. The (animated) Disney experience is just better when it's in theatres.

SOPA Blackout and Productivity

CODY SHAW
1N ELECTRICAL

SOPA (Stop Online Piracy Act), for anyone who have been under a rock long enough to still not know what it represents, is a bill brought up in the US that takes trying to stop copyright infringement in the wrong direction. I'm sure everyone will agree that copyright infringement is bad (and at the same time, I'd be surprised if they had not committed infringement online in some fashion), but SOPA is not the answer for multiple reasons. For starters, it is too broad. In essence, if SOPA is passed, any website that had any connection to copywritten material at all would be forced to sever such a tie, or fear the consequences: loss of ad revenue from US internet advertising agencies and blacklisting from major US based search engines, Google in particular. A site can literally be taken down if a user say, posts a link to a picture that infringes on some copyright. SOPA also smears the idea of a "domestic" website and a "foreign" website. For instance, SOPA states that any website with .com, .org and other widely used domains is a "domestic" site, while any site with a different domain is flagged as a "foreign" site. This raises issues, as sites physically hosted on US soil can use nearly any domain it wants (Example, Redd.it), but are still flagged as "foreign". The reverse is also possible (wikileaks.org apparently is a domestic site)! SOPA acts over all sites, but if a site is flagged as "domestic", the site can be seized as a lawful act and obviously there are huge issues here. As a second point, SOPA won't even be able to stop people from pirating software, no matter how hard it tries. Most large sites (Google, Facebook, etc.) would end up simply moving offshore and changing domain names to avoid such nightmares of doing what SOPA wants to stay online. As a protest against this bill, many large websites either blacked out or held some sort of censorship ad last Wednesday. Some very large and influential sites blacked out, including Wikipedia and Reddit (WORST. DAY. EVER.) This got the attention of many internet users that were previously ignorant of SOPA. Fortunately, SOPA has been shelved "until there is wider agreement on a solution", which was announced after the blackout. There aren't many good ideas for infringement protection for online copyright material, and SOPA is definitely at the top of the list. Even though this was a mad grab for the US to have more rule over the usage of the internet, they still seem to be able to do whatever they want with it, after the whole recent Megaupload debaucle. Nothing to do here.

On another note, what did everyone do while Reddit was down? Work? Hah! Many people were saying blackout day was going to be one of their most productive day in years. I thought that too. As a student on Co-op this term, I could not tell you the amount of times I thought "Ok, there is a lull at work, and everyone is sort of just chilling, I wonder what is going on online…" at which point I would instinctively open a Reddit window to find that damned countdown timer. "Hmm, this Mississauga bus is boring as all heck. REDDIT TIME!" … nope. I didn't even have anything new to post on my Facebook wall! I even had co-workers walk past my desk with less than happy looks on their faces because Reddit and Wikipedia was down. From reading the sleuth of aftermath posts, the consensus was that most simply watched the countdown timer on the blackout page they discreetly stuck in centre view tick down, rather than actually being productive at work/school/home. Of course, procrastination on Reddit and random-ing articles on Wikipedia should not be what you are doing over schoolwork/job work, right guys? …Right? Where is my bacon…?

Bad Movie Review: Titanic: The Legend Goes On (2000)

MICHAEL NEW
4B CIVIL

Last issue, I talked about "The Room", a movie that was so bad it was good. This issue, I'll be talking about a bad movie that is so bad it makes other bad movies look good.

When I was but a wee lad of 11 living in Thailand, my friends decided that they wanted to go see James Cameron's "Titanic" (1997) in theatre. Titanic had been setting box office records for a couple years already by this point and was still playing occasionally in theatres. I had already seen it but didn't mind going again because that movie kicks ass and movie tickets in Thailand are only 2 dollars. My friends, being Thai, could not yet read English very well and when they handed me my ticket, I was trying to remember if Titanic was followed by: "The Legend Goes On". It wasn't. What followed was a terrifying experience that will haunt me for the rest of my life.

"Titanic: The Legend Goes On" (2000) is an Italian film which also happens to be an animated musical with Mexican mice and a rapping dog. Just let that sink in for a second… For the benefit of the one person who reads this who doesn't actually know what the Titanic was (and I wouldn't dare alienate a single one of my readers), it was a ship built in 1911, that sank on its maiden voyage after hitting an iceberg. 1,517 people died. To put things into perspective, "Extremely Loud and Incredibly Close", a new film coming out this year starring Tom Hanks, is about the September 11 attacks. Now imagine if that movie had Tom Hanks suddenly burst out into song while surrounded by Mexican mice and Snoop Dogg (a rapping dog). Bad idea. The only person who could ever get away with doing something like that would be Mel Brooks. Remember "Springtime for Hitler" in "The Producers" (1968)?

"Titanic: The Legend Goes On" currently holds a record of 1.3 on IMDB, making it one of the worst movies I have ever seen on that site. And boy, does it earn it. Here is a movie that confounds me. Who in their right mind would ever fund this!? In this film, there is a rich boy named William (and his nanny… wuss) and a poor girl named Angelica (with her two evil stepsisters and evil stepmother "Cinderella!" cough cough) who meet on board the ship and fall in love. Meanwhile, there are some side plots about jewel thieves, a detective who dresses like Sherlock Holmes, the nanny who lost a daughter years ago (could it possibly be Angelica?), and a singer. Oh I almost forgot, there are singing Yiddish and Mexican mice, birds and a rapping dog. A RAPPING DOG! The plot is ripped off and the dialogue is just plain stupid as well as being poorly voice acted (the English dub was just as bad). I can just picture the budget meeting for this movie now:

Director: "It's going to be so fun! There's going to be Mexican mice and a rapping dog!"

Studio Head: (has a heart attack and dies)

Director: "I'll take your silence as a yes!"

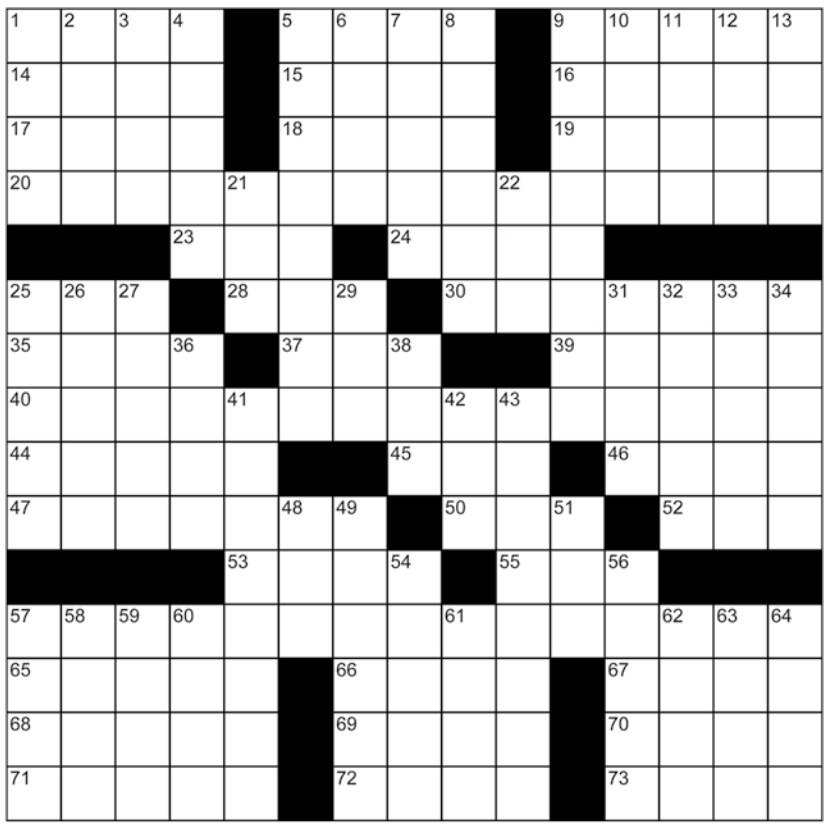
I guess I should probably mention that this isn't the only animated musical about the Titanic. Would you believe me if I told you there was one even worse? In "The Legend of the Titanic" (1999), there is a stupid giant octopus that is tricked by some evil talking sharks to throw an iceberg in front of the Titanic as a part of a scheme by some greedy whale hunters. Once again there are talking mice and a couple who fall in love. Oh and nobody dies in this version. That's like if Mark Wahlberg was on board one of the planes from "Extremely Loud and Incredibly Close". Why are there two of these? We, the human race, have put men on the moon, built skyscrapers that pierced the clouds, designed computer chips almost too small to see, and have canceled out all these great achievements with the creation of these two films. DO NOT watch these movies. Ever.

How to Survive those boring lectures

Michael New

Today's Forecast?

STUART LINLEY
2T NANOTECHNOLOGY



ACROSS

1 Sci-fi weapons
5 British rocker Billy
9 Black suit
14 Restrain, with in
15 Islamic prophet
16 Uneasy
17 Enthusiastic about
18 Span go with
19 Eagle's nest
20 Sound carpentry advice*
23 ___ Lanka
24 Spotted
25 Tor. concert venue
28 Fine
30 Went by
35 "Matilda" author
37 E unit
39 Saltpeter
40 Use all the power*
44 Study
45 Take a ___
46 Greet the king
47 Morocco feature
50 RTS stat.
52 A, B or C, e.g.
53 Some Kias
55 Scrape by, with out
57 Red, Blue, Gold and Silver, for example*
65 Certain Asian people
66 Slam
67 Q.E.D. part
68 Wolf genus
69 Ultimatum ender
70 12-Down + D
71 Certain displays
72 Contract
73 Desires

DOWN

1 Actor Bana
2 DVD-Diner commonality
3 Button and Durdan portrayer
4 Whites out
5 The nose one follows
6 Scooby Doo char.
7 End notes?
8 White fruit
9 Static
10 Dock
11 Jordan castle, Qasr ____
12 70-Across - D
13 Paradise
21 Rage
22 Unagi
25 Sum kind of snake?
26 A la _____
27 Hot, to Pierre
29 Ta succeeder
31 Core
32 Upper cut?
33 Ghoulish
34 Deadpan
36 Toppers
38 Fronted
41 Almost
42 Didn't pass
43 Fought back
48 'The One'
49 Put on
51 Type of mask
54 Expired
56 Axis, to Allies
57 10^-12
58 Vocal
59 Rosebud citizen
60 Author Blyton
61 On the ____
62 The 'E' in 'HOMES'
63 Word found in each of the starred clues and also the answer to the title question (well, probably...)
64 Reasons for abstinence

Easy

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

Medium

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

Hard

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

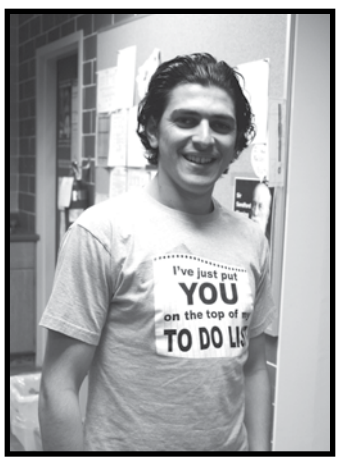
IRON INQUISITION

Nicole Jiang, 1B Electrical

"What is your favourite form of procrastination?"

"Super Smash Bros"
Daniel De Carvalho 3B Computer

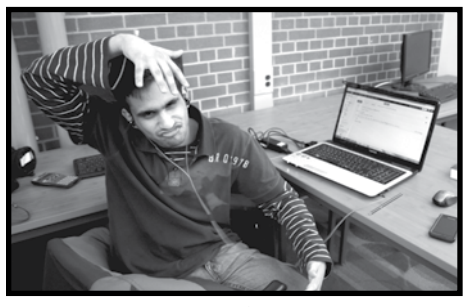
"Beating Daniel De Carvalho at Super Smash Bros"
Kevin Bevis, 3B Computer



"Flirting with girls"
Tamer Darwazeh, 1B Management

"Tetris!"
Smit Shah, 1B Computer

"Watching Glee!"
Wendy D'Souza, 1B Management



"Interpretive dance to music"
Vinay Jacob-John 3B Tron