Applying to Canadian Universities

David Lu

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About Me

- Education:
  - University of Waterloo Software Engineering Class of 2020
  - TOPS Class of 2015
- Experience:
  - Full Stack Developer (coop) at Mattermost Inc. @ Palo Alto, California (distributed)
  - Teacher at Olympiads School
- dlu97@outlook.com

Special Notes

- This presentation focuses on the University of Waterloo
- “~50” is an estimate
- “12.91%” is an exact number with a source
- Acronyms:
  - SE: Software Engineering
  - CE: Computer Engineering
  - CS: Computer Science
  - AIF: Additional Information Form
  - EC: Extracurricular
  - Chars: Characters, “I like dogs” has 11 characters

University of Waterloo

- One of the best Canadian STEM universities
  - Science, Technology, Engineering, Mathematics
  - Top rated Engineering and Math faculties
- In-Demand Programs (in rough order):
  - Biomedical Engineering (55 spots)
  - Software Engineering (125 spots)
  - Computer Science (~300 spots)
  - Computer Engineering (~240 spots)

Source: https://profbillanderson.wordpress.com/2015/12/20/december-2015-update/

Other Canadian Universities

Ontario

- University of Toronto
- McMaster University
- Western University
- Queen's University
- University of Ottawa
- Carleton University
- York University

Outside of Ontario

- McGill University
- University of British Columbia
- University of Alberta

Why Canada?

- Low tuition costs
  - Maximum of $20 0000
  - Average $10 000
- Closer to home
- High quality of education
- Easier application process

- **COOP**

Why Coop?

- 5 year program, 14 alternating four month terms
  - 8 study terms
  - 6 work terms
  - No breaks…
- Same theoretical knowledge as any other equivalent undergraduate program
- Significant (2 years) work experience with up to 6 different companies
  - Graduates are sought after by all major companies
- Decent pay
  - Canada: $14-35/hr
  - US: $25-60/hr
  - 1st work term average: ~$20/hr (anecdotal)

Source: https://uwaterloo.ca/co-operative-education/hourly-earnings-information-january-december-2015

Software Engineering

- A combination of Computer Science and Computer Engineering
- Focuses on the technical side of software development
  - Less low-level hardware than CE
  - Less theory than CS
- Programming experience **REQUIRED**
  - Contests, side projects, work experience, courses, etc.
- Average required: ~96% with a strong AIF
- Fixed schedule of ~30 hours per week, few electives

Source: https://uwaterloo.ca/software-engineering/future-undergraduate-students

Computer Science

- Offered by the Mathematics faculty
- Study of software, algorithms, programming, and computation
- Can become similar to Software/Computer Engineering
  - Digital Hardware Option
  - Software Engineering Option
- Average required: ~94%
- Flexible schedule of ~15-20 hours per week, many electives

Source: https://cs.uwaterloo.ca/future-undergraduate-students/undergraduate-programs-courses/computer-science

Computer Engineering

- Under the Department of Electrical and Computer Engineering (ECE)
- Study of all computing, from chips and wiring to software and networks
  - Focuses on practicalities, many labs and projects
- Average required: ~92% with a strong AIF
- Fixed schedule of ~30 hours per week, heavy workload, few electives

Source: https://uwaterloo.ca/find-out-more/programs/computer-engineering

Programs Summary

- Computer Science: Algorithms, programming, math, etc.
- Computer Engineering: Hardware, networks, robotics, etc.
- Software Engineering: Both
- My personal ranking:
  1. Software Engineering
  2. Computer Engineering
  3. Computer Engineering (UofT)
  4. Computer Science

Other University Programs

- In rough order of demand:
  - McMaster Health Sciences
  - UofT Engineering
  - McGill Health Sciences
  - Western Ivey
  - UofT Rotman
  - Queens Business
  - York Schulich

Application Process

1. OUAC – October/November (school dependent)
   I. One engineering application
   II. One math faculty application
2. Keep up your grades – December/January
   I. **MCV4U (Calculus and Vectors)**
   II. MHF4U (Advanced Functions)
   III. ENG4U (English)
3. Additional Information Form (AIF) – later December
   I. Due in January for early acceptance, March otherwise
4. First Round (~25% of offers) – late February
5. Final Round – early May

By the Numbers: Acceptance Rates

- 12000 applicants to engineering
- 1550 spots, 12.91% overall
- Acceptance rates (for Canadian students):
  - Biomedical: 5.88%
  - Software/Computer/Electrical: ~11%
  - Systems Design/Mechatronics: ~23%
- Comparisons:
  - Harvard: 5.2%
  - Yale: 6.3%
  - Cornell: 14.2%
  - Berkeley: 16%

Sources: https://profbillanderson.wordpress.com/2015/12/20/december-2015-update/, http://colleges.usnews.rankingsandreviews.com/best-colleges/rankings/lowest-acceptance-rate

Which One Should I Apply To?

- Depends on your personal situation
- Apply to what you want, not what someone else wants
  - One application is only ~$40
- One engineering, one math @ Waterloo
- Aim HIGH…

Aiming High?

- Engineering applicants must indicate a 2nd and 3rd choice
  - Considered equally with other applications
  - Can be rejected from SE but compete fairly for CE (2nd choice)
- Computer Science applicants are considered for (in order):
  - Mathematics with coop (BMath/CS = BCS)
  - Computer Science without coop
  - Mathematics without coop
  - Geomatics (Faculty of Environment)
- Coop is hard to get if you do not have it
- SE can transfer to CS or CE seamlessly, the reverse is much harder
- Bottom line: It never hurts to aim high

Marks and Admission

- Required courses overall: MCV4U, MHF4U, ENG4U
- Engineering required courses: SCH4U, SPH4U
- A total of 6 courses is used to calculate your admission average
  - Engineering AIFs can add up to 5%
  - CS AIFs are more holistic, but contests matter greatly
  - Adjustments are made for school difficulty
- Applicants are then ranked by admission average
- Bottom line: Higher is better

Additional Information Form

- Sections:
  - About You (**MOST IMPORTANT**)
  - Courses
    - List of grade 12 courses, courses outside of day school, repeated/upgraded courses
  - Engineering **(IMPORTANT)**
  - Math & Computer Science **(IMPORTANT)**
    - All math/computer science contests and your scores
- Considered out of 5 for engineering
- A good AIF is often the deciding factor
- Reviewed by engineering alumni

https://uwaterloo.ca/quest/applicants/how-do-i/admission-information-form

About You

- Why did you choose your program/Waterloo (900 chars)
- Extracurricular Activities
  - Type, short description (30 chars), start/end date, grade, hours/week, weeks/year
- Extracurricular Activities – Extra Information (300 chars)
- Employment Background
  - Employer, job title, work description (~100 chars), hours/week, start/end date
- Special Achievements, Distinctions, and Awards
  - Type, Award, Year, Size of Competition
- Additional Information (900 chars)
  - Anything else you would like to add to your AIF

Extracurriculars

- Waterloo admissions look for well-rounded people
- Coop programs look for employable people
- This is your place to shine
- The average applicant has an almost empty AIF
- Fill it out, in rough order of importance
  - Keep the embellishment to a minimum
- Examples:
  - President of Computer Science Club
  - Volunteered with World Vision
  - Student Council Treasurer
  - Active participant in Math Club
  - Volunteered in Federal election

Summer Programs

- Shad Valley
- FIRST Robotics
- DEEP Summer Academy
- Deep River Science Academy
- Sunnybrook Research Institute
- Volunteering

Work Experience

- Any work experience you may have
- Shows that you are employable
- Can significantly boost AIF
- Work must be paid (exception for unpaid research)
- Examples:
  - Summer Intern at Sunnybrook Research Institute
  - Teacher at Olympiads School
  - Web Developer at Paytm Labs
  - Customer Service Specialist at McDonalds

Contests

- Contests are highly valued for CS/SE admissions
  - Anecdotal examples: 92% average, 96 Euclid, SE/CS, 94% average, 84 Euclid, SE
- Contests include
  - **Euclid**
  - CCC
  - Fermat
  - Hypatia
  - CSMC
- Going to IMO/IOI/CCO etc. guarantees admission
- Olympiads courses help greatly with contest preparation (Euclid, CSMC, etc.)

Engineering

- Engineering Interests and Goals (900 chars)
  - Why do you want to study engineering, particularly your program?
  - Career goals? Interests and abilities? Exposure to engineering?
- Reading Interests (900 chars)
  - Discuss a book or a written article you enjoyed or had an impact on you
  - Not a huge factor in determining AIF score, shows you are a human
- Programming Knowledge, SE only (600 chars)
  - Discuss your programming knowledge by language and number of months
  - Should ideally be in ECs or work experience already

A Good AIF

- Is concise and to the point
- Shows your best activities
- Does not contain filler
- Proves you can handle the academic workload
- Does not contain any half-truths
- Is free of grammar/spelling mistakes

Sample AIF 1

- Highlights
  - DECA
  - FIRST Robotics Team
  - Shad Valley
  - 63 on Euclid
  - Summer job at Tim Hortons
- Grade
  - ~3.5-4/5 Engineering
  - Not a huge boost for CS
- This shows a somewhat typical applicant

Sample AIF 2

- Highlights
  - Editor of school newspaper
  - Student council member
  - Shad Valley
  - Placed in DECA regionals
  - Member of Math Club
  - 53 on Euclid
- Grade
  - ~3/5 engineering
  - No effect on CS
- This shows a very well rounded applicant

Sample AIF 3

- Highlights
  - Member of Computer Science Club
  - Deep River Science Academy
  - Hobby programmer
  - 64 on Euclid
  - 51 on CCC
- Grade
  - ~3/5 engineering
  - CS admission likely
- This shows a more technical applicant

Sample AIF 4

- Highlights
  - President of Computer Science Club
  - Open source software contributor
  - Attended multiple hackathons
  - Extensive programming experience
  - CCO participant
  - 74 on Euclid
- Grade
  - ~4-5/5 engineering
  - Large scholarship to CS
- Only a few people will have this, do not aim for this

My AIF

- Do not be like me, I am a bad influence…
- If you must know:
  - Computer Science Club President/Founder
  - School Newspaper Web Development Lead
  - Robotics Club Vice President
  - TOPS Program Website Lead
  - Olympiads Web Development/Programming Teacher
  - Sunnybrook Research Institute Software Developer Intern
  - Top ~10% in programming contests
  - Top ~25% in math contests

Tips and Tricks

- Get someone else, preferably attending Waterloo, to read your AIF
- Try to find some way of making yourself stand out
  - E.g. Teaching at Olympiads
- Remember that your AIF is read by Waterloo alumni
- Do not talk about university/program rankings, pay, etc.
- Remember to save your AIF
- Some ECs automatically add to your AIF
  - Shad (~1%)
  - FIRST Robotics (~1%)
  - Work experience (~1%)

Applying to Other Universities

- Few Canadian universities require separate applications (no Common App)
  - Most universities only look at marks
- Engineering applications generally follow the same format
  - UofT, Carleton, Western, etc.
- Science/business applications consist of essays
  - McMaster Health Science
  - Almost all business schools
- Marks alone can get you into 95% of university programs

Scholarships

- Waterloo gives out at most $10000 ($2000 most common) to engineering
  - Euclid can give up to $20000 to mathematics
- Do not depend on scholarships
- Other universities may give much more ($15000 UofT, $40000 York, etc.)
- Engineering tuition is ~$8000 for one semester
- Mathematics tuition is ~$6500 for one semester
- Bottom line: Do not depend on scholarship money to fund Waterloo

Questions?

- Ask Me Anything:
  - Applying to Waterloo
  - University life
  - High school life
  - Job searching
  - Teaching
  - Cooking…
- Email me at dlu97@outlook.com