E11 – Autonomous Vehicles

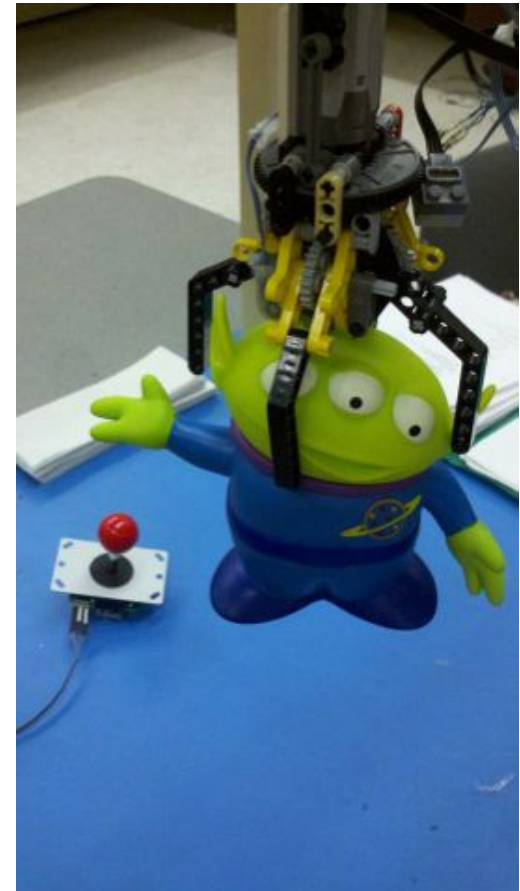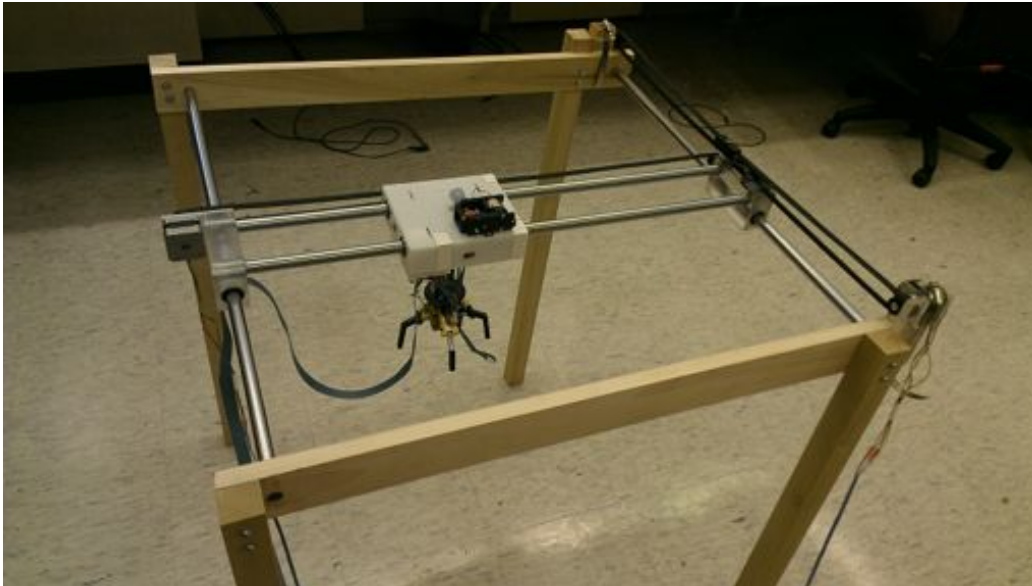Engineering and Computer Science Outlooks

Overview

- Engineering and CS @ HMC
- Jobs Today
- The Best Jobs
- Venues
- Jumping Ship

Engineering @ HMC

- Why I chose Engineering

- Best Parts of Engineering
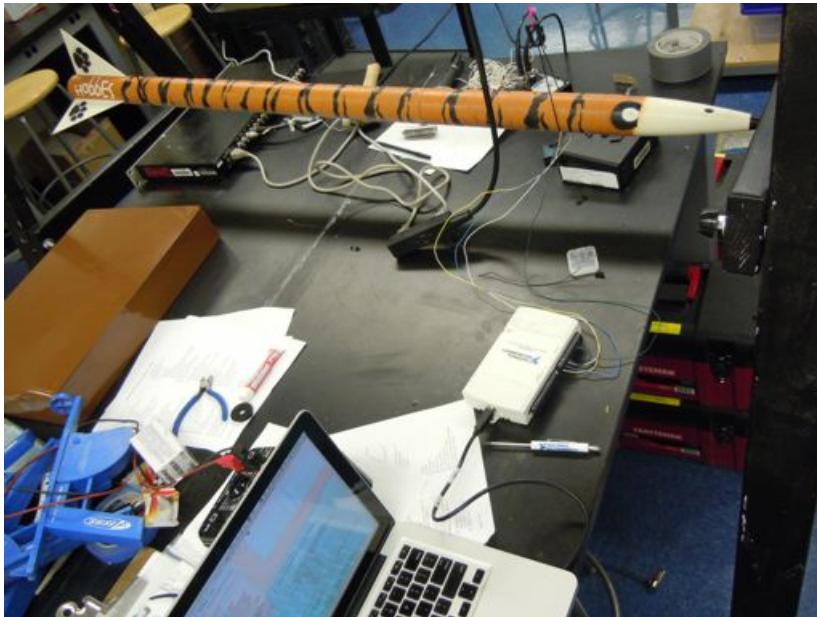
- Worst Parts of Engineering

Engineering @ HMC

- Highlights:
  - MicroPs

http://www.youtube.com/watch?v=4uBzQt8p93M

Engineering @ HMC

- Highlights:
  - E80

Engineering @ HMC

- Highlights: E80

Engineering @ HMC

- Highlights:
  - Choice Lab

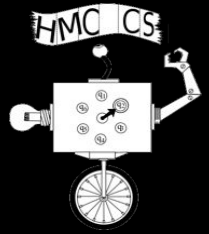http://www.youtube.com/watch?v=rX-yrE1iTMU
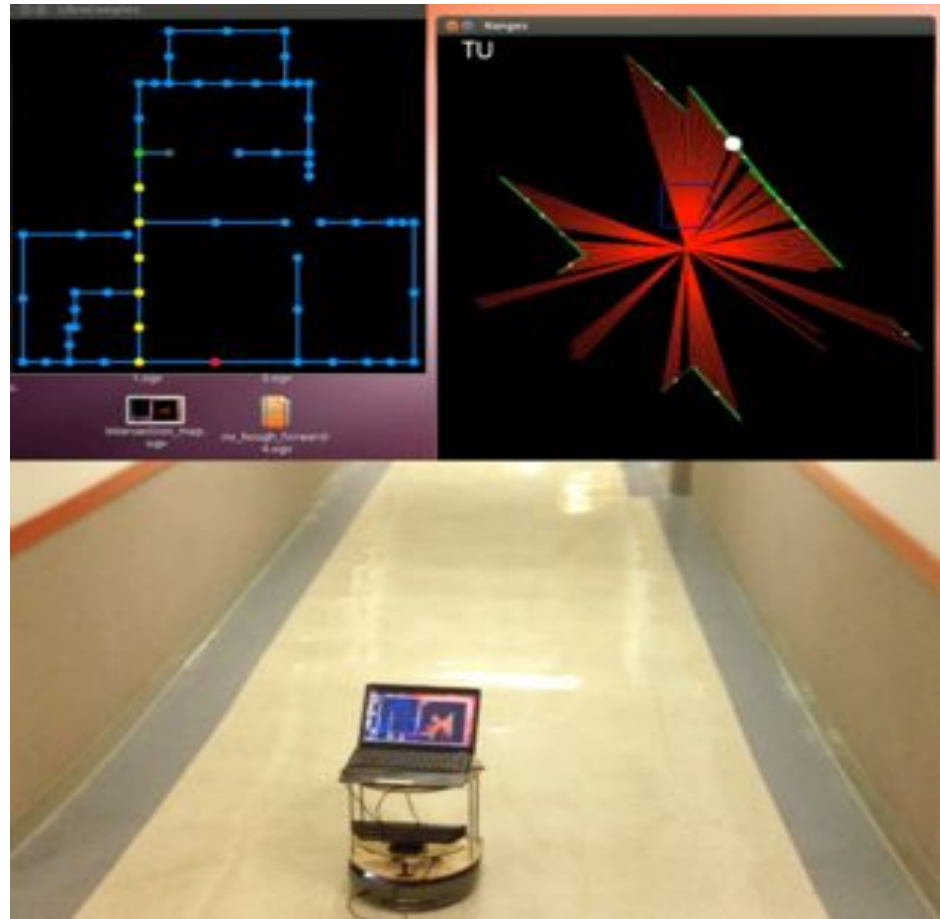
Computer Science @ HMC
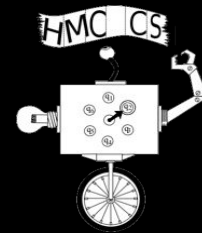
- Why I chose Computer Science

- Best Parts of Computer Science

- Worst Parts of Computer Science

Computer Science @ HMC
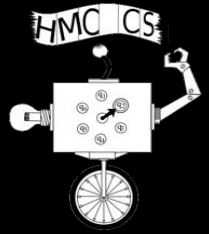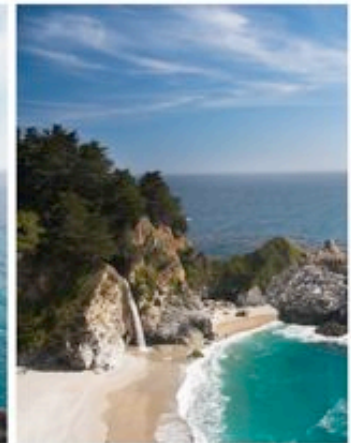
- Highlights:
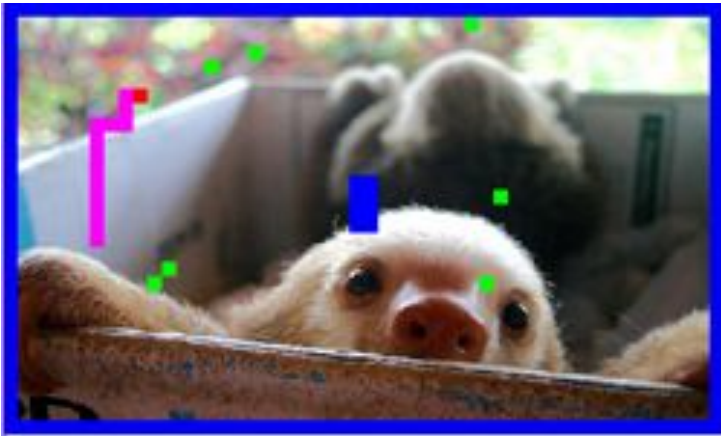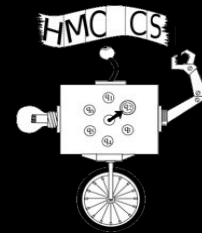 - Choice Lab

- Highlights: CS 60

- Highlights: Neural Networks

$$[9,0,-,4,2]$$
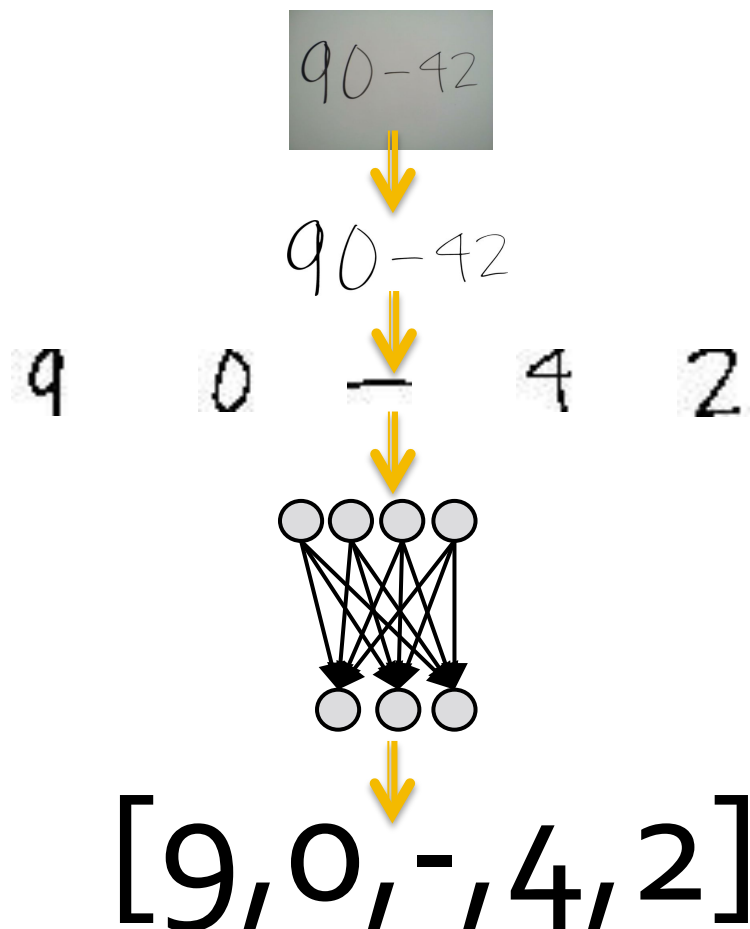
Computer Science @ HMC
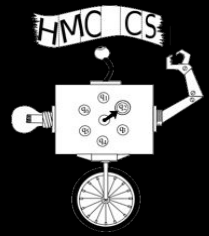
- Highlights: Computer Systems

Overview

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- Jobs Today
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Best Jobs in America

Jobs Today

Jobs Today

- CNN article…

1. Information technology. When career site Indeed.com recently analyzed millions of job postings on its web site, researchers found that the fastest-growing category of keywords — including HTML5, Android, mobile app, and social media — were in IT, and a new survey by tech job site Dice.com bears that out. About 65% of hiring managers said they hope to add tech staff in the first half of 2012. Roughly a quarter of those (27%) said they want to expand their IT headcount by more than 20%.

Openings for software developers who specialize in applications will rise by more than one-third (34%) by 2018, says Best Jobs for the 21st Century, a new book by job market analyst Laurence Shatkin, while companies will hire 20% more computer systems analysts. Rising pay in these fields reflects the surge in demand: The Bureau of Labor Statistics says that developers of systems software, for instance, earn an average of $94,180 per year.

Jobs Today

- CNN article…

4. **Engineers**. Note to college students who want their pick of job offers when they graduate: Consider majoring in engineering. A whopping 66% of employers in a new poll by **the Society for Human Resource Management** bemoaned the difficulty of finding enough engineers to hire. Civil engineers are in demand too; Shatkin's analysis of BLS data shows a 24.3% spike ahead in jobs for people who design roads, bridges, and other infrastructure projects (average annual pay $77,560).

Engineering vs. Computer Science

Occupational Distribution of STEM jobs through 2018					
	COMPUTER OCCUPATIONS*	ENGINEERS & ENGINEERING TECHNICIANS	LIFE & PHYSICAL SCIENCE OCCUPATIONS	ARCHITECTS, SURVEYORS & TECHNICIANS	MATHEMATICAL SCIENCE OCCUPATIONS	TOTAL†
Number of jobs	183,750	75,340	31,210	19,840	9,670	319,820
% of all STEM jobs	57%	24%	10%	6%	3%	100%

*Computer Technicians, Programmers, and Scientists
†Totals may differ slightly due to rounding

Best Jobs?

Best Jobs?

BEST JOBS IN AMERICA CNNMoney/PayScale.com's list of great careers

3. Software Architect

Median pay: $119,000
Top pay: $162,000
10-year job growth: 24.6%
Total jobs*: 3,426,000

What they do all day? Great software architects are designers and diplomats. They create innovative and valuable programs, but they also translate highly technical plans into a vision the C-suite can understand. They are a crucial link between a company's tech unit and management.

How to get the job? Unless one's last name is Gates or Zuckerberg, a computer-related degree is strongly advised. A high-level position, it requires lots of experience, technical smarts and fluid communication skills.

What makes it great? It's an opportunity to create and shape a company's computer strategy. More responsibility also brings higher pay for a designer who wants to trade a PC screen for the conference room.

What's the catch? Tech teams and management often speak very different languages that can lead to misunderstandings and even flare-ups. Putting out fires on both sides is crucial. —T.Z.

Quality of life ratings:

Personal satisfaction	Low stress	Benefit to society	Flexibility
B	C	C	A

Best Jobs?

Venues

- Startup
- Small High-Tech Company
- Large High-Tech Company
- Academic
- Government
- Graduate School

Venues

- **Startup Companies**
  - E.g. Kiva, DocSpace, Aeryon, Gaming, OBEI, …
  - Low level of job security
  - Hard work
  - Exciting
  - Large variety of tasks
  - Highly Creative

Kiva Systems

Venues

- **Small High Tech**
  - E.g. RTI, Sterner Automation
  - Increased Job security
  - Reasonable work level
  - Still can be Exciting
  - Typically one task, but can see relations with entire company
  - Often focus on 1-2 products

Real Time Innovations – European Southern Observatory

Venues

- **Large High Tech**
  - E.g. Lockheed Martin, Google, 3M, Solutia
  - High level of job security
  - Reasonable work level
  - Much room for lateral movement within co.
  - Typically one task
  - Often difficult to see big picture

Lockheed Martin - AUV

Venues

- **Academia**
  - E.g. Harvey Mudd College!
  - Higher job security (with tenure)
  - Unreasonable work level
  - High level of creativity
  - Very flexible
  - Very difficult to obtain

Princeton University

Venues

- **Government**
  - E.g. DARPA, Navy, CIA, …
  - Higher job security
  - Reasonable work level
  - Inflexible
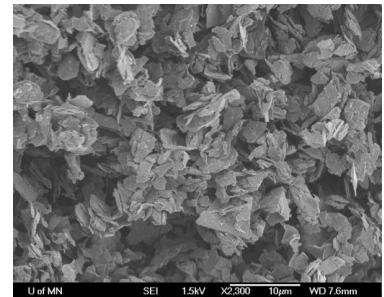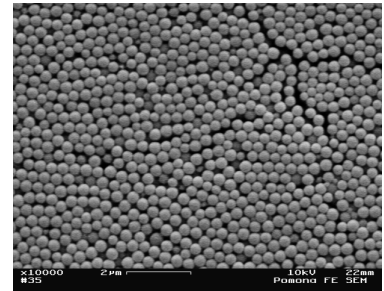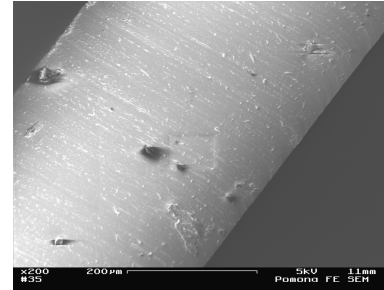 - Could be best job ever (but I couldn't tell you!)

Central Intelligence Agency

Venues

- **Graduate School**
  - Flexible
  - Low pay
  - Highly Creative
  - Empowering environments
  - Stepping Stone?

Aerospace Robotics Lab – Stanford University

Cussler Research Group – Univ. of Minnesota

Jumping Ship

- Many people transition from their undergraduate education
  - Medicine
  - Law School
  - Wall Street
  - …

Quansar Haptics