

AP Computer Science

Welcome



What Role do you want to have in Computer Science?

- **Consumer** – pays to enjoy (consume)
 - Playing games, socializing, sharing videos, shopping, finding news & scores online.
- **User** – uses computers & applications in their job
 - Creates documents, enters data and runs reports, designs promotional material.
- **Developer** – develops solutions with computers
 - creating new applications, using computers to solve research problems, connecting users.

Computer Science

- So what Science is CS?
 - Engineering
 - Mathematics
 - Art
 - Magic?
- Computers are tools used to solve problems and are used practically everywhere
- CS is still a young field, especially relative to other sciences and is still defining itself
- Key is: it's about using an analytical processes to solve problems and create applications (tools)

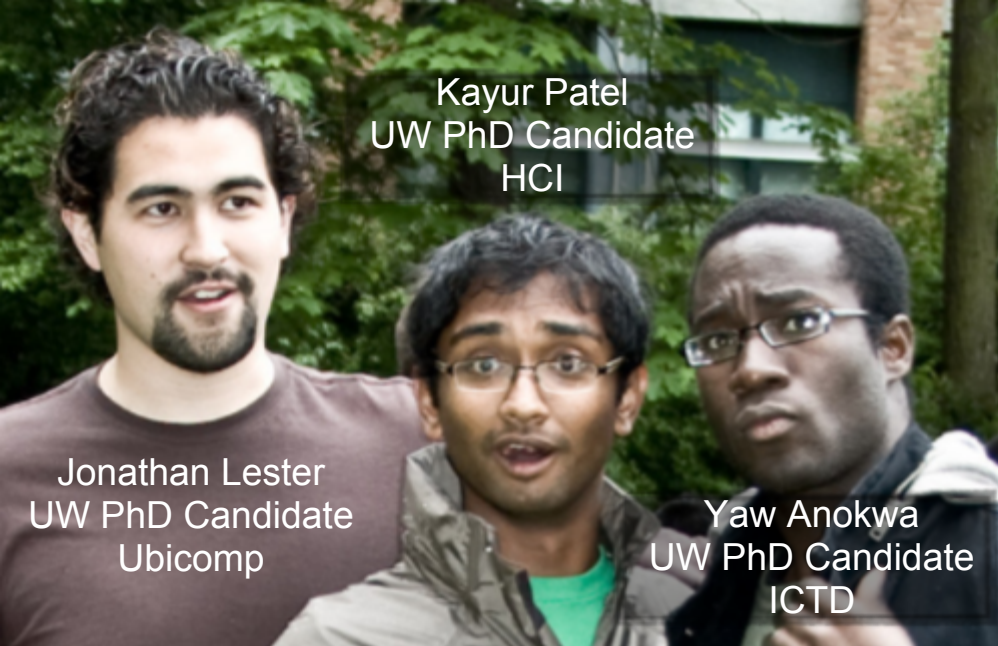


CS myths

- Computer scientists drink Mountain Dew and eat Cheetos all day
- They have all been programming since the age of 5
- All their jobs have been outsourced



(I'm sure these guys are very nice)



Kayur Patel
UW PhD Candidate
HCI

Jonathan Lester
UW PhD Candidate
Ubicomp

Yaw Anokwa
UW PhD Candidate
ICTD



Katie Neuser
Microsoft SDET



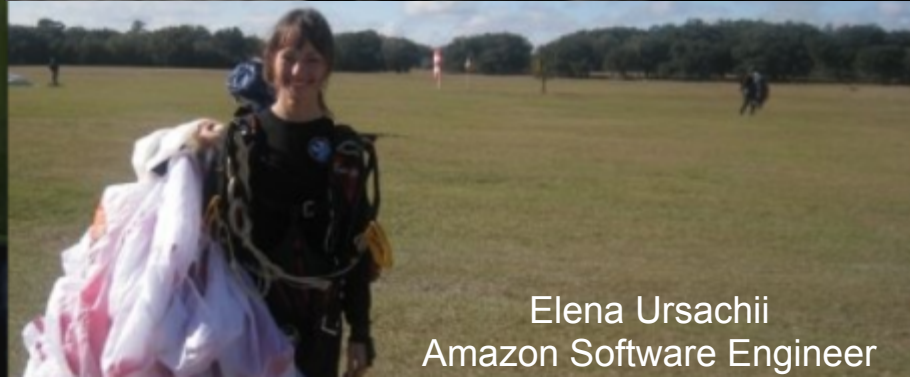
Marty Stepp
UW Lecturer



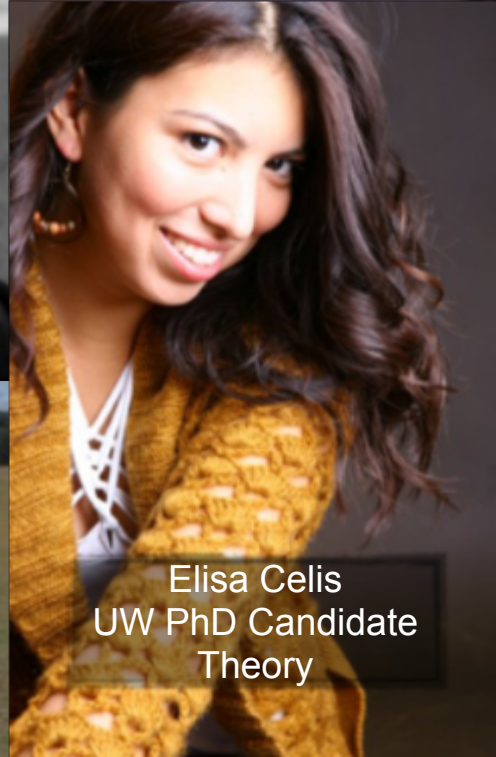
Travis Kriplean
UW PhD Candidate
Human-Computer Interaction



Ben Weintraub
iPhone Software Engineer



Elena Ursachii
Amazon Software Engineer



Elisa Celis
UW PhD Candidate
Theory

What do Computer Scientists do?

- Research to make computers faster, smaller, cooler, cheaper
- Making animated flesh look real
- Inventing approaches to solve math problems
- Creating advertising platforms on the web
- Creating interactive art installations

The past thirty years ...

Life Changers

The top innovations of the last 30 years, according to judges at the Wharton School of the University of Pennsylvania.

In response to the shouted-out question, "What are some of the greatest inventions of all time?," nearby office workers in a recent informal survey gave the following answers: the wheel, the engine, the ballpoint pen, diapers and the cheese Danish.

Life Changers

The top innovations of the last 30 years, according to judges at the Wharton School of the University of Pennsylvania.

1. Internet, broadband
2. PC and laptop computers
3. Mobile phones
4. E-mail
5. DNA testing and sequencing
6. Magnetic resonance imaging
7. Microprocessors
8. Fiber optics
9. Office software
10. Laser/robotic surgery
11. Open-source software
12. Light-emitting diodes
13. Liquid crystal display
14. GPS devices
15. E-commerce and auctions
16. Media file compression
17. Microfinance
18. Photovoltaic solar energy
19. Large-scale wind turbines
20. Internet social networking

THE NEW YORK TIMES

A version of this article appeared in print on March 8, 2010, on page B2 of the New York edition.

Click here to enjoy the convenience of home delivery of The Times for less than \$1 a day.

The screenshot shows the New York Times Business section. The main headline is "Life Changers" with a sub-headline "The top innovations of the last 30 years, according to judges at the Wharton School of the University of Pennsylvania." The article text is partially visible, mentioning a survey of office workers. A list of 20 innovations is shown, with the Internet and broadband at the top. The page also features a navigation bar, a search box, and various advertisements, including one for Ancestry.com and another for the "Nightly Business Report".

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THE NEW YORK TIMES

The screenshot shows a New York Times Business article. The main headline is "Internet, Mobile Phones Named Most Important Inventions" by Phyllis Korkki, published March 7, 2011. The article text states: "In response to the shouted-out question, 'What are some of the greatest inventions of all time?,' nearby office workers in a recent informal survey gave the following answers: the wheel, the engine, the ballpoint pen, diapers and the cheese Danish." A sidebar titled "Life Changers" lists the top 20 innovations, which matches the list in the adjacent image. The article also includes social media sharing options and a "Next Article in Business" section.

THE NEW YORK TIMES

A version of this article appeared in print on March 6, 2011, on page B1 of the New York edition.

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THE NEW YORK TIMES

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Meet the other black sheep in your family. ancestry.com discover

THE JOURNAL
Internet, Mobile Phones Named Most Important Inventions
By PHYLLIS KORKKI
Published March 7, 2012

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THE NEW YORK TIMES

A panel of eight judges from the Wharton School of the University of Pennsylvania was required to go back only 30 years — not to the dawn of history — when asked a similar question. So its answers, of course, were very different.

In the survey, the Internet was voted the biggest innovation of the last three decades, followed by computers, mobile phones and e-mail. The survey was sponsored by Knowledge@Wharton, the school's business publication, and PBS's "Nightly Business Report."

Good, important choices all, but for classic, long-lasting appeal, they still can't beat the wheel. **PHYLLIS KORKKI**

Next Article in Business (22 of 25) >

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Next Article in Business (22 of 25) >

THE WEEKENDER
FRIDAY. SATURDAY. SUNDAY
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The most recent ten years ...

- Search
- Scalability
- Digital media
- Mobility
- eCommerce
- The Cloud
- Social networking and crowd-sourcing



In the next ten years, we'll put the “smarts” in ...

- Smart homes
- Smart cars
- Smart bodies
- Smart robots
- Smart science
(confronting the data tsunami)
- Smart crowds and human-computer systems
- Smart interaction (virtual



Computer science is unique in its impact and importance



- Computer science has a rich intellectual agenda
- Advances in CS accelerate the pace of discovery in nearly all other fields
- Advances in CS drive economic growth
 - Not just through the growth of the IT industry, but through productivity growth across the entire economy
- Advances in CS touch everyone's lives – they change the way we live, work, learn, and communicate
- Advances in CS are inextricably linked to our ability to address our major national challenges
- Advances in CS have major public policy implications
 - Ranging from e-voting and identity management to the nature and global spread of democracy

There are jobs out there...

Where the jobs are and aren't

Some employers are hiring, but the openings don't overlap much with the jobs most commonly lost to the economic downturn.

TOP 10 JOB OPENINGS IN PUGET SOUND REGION*	OPENINGS, JUNE 2011
Computer-software engineers, applications	2,980
Registered nurses	1,340
Computer-systems analysts	1,316
Computer and information-systems managers	1,132
Marketing managers	740
Customer-service representatives	680
Sales managers	644
Computer-software engineers, systems software	641
First-line supervisors of retail-sales workers	620
First-line supervisors of food preparation and serving workers	556

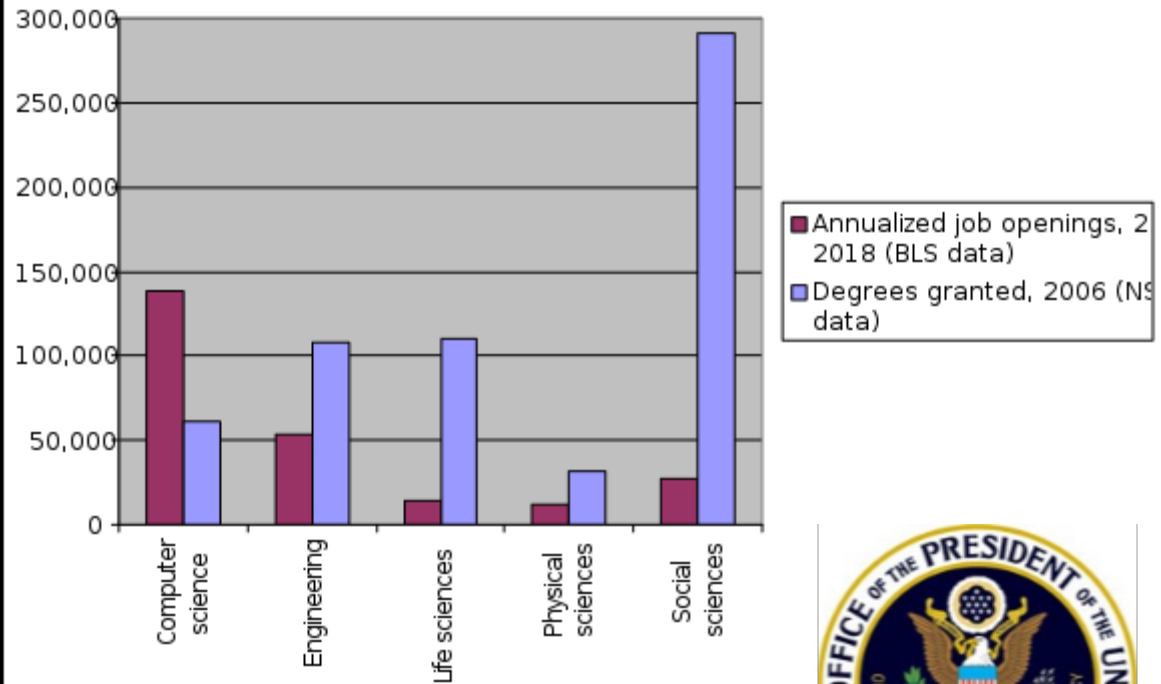
* King, Snohomish, Pierce and Kitsap counties

TOP 10 JOB CATEGORIES IN WASHINGTON WITH GREATEST LOSSES	JOBS LOST, 2007-2010
Office clerks, general	-14,690
Construction laborers	-12,170
Cashiers	-11,730
Carpenters	-8,940
Laborers and freight, stock, and material movers	-7,920
Combined food preparation and serving workers, including fast food	-7,330
Waiters and waitresses	-6,870
Truck drivers, heavy and tractor-trailer	-5,770
Bookkeeping, accounting and auditing clerks	-5,320
Customer-service representatives	-4,780

Sources: Seattle Times analysis of WorkSource job postings and Occupational Employment Statistics data

MARK NOWLIN / THE SEATTLE TIMES

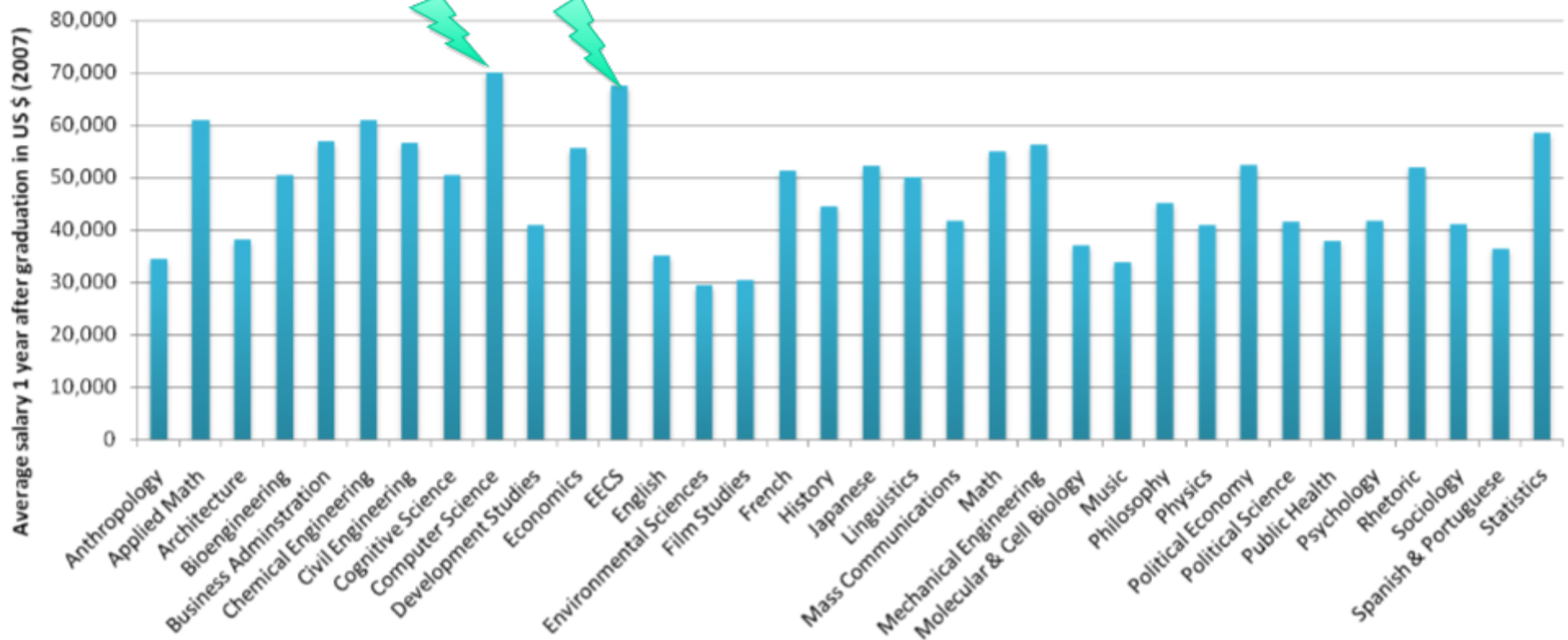
Annualized Job Openings vs. Annual Degrees Granted



From: Ed Lazowska's presentation "Why Computer Science?"

Plus CS Positions pay well...

UC Berkeley Majors and their Associated Salaries



Our focus is simply - Programming

- Implementation tool
- Generic enough to support all your interests
- Fun
- Creative
- Infinite...

This course is:

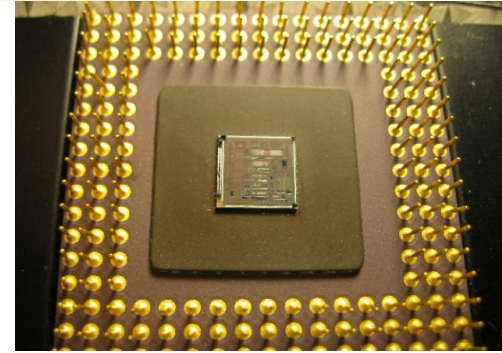
- Solving tricky problems
-
- Learning fundamentals of programming
- Mastering Java syntax
- Discovering CS application areas
- Writing lots of small to medium programs
- “AWESOME”

This course is NOT:

- Learning to use computers
- Showing off how much C++ you know
- Showing off how good you are at Half-Life
- Surfing for sports scores or latest news on the Internet
- For the weak-spirited or lazy

Why Mr. Bergquist?

- **Computer Engineer for 20+ years:**
- Designed computer chips for Hewlett Packard
 - Worked on the chip set to operate HP's first fiber optic connection between computer & their disc drives
- Database design & IT, creating custom applications to:
 - Deliver fresh meals & services to over 600 clients for a local non-profit and coordinate hundreds of volunteers
 - Track donations and fundraising, including raising millions of dollars by a series of Dance-A-Thon events in the 90's
 - Grew our network to over 40 PC's and 8 Mac's (IT)
- Manager of Software Test Engineering at Amazon.com for third party selling projects from 1999 to 2010, including:
 - The "[used & new](#)" offering on product pages
 - [Merchant storefronts](#) of other sellers on Amazon.com
 - Custom website solutions for [Target](#) and Marks & Spencer



Tomorrow

- About you
 - Why are you here?
 - What do you use computers for?
- Course goals
- Syllabus questions (look over it tonight)

Google Interview Questions

- You are given 8 identical looking balls. One of them is heavier than the rest of the 7 (all the others weigh exactly the same). You are provided with a simple mechanical balance and you are restricted to only 3 uses. Find the heavier ball. Can you find it with 2 uses?
- How would you cut a rectangular cake into two equal pieces if a rectangular piece has already been cut out of it? The cut piece can be of any size and orientation. You are only allowed to make one straight cut.

