

ENGR192/292 Lecture

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What is an engineer?

Two engineering students were walking across campus when one asked, "Where did you get such a great bike?" The second engineer replied, "Well, I was walking along yesterday minding my own business when a beautiful woman rode up on this bike. She threw the bike to the ground, took off all her clothes and said, 'Take what you want.' "

The second engineer nodded approvingly, "Good choice; the clothes probably wouldn't have fit."

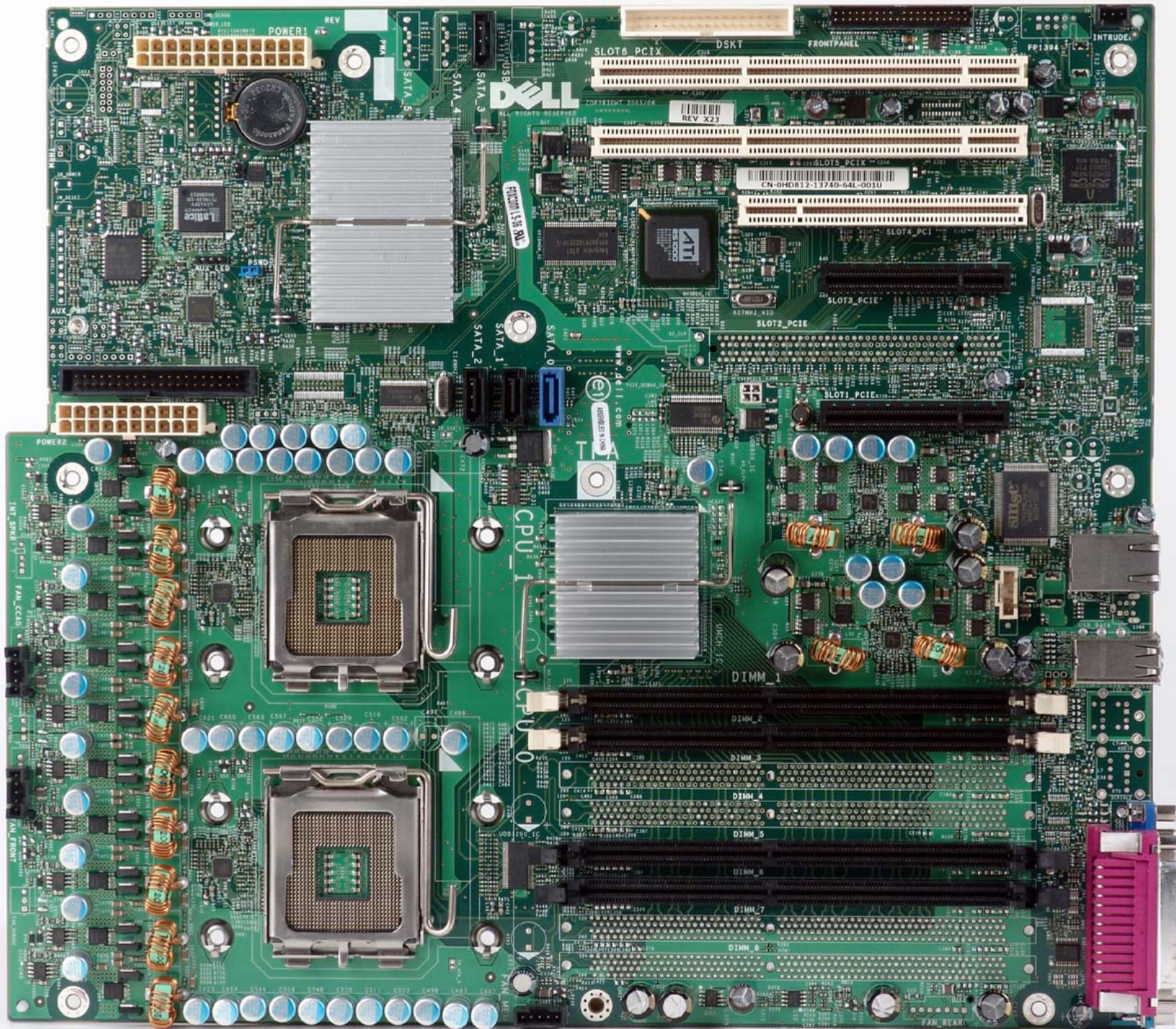
Outline

- My Background
- Working with Hardware
- Working with Software
- Life as a Professor

My Background

- BS, MS, and Ph.D. in Computer Engineering and Computer Science from the University of Southern California
- Moved to Anchorage in Fall 2007 for UAA position
- Taught undergraduate Computer Science courses at California State University, Los Angeles for over 5 years
- Worked in industry for over 8 years, starting as an intern and a programmer, moving to a technical lead and a director, then starting my own company

Working with Hardware





Computer Hardware Engineering

- Research, design, develop, and test computer or computer-related equipment for commercial, industrial, military, or scientific use.
- May supervise the manufacturing and installation of computer or computer-related equipment and components.

Computer Hardware Engineering

- Build individual components to make a computer, including the motherboard, memory, CPU, video cards, sound cards, network interface cards, peripherals, monitors
- Test components to determine proper functionality
- Average salary - \$91,280/year*

* As of May 2006, United States Department of Labor

Realistic Life

- Work a 40-hour per week job with flexible hours and possibly long lunches, if desired
- Most likely work in a cubicle until being promoted to management, where you may get an office with a window
- Attend at least 5-10 hours of meetings each week
- Wear anything you want to work, or possibly business casual on certain days
- Drive a nice, expensive car and live in a large house
- Most likely live on the west coast (Silicon Valley)
- Spend most of your time designing hardware devices in programs, simulating your design, and then building the device in a lab
- Overseeing production of the device on a large-scale after a significant amount of testing of the prototype

Working with Software

LAURIE'S OUR
NEW ENGINEER.
SHOW HER THE
ROPES, DILBERT.



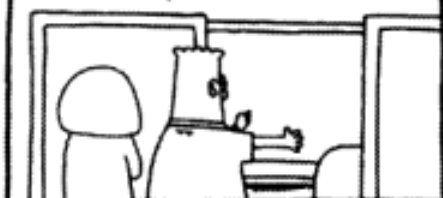
5/13/94 8:54 AM SCOTTADAMS@AOL.COM



I MEANT
FIGURATIVELY



THIS IS YOUR
ANTI-PRODUCTIVITY
POD.



IT'S EQUIPPED WITH
A LITTLE DEVICE THAT
RINGS ANYTIME YOU
TRY TO CONCENTRATE



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THE TOP IS OPEN SO NONE
OF THE BACKGROUND
NOISE IS INADVERTENTLY
MUFFLED.

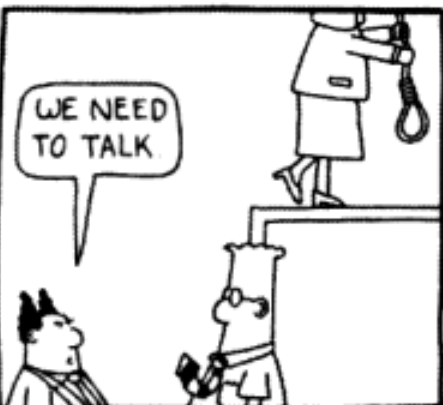


8-7

AND YOU'RE ON THE MAIN
AISLE, SO YOU'LL BE
HAUNTED EVERY MINUTE
BY FOOTSTEPS BEHIND
YOU ... STEP... STEP...
STEP...

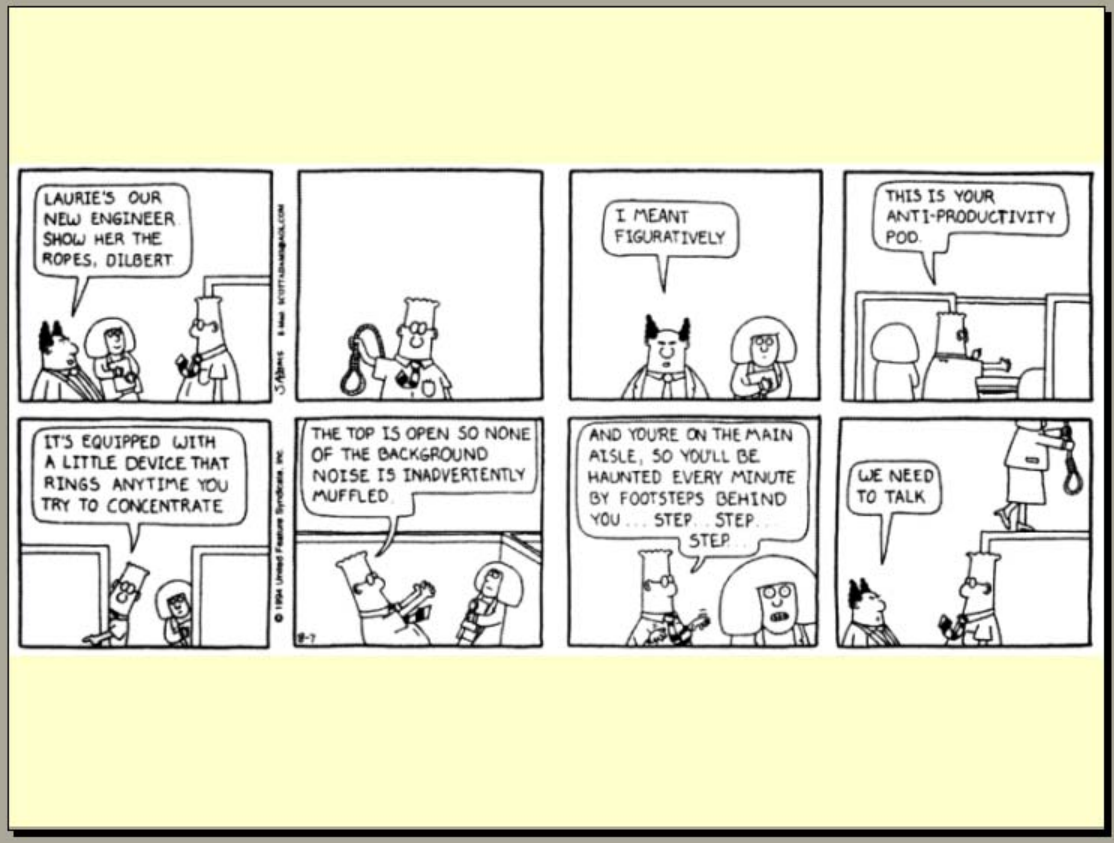


WE NEED
TO TALK



Outline Slides

- 23 Computer Software Engineering
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- 25 Electrical Engineering
- 26 Electrical Engineering
- 27 Industrial Engineering
- 28 Industrial Engineering



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Slide Layout

Apply slide layout:

Content Layouts

Text and Content Layouts

Show when inserting new slides

Computer Software Engineering

- Convert project specifications and statements of problems and procedures to detailed logical flow charts for coding into computer language.
- Develop and write computer programs to store, locate, and retrieve specific documents, data, and information.
- May program web sites.

Computer Software Engineering

- Known as programmers or software engineers
- Generally sit in front of a computer and program for the majority of their time
- Develop algorithms (sequence of steps) to solve problems, such as determining how to sort five numbers:
3, 7, 2, 1, 8
- Average salary - \$69,500/year*

* As of May 2006, United States Department of Labor

Realistic Life

- Work a 40-hour per week job with flexible hours and possibly long lunches, if desired
- Most likely work in a cubicle until being promoted to management, where you may get an office with a window
- Attend at least 5-10 hours of meetings each week
- Wear anything you want to work, or possibly business casual on certain days
- Drive a nice, expensive car and live in a large house
- Live anywhere in the world that has computers (and possibly the internet)
- Gather the requirements for a program, design it, code it, test it, deploy it
 - Then repeat
- Possibly be on call if the program crashes...

Salaries

| Occupation | Average Yearly Salary | Average Hourly Rate | Number Employed |
|-------------------|------------------------------|----------------------------|------------------------|
| Aerospace | \$89,260 | \$42.92 | 86,720 |
| Biomedical | \$78,030 | \$37.51 | 14,030 |
| Chemical | \$81,600 | \$39.23 | 29,060 |
| Civil | \$72,120 | \$34.67 | 236,690 |
| Computer Hardware | \$91,280 | \$43.88 | 74,480 |
| Computer Software | \$69,500 | \$33.42 | 396,020 |
| Electrical | \$78,900 | \$37.93 | 147,670 |
| Industrial | \$70,630 | \$33.96 | 198,340 |
| Mechanical | \$72,580 | \$34.89 | 217,500 |
| All Engineering | \$78,211 | \$37.60 | 1,400,510 |
| All Occupations | \$39,190 | \$18.84 | 132,604,980 |

* As of May 2006, United States Department of Labor

Life as a Professor

Title of Professor

- We refer to anyone who teaches college classes as “Professor” or “Dr.” if they have a Ph.D.
- However, people who teach college have different job titles
 - Lecturer / Instructor / Adjunct Professor – non tenure-track
 - Assistant Professor – tenure-track
 - Associate Professor – tenured
 - Professor – tenured
 - Distinguished Professor – tenured

Professor Responsibilities

- Teaching
 - A professor will teach between 1 and 3 classes each semester, with two semesters a year
- Research
 - A professor is required to publish papers or books, attend conferences, further his field of study, and write grants to bring research money into the university
- University
 - A professor is required to be on committees for hiring new faculty, buying new equipment, changing the curriculum, advising students, etc.

Tenure or Ten-Year?

- Tenure
 - Guaranteed employment for life, regardless of the area of research pursued
 - Allows professors to openly disagree with the common opinion and to pursue ideas that may otherwise be disliked
 - Most universities give between 5-7 years for an assistant professor to gain tenure, which is based on his research and teaching
 - Some professors may become lazy or unproductive, though the university can not do anything about it then
 - Can tenured professors be fired?

My Research

- Improving the flow of traffic based on using the latest mobile technologies
 - Known as Intelligent Transportation Systems (ITS)
- Improving the safety of traffic based on alerts for conditions that pose a higher probability for an accident to occur
 - Road conditions (potholes, foreign substances, moose)
 - Weather conditions
 - State of driver (intoxicated, tired, etc.)
 - Number of vehicles on the road
 - Section of road
 - Etc.



9th & 8th Sts 1/2
Olympic Blvd 3/4
Santa Monica Fwy 10 11/4





Questions?

- Questions about college classes and majors?
- Questions about engineering careers?
- Questions about academic careers?
- Other questions about school, life, philosophy?

Closing Remark

- The purpose of college is to learn a lot about a little and a little about a lot

When a person gets a bachelor's degree, he thinks he knows everything about everything

When he gets a master's degree, he thinks he knows everything about something

When he gets a Ph.D., he realizes he knows nothing about anything

- Never forget that the more you know, the more you realize you don't know