Welcome to Software Engineering

Stephen W. Neville, PhD, PEng (BC)

Director, Software Engineering,
Professor, Electrical and Computer Engineering
Co-manager, Entrepreneurship@UVic

Agenda

1. Introductions
2. Software Engineering Overview
3. Program Overview
4. BSEng as a nationally CEAB accredited engineering degree
5. Co-op and SEng Portfolio
6. Questions/Concerns

People...

SENG is a joint program of the CS and ECE Departments

- Director: Dr. Stephen W. Neville, PEng (BC)
  - sengdir@uvic.ca
- Advisor: Belinda de Jong
  - engradv1@uvic.ca
- Program Coordinator: Cassie Petrachenko
  - bsengoff@uvic.ca
- Co-op Coordinators:
  - Imen Bourguiba, imenbour@uvic.ca
  - Ash Senini, asenini@uvic.ca

"Software is eating the world."

Marc Andreessen

Co-founder Mosaic
Co-founder Netscape

Silicon Valley Venture Capitalist
Serial High-tech Entrepreneur

Software Engineering

"*As an engineer, you might **wield more power than you realize**: **the power to literally change society**. It's critical that on your journey to becoming an exceptional engineer, you understand the **innate responsibility needed to exercise power without causing harm**. The first step is **to recognize the default state of your bias caused by many societal and educational factors**. After you recognize this, **you'll be able to consider the often-forgotten use cases or users who can benefit or be harmed by the products you build***."

— Titus Winters, Software Engineering at Google: Lessons Learned from Programming Over Time

Software Engineering

- **Engineering:**

  "Building systems and solutions that behave predictably 24/7/365 day-in day-out in the real-world."

  As engineers, we (really) don't like surprises!

- **Software Engineering:**

  "Doing this for modern large- to global-scale software-centric systems and solutions that societies increasingly critically rely on."

Why Software Engineering Matters

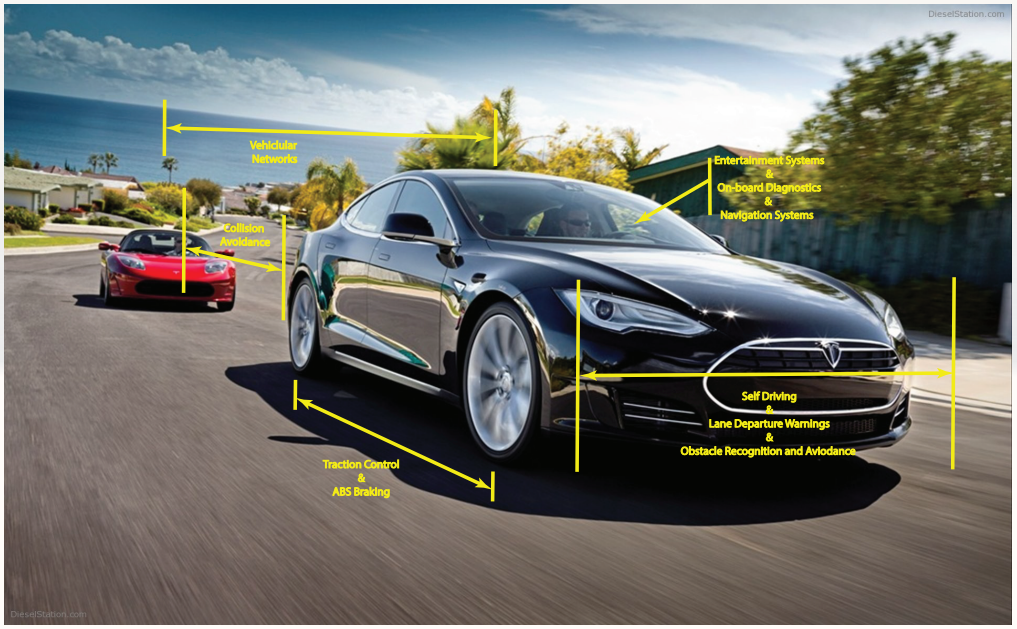
- Modern large-scale and complex software systems run (or are foundational to):
  - Social media, entertainment, & gaming platforms
  - Banking, Finance, & FinTech
  - Critical Infrastructure control & management (power, water, transportation, etc.)
  - eGovernment and eVoting
  - Business-to-business systems
  - Modern vehicles, airplanes, etc.
  - Smart Cities, Smart Grids, Vehicular networks, etc.
  - Autonomous vehicles, drones, etc.
  - Advanced heath care and eHealth
  - Data Science, AI, & ML
  - Cyber-physical systems & Internet-of-Things
  - And on and on …

Why Software Engineering Matters

- Societies expect that these systems are *engineered* to be:
  - Safe (human and environmental)
  - Secure
  - Robust
  - Reliable
  - Available
  - Cost-effective
  - Performant
  - Scalable
  - Upgradable
  - Adaptable
  - Enhanceable
  - Maintainable
  - Privacy preserving
  - Sustainable (Green)
  - Power efficient
  - Fair and Unbiased
  - etc.

Emerging Tech Trends

- Autonomous Vehicles
  - Includes: self-driving cars, drones, ocean gliders, etc.:



Software is the “autonomous” part.

Requires engineering in strong health, safety, and security measures.

Emerging Tech Trends

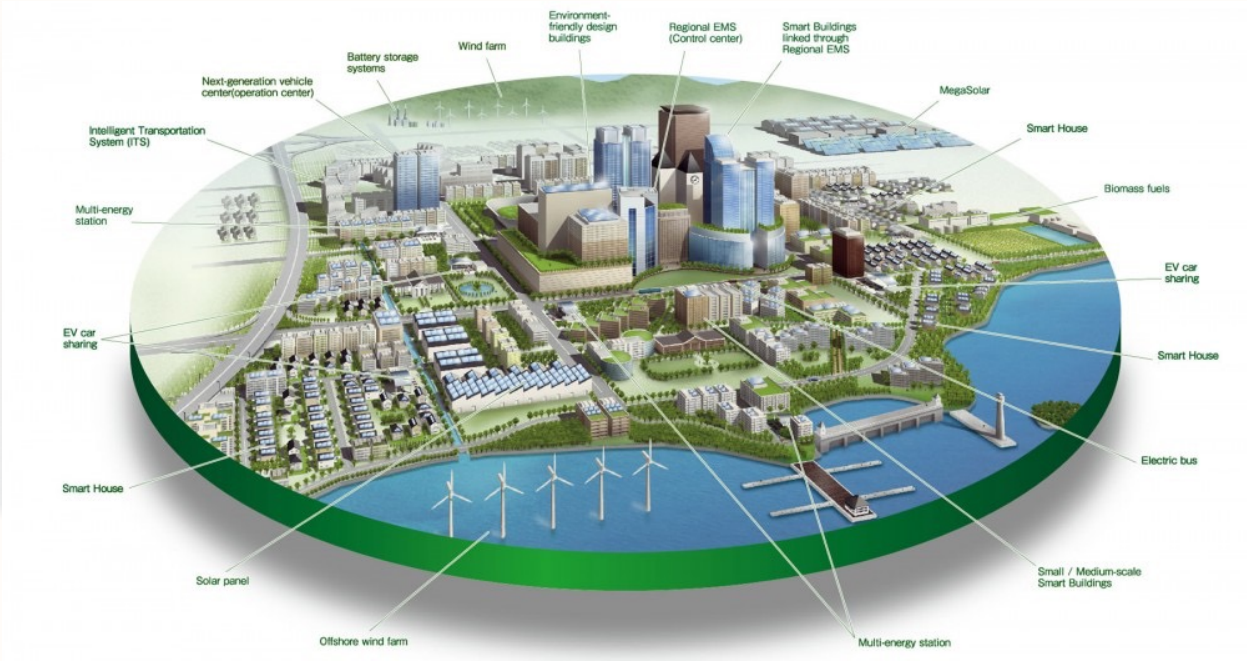
- Smart Buildings:

Software is the “smart” part.

Requires engineering in strong health, safety, security, green energy, etc. requirements.

Emerging Tech Trends

- Smart Cities:



Software is the “smart” part.

Requires engineering in strong health, safety, security, privacy, green energy, etc. requirements.

Emerging Tech Trends

- Data Driven Agriculture:

Software systems collate multiplicity of data and provide intelligent data-driven decision support.

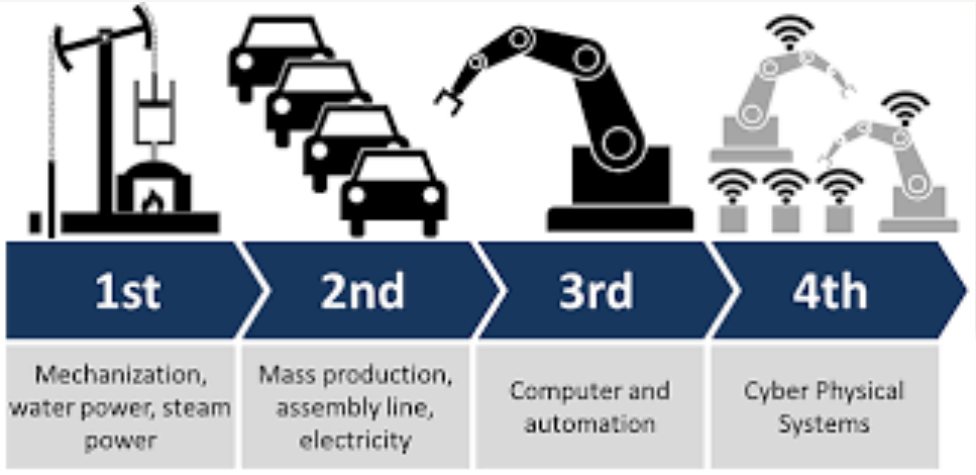
Emerging Tech Trends

- eHealth & Advanced Healthcare:

Software measures and tracks data, provides the intelligent analytical insights and decision support to improve care.

Emerging Tech Trends

- Cyber-Physical Systems (CPS) and the Internet-of-Things:



Measure, decide, act.

Strong health, safety, security, privacy, sustainability, etc. concerns that must be engineered in to work in systems evolving towards 100+ billion Internet connected devices.

Emerging Tech Trends

- Data Science, Data Analytics, Machine Learning, and AI:

Apply machine learning (ML), artificial intelligence (AI), and data analytics to massive-scale data sets to extract correct & actionable knowledge and insights.

Emerging Tech Trends

- It's your generation that will convert these possibilities into tomorrow's realities!

- The above is likely to become mainstream tech in the next 5+ to 10+ years.
  - i.e., Within the first 5+ years of your post-university SENG careers.

- The SENG program focuses on preparing you for a ***career***:
  - Building the required depth and breadth of skills, knowledge, and understanding (in both theory and practice)
  - Gaining the required experience through:
    - Industry co-ops
    - Course projects
    - SENG 499 capstone project
    - Student Clubs and design teams
    - etc.

Required Skills, Knowledge, and Experience

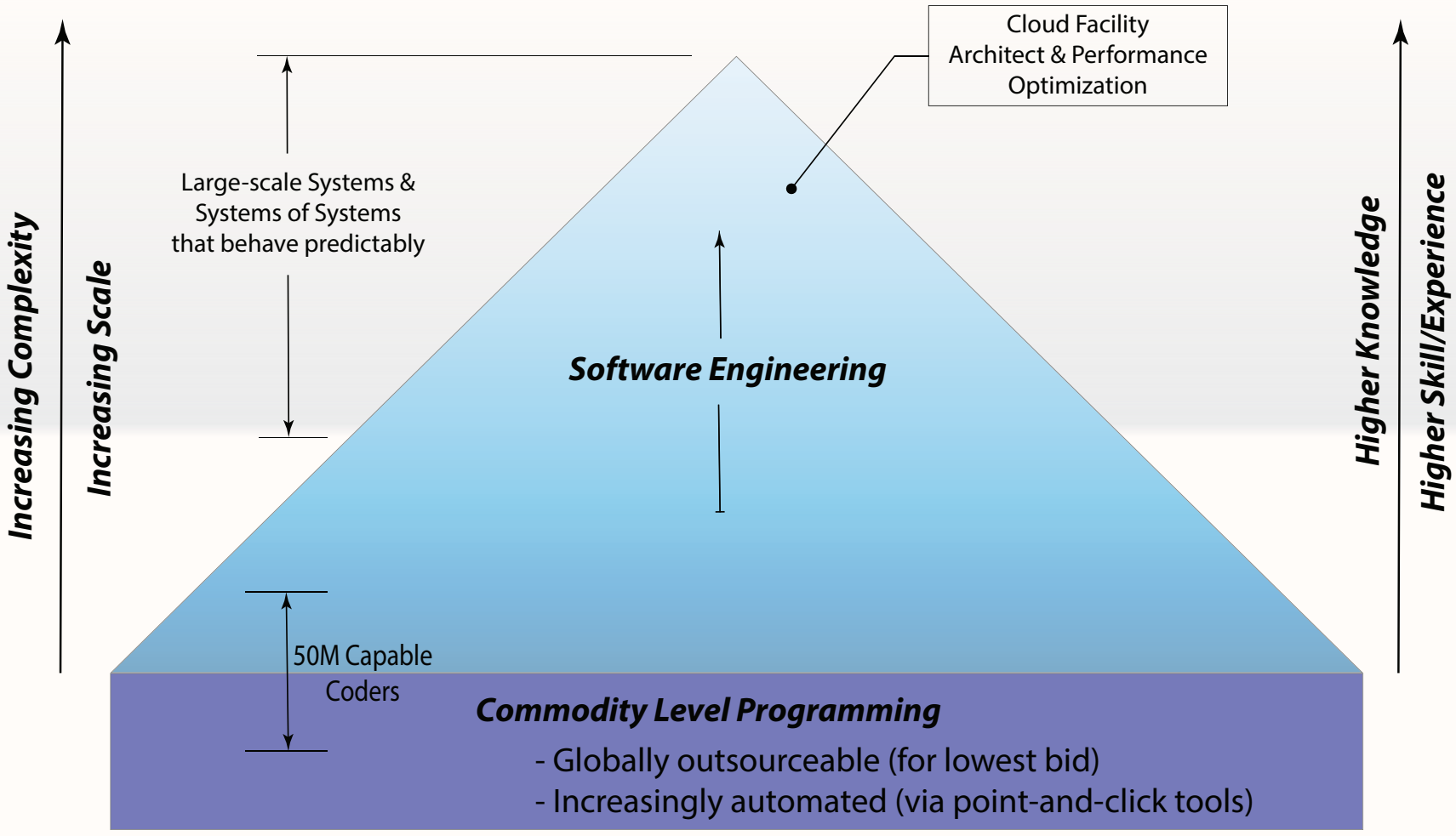
- **Rough estimate:**
  - ~5.6B people globally have access to:
    - A reasonable education and the Internet.
  - Generally,
    - 0.8% to 0.9% of a developed country's population can code (reasonably competently).
  - Globally, this means ~50M reasonably capable coders exist.
    - People who can use Python, Java, JavaScript, etc.
    - People who can build basic web sites, mobile apps. etc.
    - People who can use the Internet to learn new on-line tools, programming languages, deployment methods, etc.

Required Skills, Knowledge, and Experience

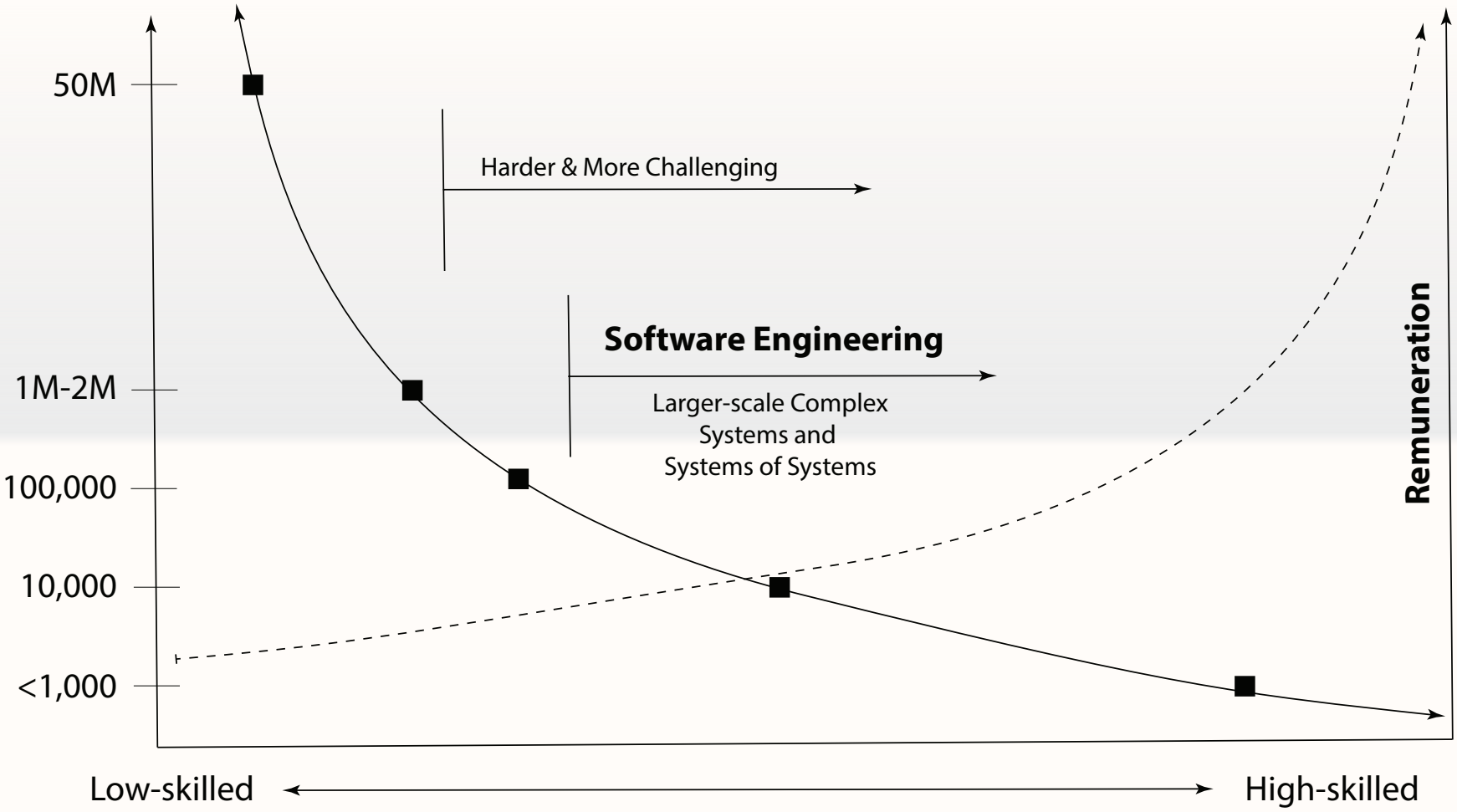
- **Implications:**
  - **Lower end coding jobs are becoming:**
    - Global and commoditized,
      - i.e., low-cost, lowest bidder
    - Increasingly automated
      - e.g., Point-and-click web site building, point-and-click basic mobile app building, etc.

Software Engineering degrees require significant time, effort, and expense to gain deeper and broader sets of skills, knowledge, and experience …

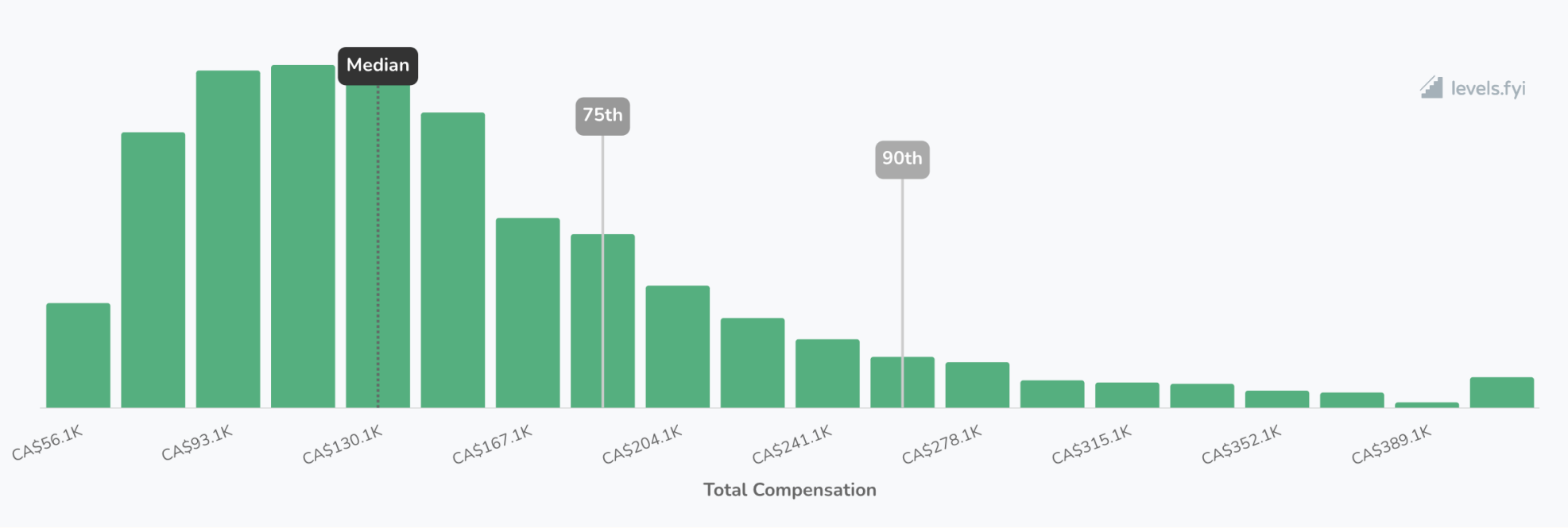
Required Skills, Knowledge, and Experience)



Required Skills, Knowledge, and Experience



SENG Payscale Distribution Canada



https://www.levels.fyi/t/software-engineer/locations/canada

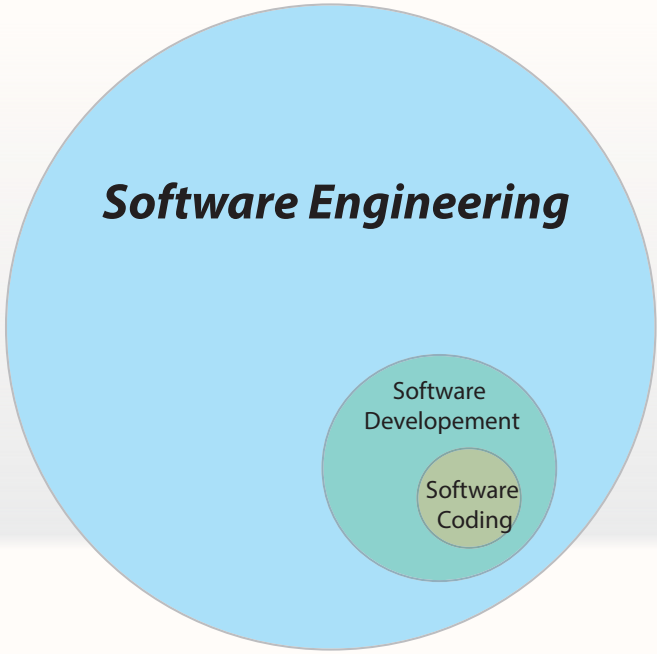
Difference between Software Engineering, Computer Engineering, and Computer Science?

- **Computer science:** focuses the underlying science of computers and computer-based technologies.
  - *Science focuses on*: "What is possible?"
- **Engineering:** expands math and science foundations to build usable (and well-engineered) real-world systems and solutions to advance societies.
  - *Engineering focuses on*: "Converting the possible into the day-to-day"
- **Software Engineering:** focuses on modern large- to global-scale software-centric systems and solutions.
- **Computer Engineering:** focuses on the interfaces between the physical and cyber-worlds and on hardware-facilitated computations
  - i.e., computations not involving OSes.

Developer vs Software Engineer?

Software Engineering *vs* ***software development****:*

- *Coding one of the tools Software Engineers use to solve problems.*
- *Software is one of tool(s) we use to make global impacts.*



Software Engineering *requires applying a far wider set of engineering principles and concerns to the creation of software-centric systems such that they operate correctly and behave predictably.*

A Useful Analogy

Many people can code.

And many people can construct a reasonably nice garden shed.

But…

Engineering is required to do things at-scale!

Building a bridge is nice …

Having it collapse (twice …) is bad (very bad)…

Quebec Bridge Disaster(s):

- Aug. 29, 1907
- Sept. 11, 1916

- Total: 88 died

- *Collapse(s) is the reason why Canadian-trained engineers receive Iron Rings …*

Large-scale Software is significantly harder…

- If a software systems collapses (hourly, daily, monthly …)
  - At best you (or your team or company) just get fired …
  - Or your company goes out of business, etc.
  - Worst case people may be injured or killed, major financial impacts may arise (in the tens of millions to tens of billions), serious environmental damage, etc.
  - Impacts can be global …

- Building bridges is arguably easier:
  - Known (or knowable) soil and expected weather conditions
  - Known material compositions and strengths
  - Known and allowable static and dynamic loads
  - Known inspection and maintenance requirements and cycles
  - New ways of building bridges are not arising every 6 months
  - Bridges are simply smaller scale and more constrained systems …

Large-scale software is considerably more complex and complicated …

Some of the additional complications & complexities:

- Modern software systems process millions, billions, or tens of billions of daily events
  - Requires testing against part per million, part per billion, or even higher failure rates
- Frameworks, coding languages, APIs, deployment regimes, etc., change rapidly
  - Typical software industry technology half-life is around 6 months
- Systems must be designed to support evolving needs and scales:
  - New features, purposes, workloads, higher volumes, etc.
- Have to deal with intelligent capable adversaries (including nation-states ones)
- Have to meet regulatory and best practice requirements (privacy laws, etc.)
- Have to work across a complex multiplicity of geopolitical contexts and jurisdictions.
- Complex (to very complex) underlying mathematical models

These are the largest, most complex systems humanity has ever made!

Makes SENG one of the most challenging, dynamic, and rapidly evolving engineering disciplines!

Software Engineering careers evolve as technologies evolve:

- Many of today's jobs involve aspects such as:
  - Scalability and performance issues within large-scale distributed software systems (SaaS, MMOGs, etc.)
  - Cyber-security and privacy
  - Data analytics and data management
  - etc.
- Tomorrow's Software Engineering careers (all of the above plus):
  - Complex systems of systems that need to:
    - Measure (observe) real-world events in real time,
    - Collect, clean, collate, analyze data, and interpret/convey results
    - Generate intelligent decisions and actionable insights, and
    - Enact real-world actions.

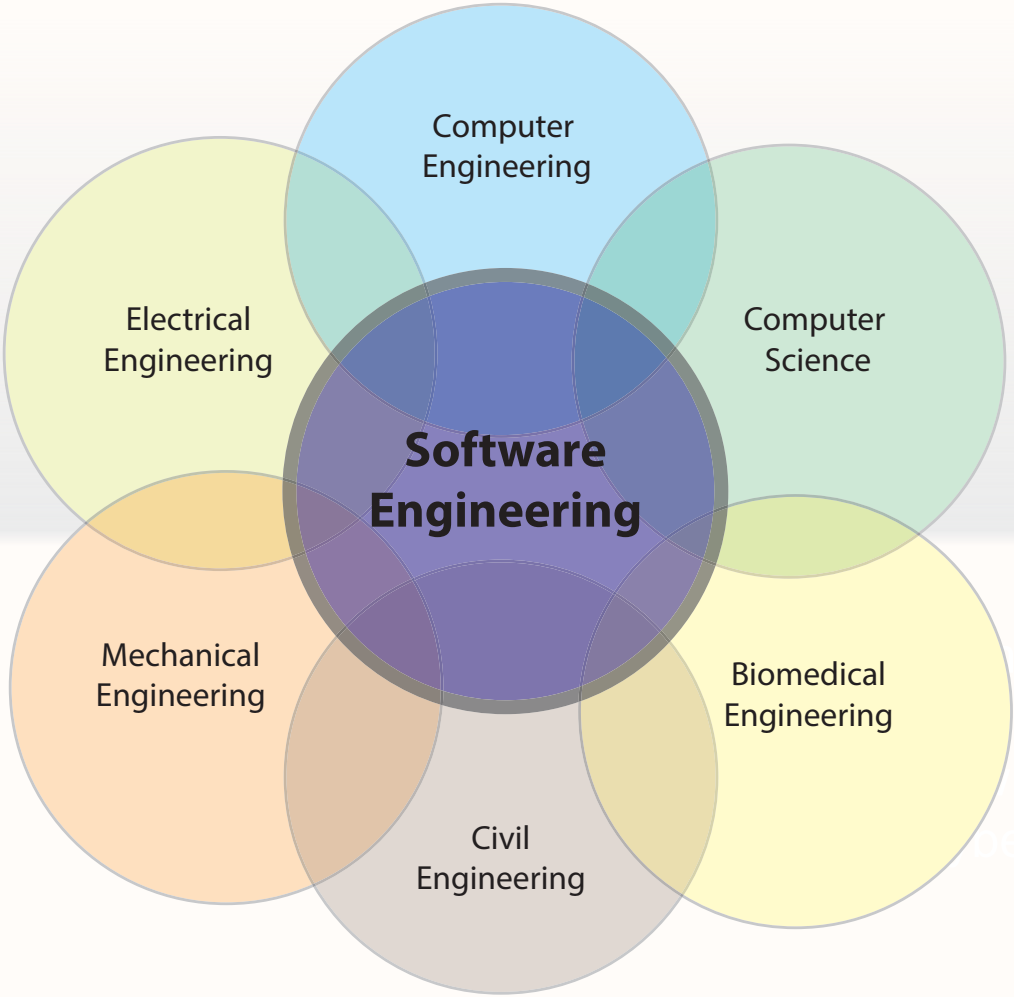
Why is SEng a good/great career:

- High and rapidly accelerating global demand
  - There is not going to be less software in 5, 10, or 20+ years …
- Everyone uses similar (or the same) software stacks/deployment regimes
  - High (and easy) career mobility across industries (or countries)
  - Cloud computing and mobile computing are driving this commonality
- Important, high-value problems that matter to industries, governments, & societies
  - Small teams can (and do) make global impacts!
  - Work that matters
  - Good pay and benefits
- High work flexibility
  - From home, from office, from half-the-world away
  - Collaborative and interesting work

Being a member of teams that are building core systems that advance societies.

Software Engineering

Is becoming the “glue” interconnecting fields



SENG Growth by Numbers:

Engineer's Canada growth by discipline (2016-2020)

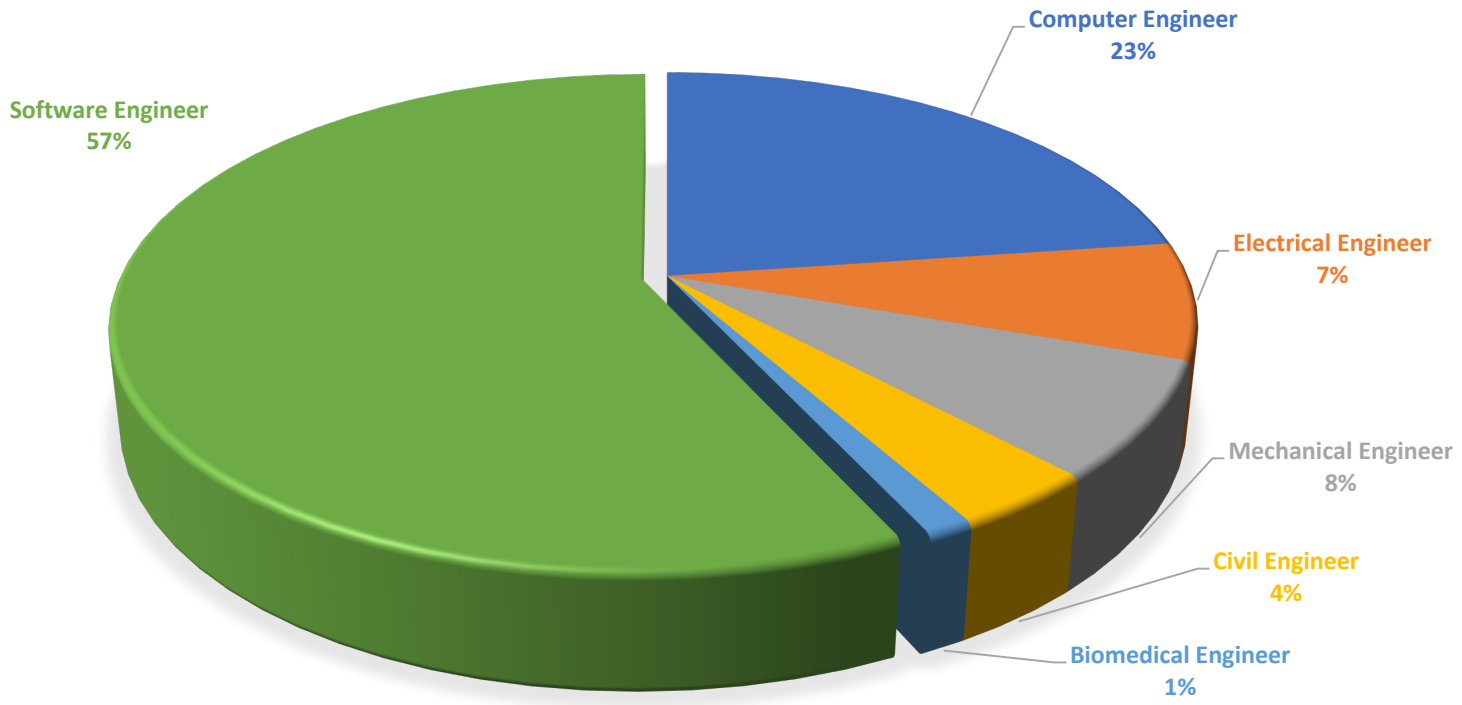
Engineering Discipline	2016	2017	2018	2019	2020	Gain	CAGR
Software	***4,649***	***5,020***	***6,394***	***6,878***	***7,391***	***2,742***	***12.3%***
Computer	5,473	6,097	6,451	7,389	8,192	2,719	10.6%
Mechanical	18,415	18,194	20,275	19,190	19,874	1,459	1.9%
Biosystems	1,787	1,855	2,366	2,693	2,969	1,182	13.5%
Other	4,263	4,419	3,159	4,682	4,986	723	4.0%
Industrial or Manufacturing	2,787	2,798	3,370	3,271	3,328	541	4.5%
Environmental	1,501	1,668	1,247	1,965	1,934	433	6.5%
Materials or Metallurgical	951	869	885	885	934	-17	-0.5%
Geological	746	654	609	603	556	-190	-7.1%
Civil	12,379	11,666	12,978	12,209	11,979	-400	-0.8%
Chemical	6,341	5,949	6,451	6,099	5,940	-401	-1.6%
Mining or Mineral	1,249	967	1,106	948	831	-418	-9.7%
Electrical	11,391	11,222	12,129	10,783	10,651	-740	-1.7%
Engineering Physics	3,303	3,245	2,346	1,335	1,396	-1,907	-19.4%
TOTAL	***79,999***	***79,227***	***86,895***	***88,273***	***90,311***	***10,312***	***3.1%***

SENG Growth by Numbers:

One of the fastest growing Canadian engineering disciplines

- Canada:
  - 15,000+ open SENG jobs
  - About 2,000 expected Canadian SENG graduates in 2022
  - 7:1 jobs to graduates ratio

LINKEDIN JOB POSTINGS - CANADA
SEPTEMBER 3, 2022
26,000 TOTAL ENGINEERING JOBS

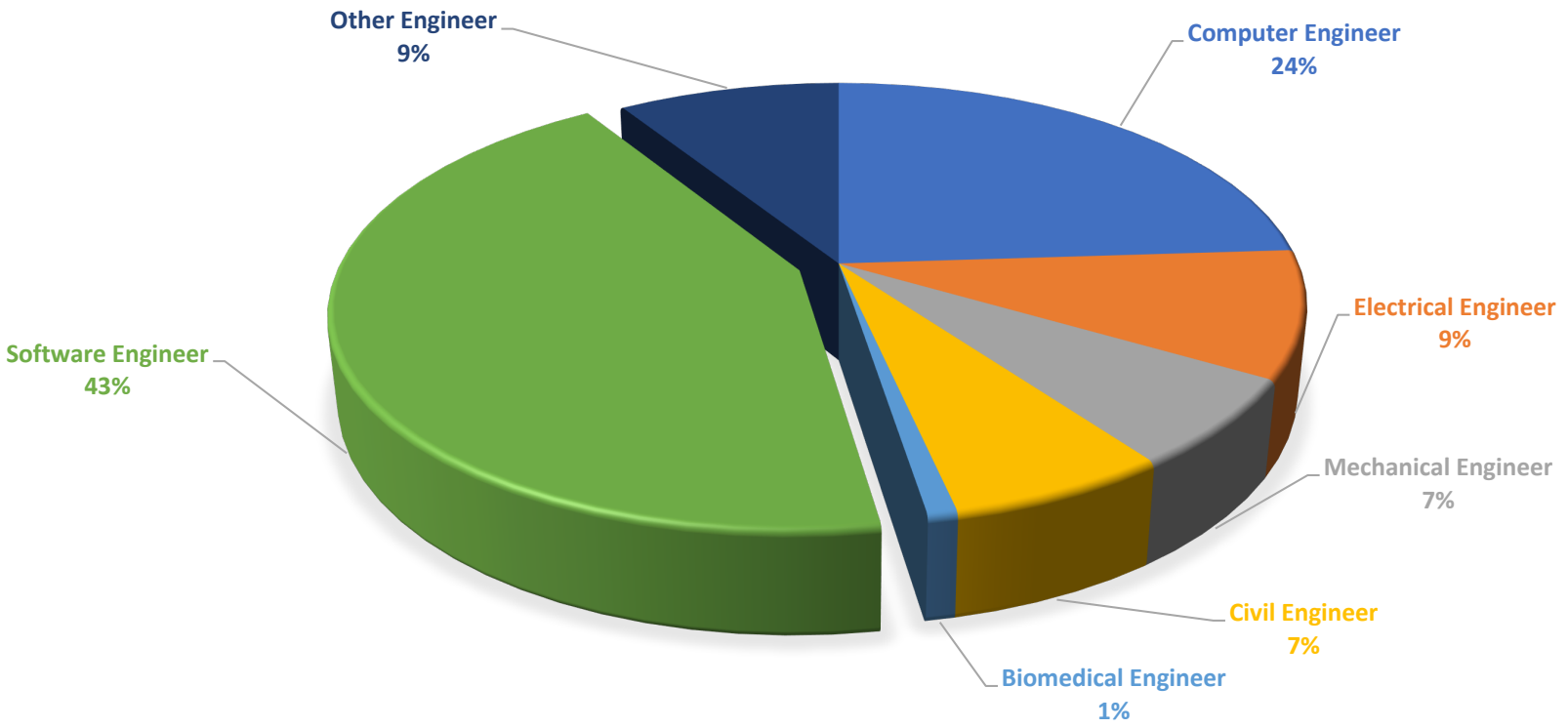


SENG Growth by Numbers:

One of the fastest growing Canadian engineering disciplines

- USA:
  - 245,000+ open SENG jobs

LINKEDIN JOB POSTINGS - USA
SEPTEMBER 3, 2022
563,000 TOTAL ENGINEERING JOBS

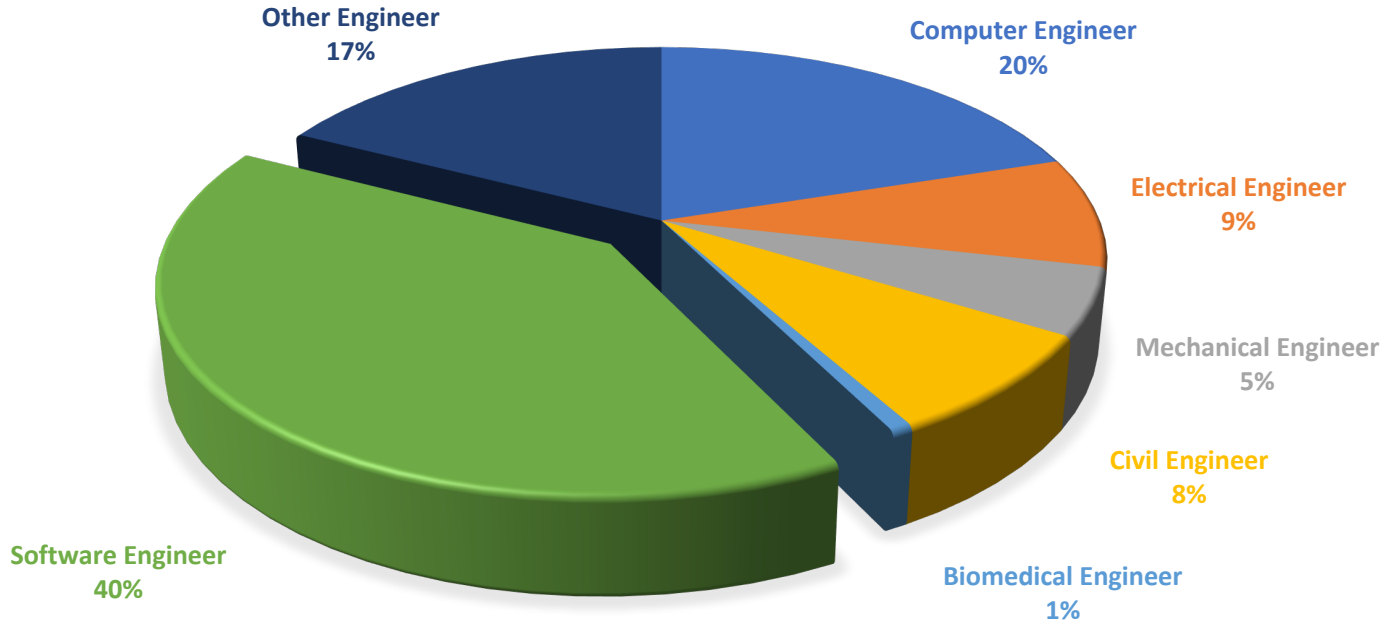


SENG Growth by Numbers:

One of the fastest growing Canadian engineering disciplines

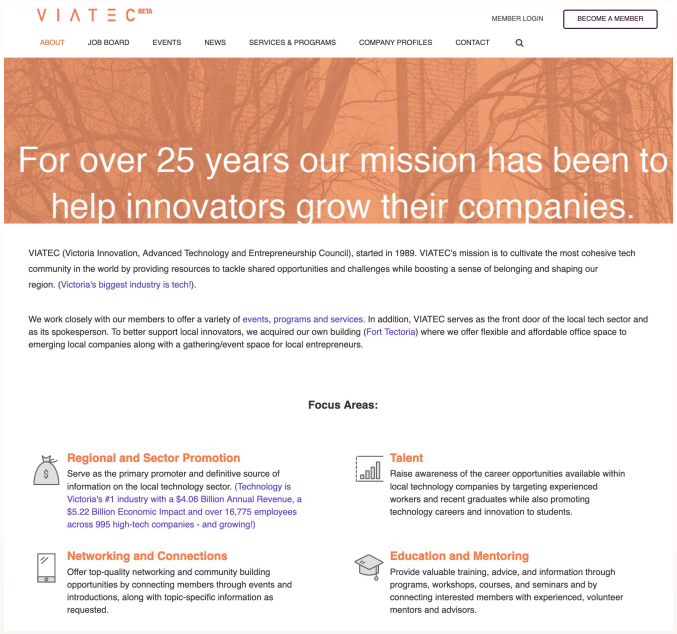
- British Columbia:
  - 2,000+ open SENG jobs
  - BC Gov't est. 9,350 new SENG job openings by 2031
  - Currently, BC produces around 100 SENG graduates per year

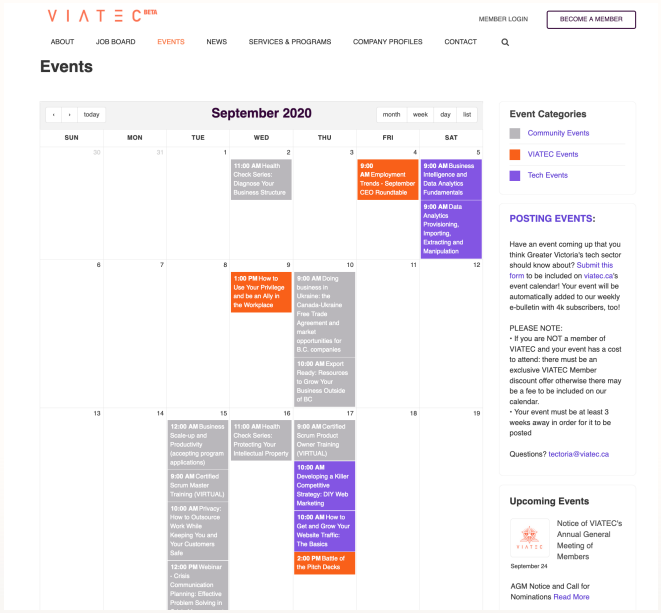
LINKEDIN JOB POSTINGS - BRITISH COLUMBIA
SEPTEMBER 3 2022
5,000 TOTAL ENGINEERING JOBS

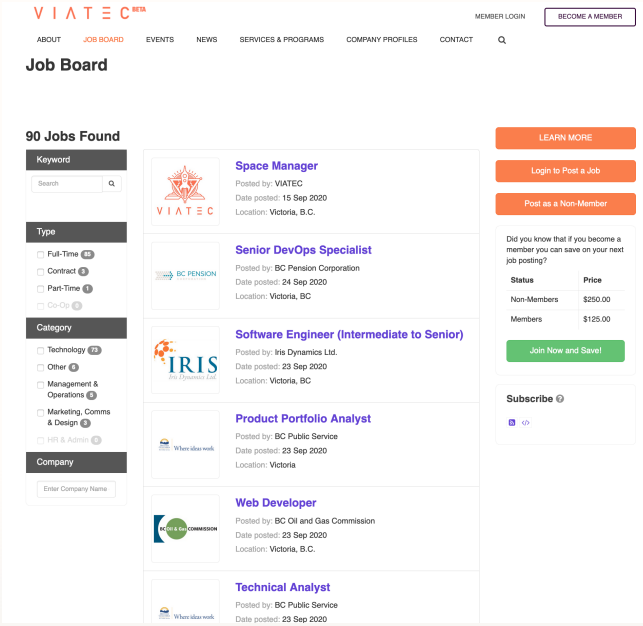


High-tech in Victoria

- Victoria has a vibrant, inclusive, supportive, globally competitive, software-centric high-tech industry sector and community.
  - 70%+ of SENG co-ops are local
    - Gain globally valued experience and skills locally
    - While earning reasonable incomes to pay for your degree/living costs …
  - VIATec is the industry ”cheerleader” organization
    - https://www.viatec.ca/
    - VIATec Job board is where many local companies post openings
    - Host many events which students are very welcome to …
  - As of 2018:
    - 900+ local high-tech companies
    - $4.3B in annual revenues
    - 18,000+ direct employees
    - and rapidly growing …
  - On target to grow to $10B/year in revenues by 2030
    - Access to skilled talent is the core growth limiter!

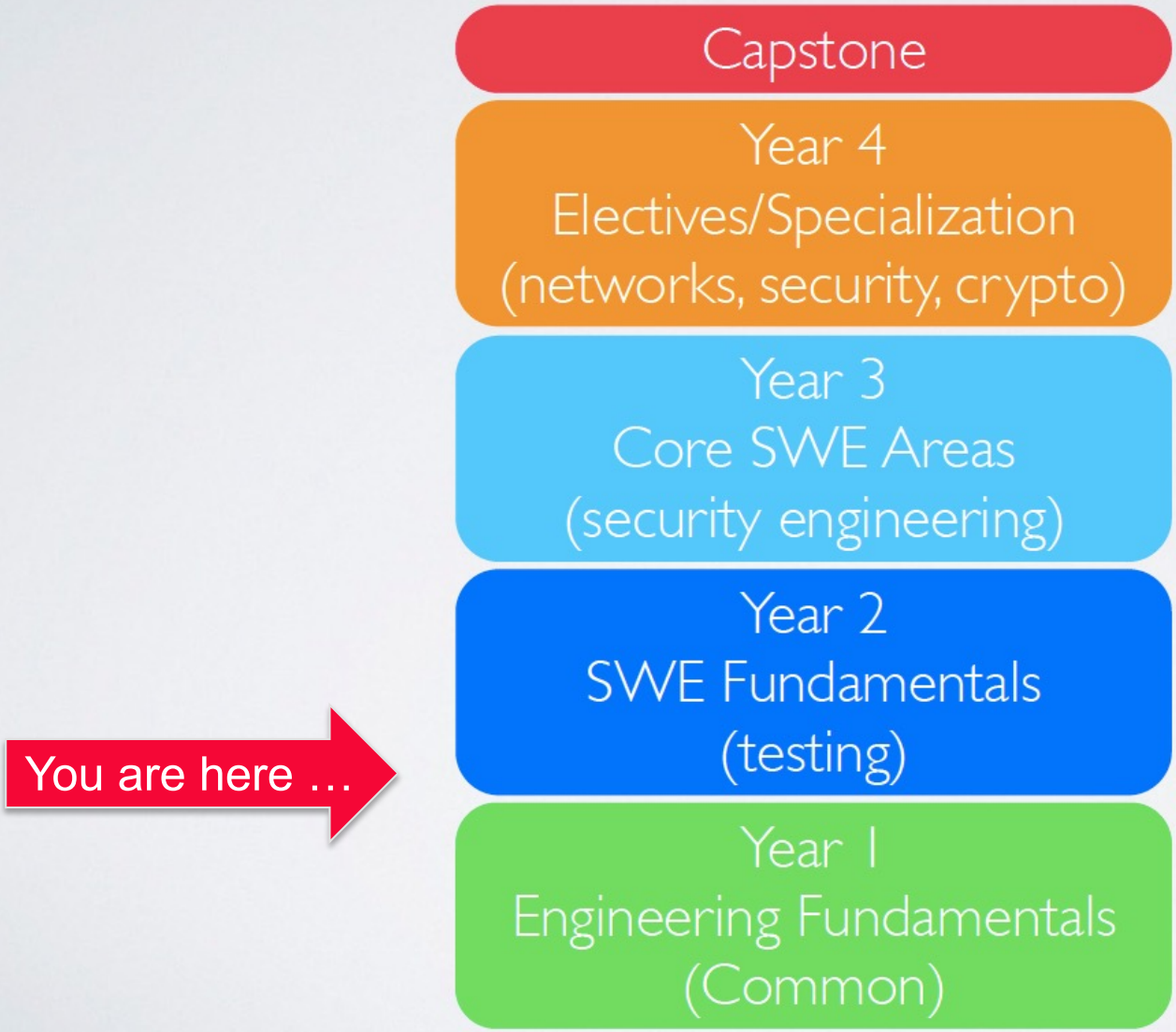


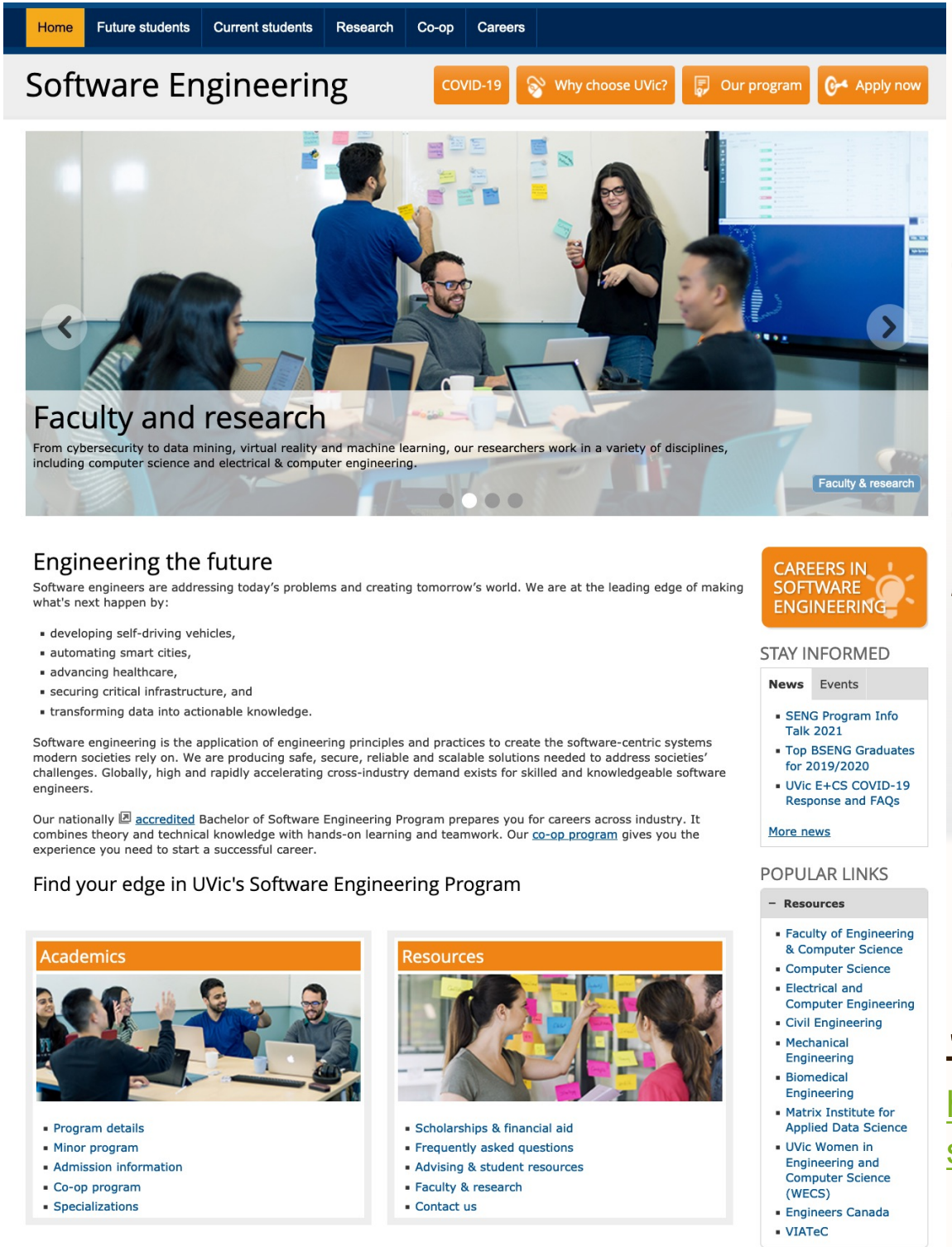




- VIATec: Supports the local tech sector
  - Hosts many events per month (students are welcome)
  - Host a very active local job board
  - Provides a good way to get to know (and engage with) people in the local tech sector
  - Web: https://www.viatec.ca/cpages/home
  - You can get world-class experience within the local high-tech sector as most companies are successfully competing within global markets

SE PROGRAM OVERVIEW





Web Links:

Main SENG website:

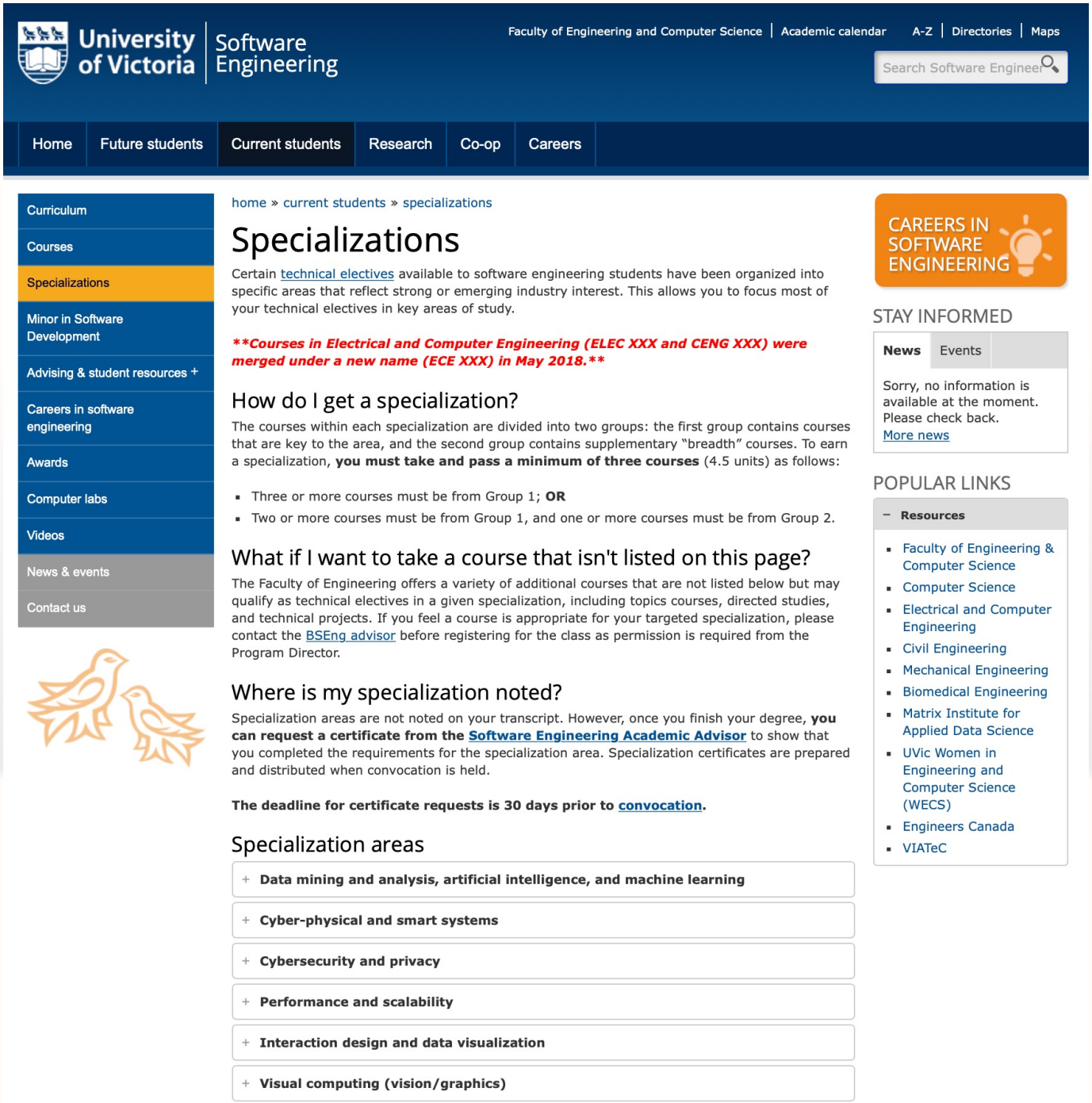
https://www.uvic.ca/ecs/software/index.php

UVic Calendar SENG program:

https://www.uvic.ca/calendar/undergrad/index.php - /programs/SJKVp7AME?bc=true&bcCurrent=Software Engineering&bcItemType=programs

SENG Specializations:

https://www.uvic.ca/ecs/software/current-students/specializations/index.php



SENG Specializations:

- Data mining and analysis, AI & ML
- Cyber-physical and smart systems
- Cybersecurity and privacy
- Performance and scalability
- Interaction design and data visualization
- Visual computing (vision/graphics)

SENG Faculty & Structure

- SENG is a jointly delivered and shared program between the:
  - Dept of Computer Science, and
  - Dept. of Electrical and Computer Engineering

- Combines and build on the insights and approaches provided via both departments and disciplines

- SENG is:
  - 2nd largest undergraduate engineering program in the ECS Faculty, and
  - Fastest growing … (at over 8.31% annually)
  - Currently, 325+ SENG students (and growing …)

Prof. Stephen W. Neville
Director, Software Engineering
sneville@ece.uvic.ca

Research Focus Areas:

- Software Engineering in large- to global-scale Systems
- Cyber-security and Privacy
- Data Analytics, Data Science, ML & AI
- High-tech Entrepreneurship

Focus on Industry-applied research

Prof. Issa Traoré

itraore@ece.uvic.ca

Research Focus Areas:

- Cyber-security
- Biometrics
- Forensics
- Formal methods
- Software quality engineering
- Requirements specification

Prof. Margaret-Anne (Peggy) Storey
Canadian Research Chair

mstorey@uvic.ca

Co-director, Matrix Applied Data Science Institute

Research Focus Areas:

- Software engineering, knowledge engineering
- Information visualization
- Human computer interaction
- Computer supported collaborative work
- Social informatics
- Knowledge management

Prof. Bruce Kapron

(bmkapron@uvic.ca)

Theory of Privacy and Security

Research Focus Areas

- Verification of security protocols
- Anonymization of social network data
- Game-theoretic methods in security
- Cryptography
- Anti-malware evaluation

Recent collaborations

- VERIMAG Embedded Systems Lab, University of Grenoble (Automated verification of security protocols)
- Xoom Data Services, Victoria (GPU encryption of streaming video)
- Intel (Automated antivirus evaluation via malware mutation)

Prof. Hausi Muller

(hausi@uvic.ca)

Internet of Things

Self-adaptive systems and Autonomic systems

Quantum computing

Goal: Institute for Cyber Physical Systems Research

"Smart systems that encompass computational and physical components, seamlessly integrated and closely interacting to sense the context of the real world.

http://shonan.nii.ac.jp/seminar/052/category/talks/

Prof. George Tzanatakis

Research Interests: ***Music Information Retrieval,*** *Audio Signal Processing, Machine Learning, Human-Computer Interaction*

Projects: ***Marsyas*** *(http://marsyas.sness.net)* free software audio processing framework used in academia and industry

Achievements/awards:

- IEEE Young Author Signal Processing Award 2004
- Associate Editor Computer Music Journal, IEEE TASLP
- Chair, Int. Conference on Music Information Retrieval ISMIR 2006, Victoria, Canada

gtzan@cs.uvic.ca

Prof. Daniel German

(dmg@uvic.ca)

Open Source Software Engineering (OSS)

What can traditional software engineering learn from OSS?

- How **release management** is done in open software
- How people use git and GitHub (**Distributed version control**) and how it changes collaboration
- Build tools for **Linux to trace contributions**

How is software licensing affecting software development?

- **License** identification and documenting (developed Ninka)
- Understanding how software architectures and OSS licenses affect **software reuse**
- Building tools to determine **Software Provenance**

Prof. Daniella Damian

danielad@uvic.ca

Studies global software development, empirical software engineering, human-computer interaction, computer-supported cooperative design, requirements engineering

Dr. Neil Ernst

nernst@uvic.ca

Studies software engineering, software architecture, requirements engineering, autonomous systems, information systems modernization, empirical methods

SENG is CEAB Accredited

- Canadian Engineering Accreditation Board (CEAB)

- Means your BSEng degree meets national accreditation standards:
  - UVic has one of the largest BSEng programs in Western Canada.
  - And one of the most mature SENG programs in the country (founded in 2003).

- In industry, “software engineer” is an overloaded term:
  - Companies increasingly want to clearly know what the knowledge and skill sets are of people who call themselves: “software engineers”.

  - CEAB accreditation means the “Software Engineer” title you get has national significance (and value) and is matched by the required depth and breadth in skills, knowledge, and experience.

Expectations

Software Engineering is a Professional program

- Essential for future Professional Engineers to:
  - Act professionally
    - If issues should arise tell us ...
  - Be courteous and show respect
    - Peers, support staff, TAs, professors, and everyone
  - Honour and honesty

- Cheating and plagiarism costs you the skills and knowledge you will need in your career
  - If something is unclear or you're unsure – Ask!
  - https://www.uvic.ca/students/academics/academic-integrity/

You are adults and we expect you will act professionally …

Expectations

Software Engineering is a Professional program

- Become a good team player and leader
  - You are always creating an impression
    - It's your choice is whether it's "good" or "bad" …
  - People will ask:

    "You went to UVic with Bob/Jane, what is your impression of them?"

- Be open-minded and willing to learn:
  - Diverse opinions and backgrounds leads to better decisions & insights
  - Recognize you may be wrong (or have misunderstood something)
  - You can learn if you respectfully listen and work to understand the viewpoints of others.

- Face challenges head on
  - A challenge is an opportunity to learn and grow

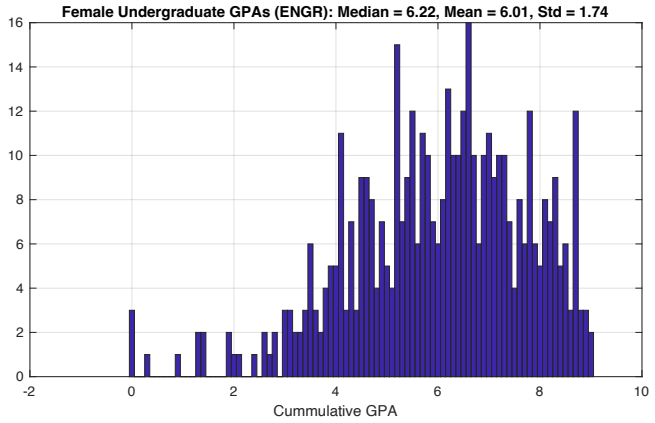
- Provide thoughtful feedback (venting doesn't foster change)
- Be conscious of your biases ….

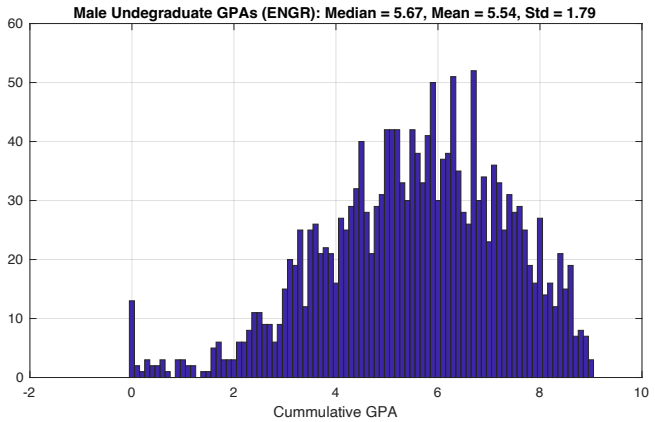
Expectations

Software Engineering is a Professional program

- Be aware of potential biases
  - Across all of our engineering programs women students are performing better (to a statistically significant level) than their male colleagues.

Cumulative GPAS (All years, All programs)	Female	Male
Mean	6.22	5.67
Median	6.01	5.54
Standard Deviation	1.74	1.79





- Note: Top-end is very similar.

https://www.uvic.ca/ecs/_assets/docs/student-forms/professional-behaviour.pdf

University of Victoria

Faculty of Engineering: for Engineering and Computer Science

Standards for Professional Behaviour

It is the responsibility of all members of the Faculty of Engineering, students, staff and faculty, to model and promote standards of professional behaviour that support an effective learning environment and prepare graduates for careers as professionals.

Professional Behaviour

Professionalism is a way of conducting oneself that includes:

Respect for others: Respect for others is fundamental to professional behaviour. A professional strives to appreciate the differences among classmates and colleagues, provides fair constructive feedback when asked to evaluate others, contributes equitably in group work, and is punctual and avoids disrupting the learning and work environment. Professionals consider the effect of their words and actions on others and respect others' expectations of confidentiality and privacy.

Commitment to quality: A professional aims for the highest possible standards and endeavours to produce work in which they can take true pride. Professionals respect themselves and others, and demonstrate this through their work, words, actions and appearances.

Responsibility: A professional takes responsibility for their own progress by being prepared for all activities, including classes, labs, deadlines, meetings, etc. A professional also takes responsibility for their actions and respects the work of others. A professional considers consequences and is aware of how their actions will affect others.

Professionals in the workplace are governed by codes of conduct/ethics. Knowing, understanding and adhering to those codes is a significant part of preparing to enter a profession. Examples of codes of conduct/ethics that are used in areas related to the engineering and/or computer science disciplines include those listed below. Students should be familiar with the core principles that are common to all such codes of conduct/ethics, many of which are also common to the rules for student conduct in the University Calendar.

- Engineer & Geoscientists BC Code of Ethics
- Canadian Information Processing Society Code of Ethics and Standards of Conduct
- Institute of Electrical and Electronics Engineers IEEE Code of Ethics
- Association for Computing Machinery Code of Ethics and Professional Conduct

In addition to the guidance in this standard, students are subject to all University policies and procedures relative to the matters of:

- Equity, Diversity and Inclusion
- Academic Integrity
- Non-Academic Misconduct
- Use of facilities

Or, in the recent 737 MAX 8 case, killed over 300 people and was costing >$4B per fiscal quarter.

How one bad line of code shut down UK air traffic for an hour

Shortly before the Christmas vacation break got under way, a single line of bad code at the UK's national air traffic control center left thousands of people grounded for days.

By Zack Whittaker for Between the Lines | February 11, 2015 -- 08:05 GMT (00:05 PST) | Topic: CXO

A view from one of NATS' control towers (Image: NATS Holdings)

Some other costly software failures

- NASA Mars Climate Orbiter (1998) – $125M
- Ariane 5 Flight 501 (1996) – $8B development + $500M satellite
- UK EDS Child Support Payment System (2006) – $7B in uncollected child support payments and $1B in costs.
- Soviet Gas Pipeline Explosion (1982) – largest non-nuclear explosion in history
- Bitcoin Hack, Mt. Gox (2010) – ~$500M (850k bitcoins stolen, $7.8B today)
- Heathrow Terminal 5 – 500 flights cancelled, 42k bags lost
- Morris Worm (1988) – est. $100M
- Patriot Missile (1991) – 28 killed, over 100 injured
- Knight Capitol Group (2012) – $440M stock market loss in 30 min.
- NASA (1978 – 1985) – Ozone layer hole went undetected
- Therac-25 (1985-88) – at least 5 died
- Chinook helicopter (1994) – crash killed 29
- Yahoo breach (2016) – data of 500M users lost (compromised)
- Zillow AI home buying system (2021) - $403M write down

Estimated that software bugs cost the US economy $1.1T in 2016.

Going Forward (in your careers)

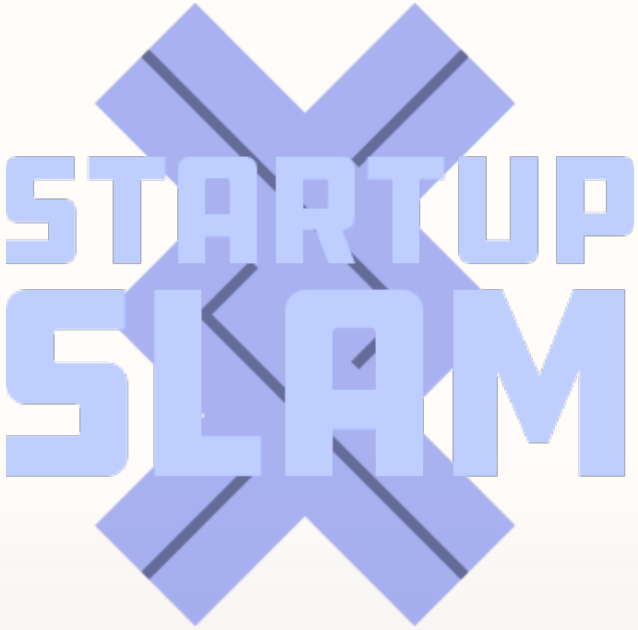
- The software technologies and systems your generation creates will be:
  - Far more widely used, and
  - Have far higher risk potentials.
- Software Engineering has become an increasingly important and critical knowledge and skill set.
- As with all technology areas:
  - It will require life-long learning, and
  - A degree of responsibility and care.
- But with:
  - High (and rapidly accelerating) demand globally across all industries,
  - Strong potential & opportunities to change the world for the better.

Student-lead Faculty of Engineering Clubs and Opportunities!

UVic Student Teams for All Engineering Students:

- EcoSat project, building a microsatellite
- Formula SAE, race car team
- Autonomous underwater vehicle (AUV) team
- UVic Aero unmanned aerial vehicle (UAV) team at Victoria Airport
- UVic EcoCar, Canada-US competition, hybrid vehicle
- Computer programming competitions
- Cyber Security Challenge Canada

Employers see high value in student engagement with clubs and student competitions.



- Largest tech conference on Vancouver Island where students, developers, and entrepreneurs come together to share ideas, knowledge, and expertise
- Speakers and workshops
- https://www.startupslam.io/

Creating a SENG Portfolio:

- As you go through the degree, courses, and course projects, it can be useful to build up an on-line portfolio of what you have done.
- Employers see value in good portfolios as they can help to tangibly highlight your abilities and experience
  - Employers are looking for people who are a good fit, have the right skills, knowledge, attitude, have soft skills, etc.
    - i.e., people who can contribute and are low risk.
  - A portfolio allows employers to see what you have actually done while getting a sense of your coding competencies and skills.
- Student club activities, self-driven projects, etc. can also be quite useful as these show engagement and interest beyond just your courses.

Support:

- Academic Program: https://www.uvic.ca/ecs/undergraduate/advising/index.php

Academic support

Academic advisers are an invaluable resource. They can help you understand general and individual program requirements, adjust course load and can direct you towards many of the learning resources available to you as a UVic student.

- Tips for new students registering in our faculty's coursesavailable

Advising staff

– BEng / BSEng

BEng / BSEng	Contact	Phone	Email
1st year and undeclared	LeAnne Golinsky	250-721-6018	engradav@uvic.ca
2nd, 3rd and 4th year MECH and BSEng	Belinda de Jong	250-472-5215	engradv1@uvic.ca
2nd, 3rd and 4th year BME, CENG, CIVE and ELEC	Alejandra Montenegro	250-472-5216	engradv2@uvic.ca
Exchange and visiting students	Tracy Kirkendale	250-721-6023	engr@uvic.ca
Advising support	Mimi Lin Tracy Kirkendale Brenden Hartridge	250-721-8678 250-721-6023 250-472-5322	enguo@uvic.ca engr@uvic.ca enguoast@uvic.ca

Co-op:

Co-op Website:

- https://www.uvic.ca/coop/explore-programs/engineering/index.php?utm_medium=redirect&utm_source=/coopandcareer/co-op/info-by-program/engineering/index.php&utm_campaign=redirect-usage

SENG 2A Co-op Refresher workshops:

Tuesday, Sept. 20 @ 3:00 pm – 3:50 pm in ECS 660 & online

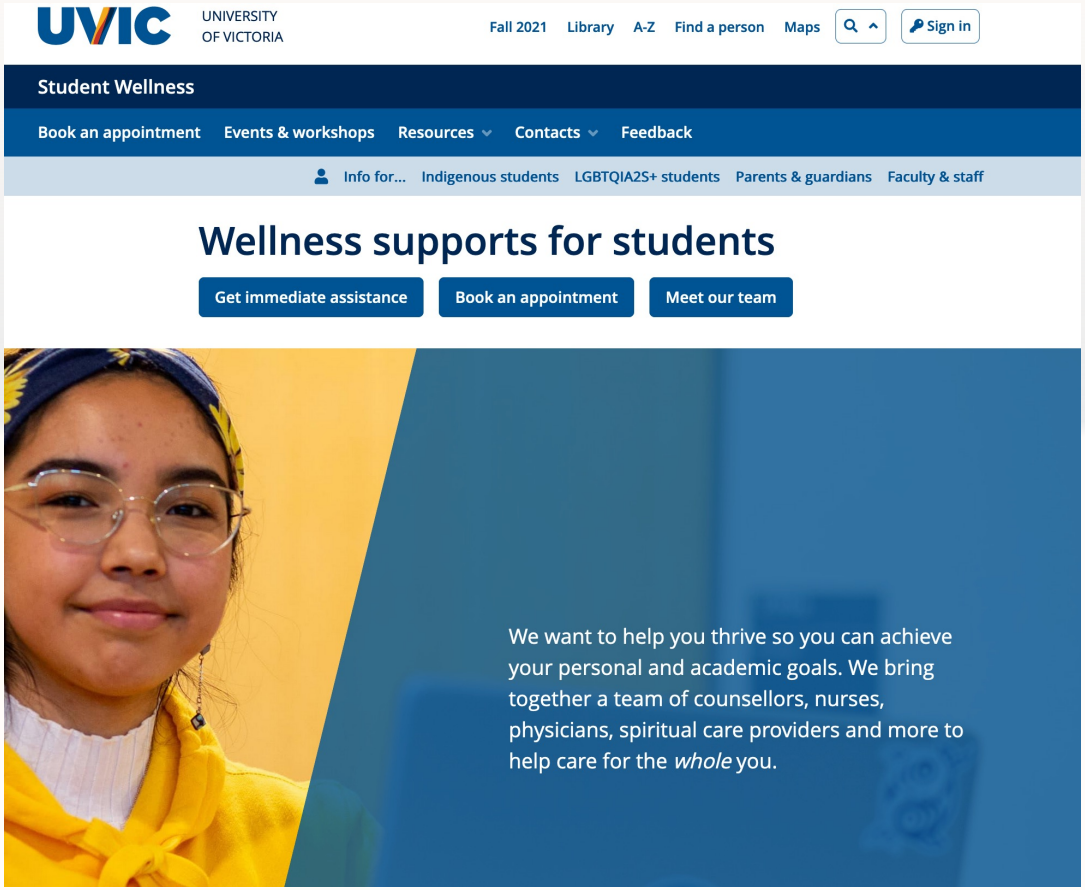
Wednesday, Sept. 28 @ 10:30am-11:20am in ECS 660 & online

SENG coordinators:

Student #s ending 0-4 – Ash Senini (asenini@uvic.ca)
Student #s ending 5-9 – Imen Bourguiba (imenbour@uvic.ca

Support:

- Mental Health and Wellness: https://www.uvic.ca/student-wellness/



If challenges arise:

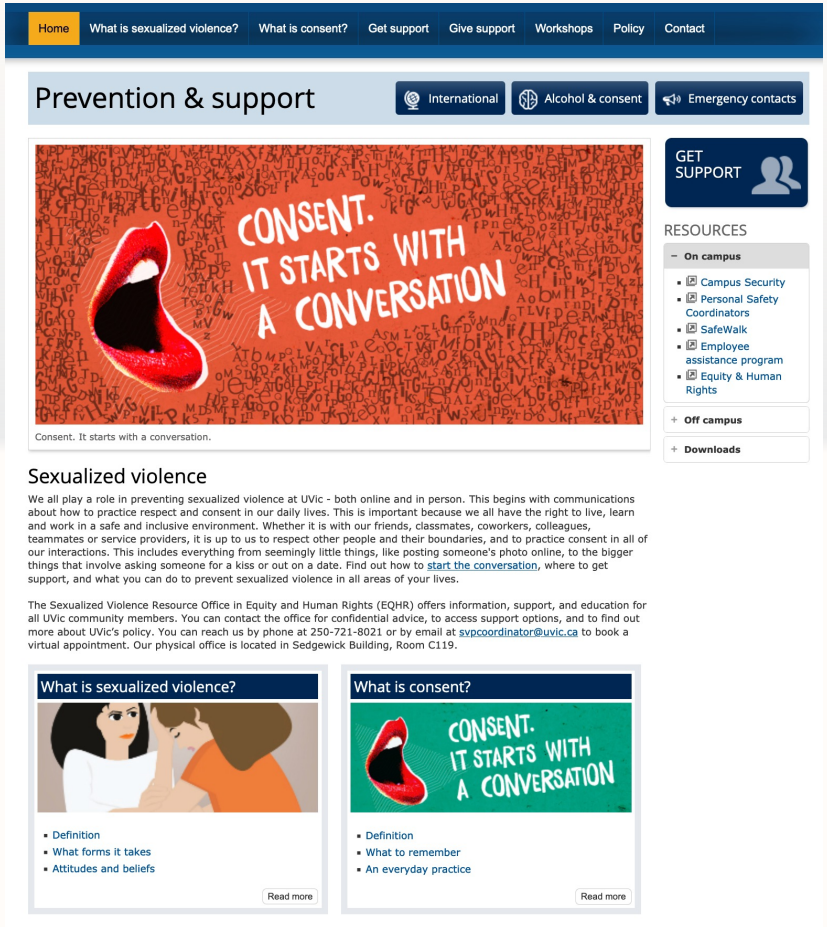
- Talk to someone
- Your student fees help fund these services …

Many very successful people had challenges in their undergrad degrees …

These services exist because lots of challenges come up …

Support:

- Sexualized Violence: https://www.uvic.ca/sexualizedviolence/



If you're feeling uncomfortable because of someone or something:

- Talk to someone
- Not mandatory reporting …
- Even if you may not be sure whether it was "over the line" …

Challenges should come from the academics and not from how people treat you …

Questions?

Concerns?

Issues?