

Applying to Waterloo

David Lu

June 2016

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
- ▶ This summer I am teaching:
 - ▶ Web Development (NEW)
 - ▶ Computer Contest Level 1
 - ▶ Java

Special Note

- ▶ “~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/>

Why Waterloo?

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

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, not much in the grand scheme of things
- ▶ One engineering, one math
- ▶ 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%)

Scholarships

- ▶ Waterloo gives out at most \$10000 (\$2000 most common)
- ▶ Do not depend on scholarships
- ▶ Other universities may give much more, Waterloo has coop
- ▶ 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...
- ▶ Presentation available at <http://tinyurl.com/jeah69o>
- ▶ Email me at dlu97@outlook.com