

CME/CS184: Startup Engineering

Lecture 0

Logistics and Discussion



Study: Startups Led By Stanford, Harvard Grads Lead The Way In Scoring Venture Capital Funding



COLLEEN TAYLOR ✓

Monday, October 29th, 2012

24 Comments



An interesting new study released today by venture capital and angel investment-focused research firm **CB Insights** found that, in a shocking twist, graduates of Stanford University do not actually dominate when it comes to building startups that nab top VC dollars.

LOL, just kidding. Of course Stanford alumni dominate the VC-funded tech startup space.

Indeed, anyone who's spent any amount of time in Silicon Valley notices the prevalence of Stanford graduates at every level of the tech

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Stanford Grads Get Most Startup Cash, Harvard Counts on Facebook Effect

BY SARAH MITROFF 10.30.12 6:30 AM

Stanford University is so startlingly paradisiacal, so fragrant and sunny, it's as if you could eat from the trees and live happily forever. Students ride their bikes through manicured quads, past blooming flowers and statues by Rodin, to buildings named for benefactors like Gates, Hewlett, and Packard. Everyone seems happy, though there is a well-known phenomenon called the "Stanford duck syndrome": students seem cheerful, but all the while they are furiously paddling their legs to stay afloat. What they are generally paddling toward are careers of the sort that could get their names on those buildings. The campus has its jocks, stoners, and poets, but what it is famous for are budding entrepreneurs, engineers, and computer aces hoping to make their fortune in one crevasse or another of Silicon Valley.

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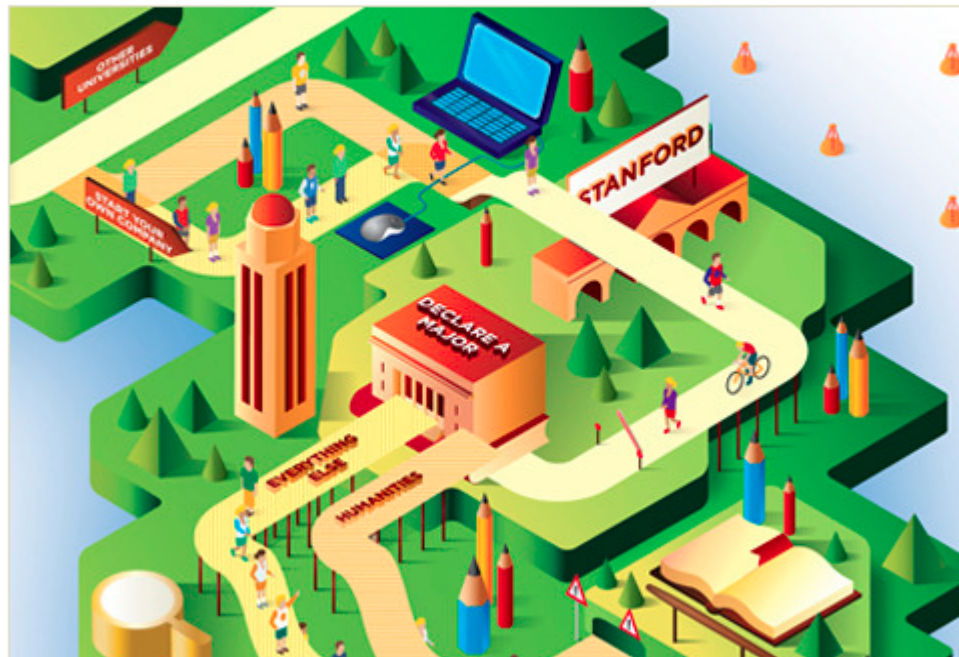
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AUDIO: KEN AULETTA ON SILICON VALLEY AND STANFORD UNIVERSITY.

KEYWORDS

STANFORD UNIVERSITY; SILICON VALLEY; JOHN HENNESSY; EDUCATION; ENTREPRENEURS; DISTANCE LEARNING; TECHNOLOGY

Who Needs the Humanities at 'Start-Up U'?



Vault49

[View photo album >>](#)

About Us

A brief introduction to your instructors

Instructors

- Balaji S. Srinivasan

- Taught CS and Stats at Stanford from 2006-2008; Stanford BS/MS/PhD
- Co-founder and CTO of Counsyl; genomics startup featured in Stanford Magazine, won Wall Street Journal's Innovation Award for Medicine and named "Top 10 World Changing Idea" by Scientific American.
- Scaled Counsyl from Stanford dorm room to 120 employees, >2.5% of US births; investors include Founders Fund, founders of Paypal/Youtube, Square COO, Jeff Dean, etc.

- Vijay S. Pande

- Professor of Chemistry and, by courtesy, of Structural Biology and of Computer Science, and the Director of the Program in Biophysics.
- Princeton/MIT/Berkeley grad; programming since 1982, first company Naughty Dog (Crash Bandicoot for Sega) in 1986; at Stanford since 1999
- Founder and director of the Folding@Home Distributed Computing Project, one of the world's largest supercomputers

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Counsyl

The New York Times

Business

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Counsyl Brings Gene Tests to Masses

By [ANDREW POLLACK](#)

Published: January 28, 2010

REDWOOD CITY, Calif. — The new movie “Extraordinary Measures” is based on the true story of a father who starts a company to develop a treatment for the rare genetic disease threatening to kill two of his children before they turn 10.

[Enlarge This Image](#)



Now, a Silicon Valley start-up is making the bold claim that it can help eradicate that disease and more than 100 others by alerting parents-to-be who have the carrier genes.

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Counsyl

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September 26, 2010, 4:57 p.m. ET

BRONZE WINNER | COUNSYL INC.

A Genetic Test for Prospective Parents

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By MICHAEL TOTTY

A three-year-old Silicon Valley start-up, Counsyl Inc., won the Bronze Innovation Award for its simple, low-cost genetic test that can alert prospective parents who might be carrying genes that could cause hereditary diseases in their children.

Counsyl

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World Changing Ideas

Ten thoughts, trends and technologies that have
the power to transform our lives



HEALTH AND MEDICINE

One Hundred Tests

A cheap diagnostic warns couples against passing rare genetic diseases
to their offspring *by Mary Carmichael*

Instructors



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Folding@Home



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Folding@home



From Wikipedia, the free encyclopedia

Folding@home (**FAH** or **F@h**) is a [distributed computing](#) project for disease research that simulates [protein folding](#), computational [drug design](#), and other types of [molecular dynamics](#). The project uses the [idle processing resources](#) of thousands of [personal computers](#) owned by volunteers who have installed the software on their systems. Its primary purpose is to determine the mechanisms of protein folding, which is the process by which [proteins](#) reach their [final three-dimensional structure](#), and to examine the causes of [protein misfolding](#). This is of significant academic interest with major implications for [medical research](#) into [Alzheimer's disease](#), [Huntington's disease](#), and many forms of [cancer](#), among other diseases. To a lesser extent, Folding@home also tries to [predict](#) a protein's [final structure](#) and determine how other molecules may [interact](#) with it, which has applications in drug design. Folding@home is developed and operated by the Pande laboratory at [Stanford University](#), under the direction of [Vijay Pande](#), and is shared by various scientific institutions and research laboratories across the world.^[1]

Folding@home



Original author(s) [Vijay Pande](#)

Developer(s) Pande laboratory, [Sony](#), [Nvidia](#), [ATI](#), [Cauldron Development LLC](#)^[1]

Initial release October 1, 2000

Stable release 7.2.9^[2]

Operating system Microsoft Windows, OS X, Linux

Platform [Cross-platform](#)

Available in English

Type [Distributed computing](#)

License Partially [GPL](#), partially [proprietary](#)^[3]

Website [folding.stanford.edu](#)

About the Course

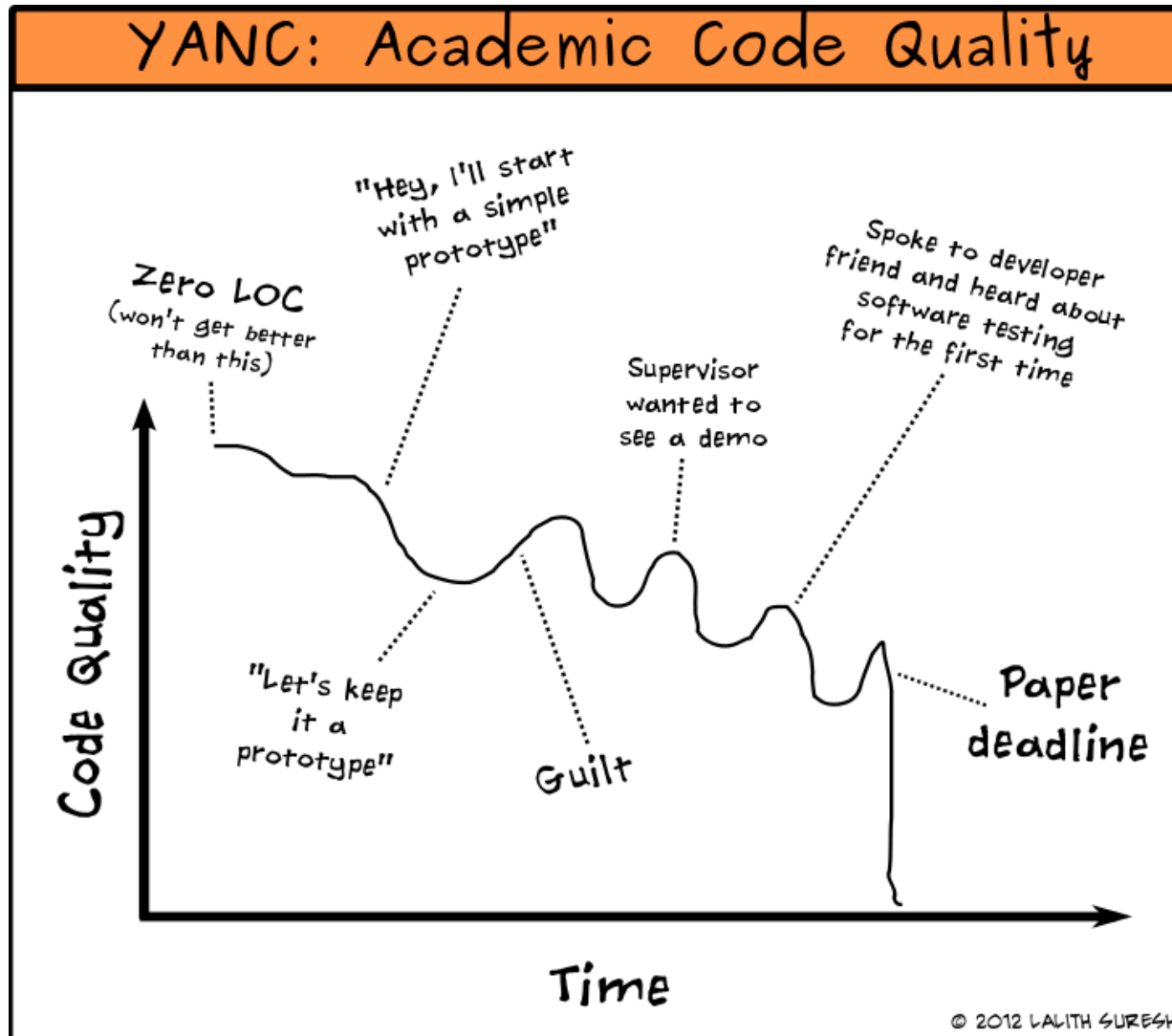
The Whys and the Whats

Bulletin

Spiritual sequel to Peter Thiel's CS183 course on startups. Bridges the gap between academic computer science and production software engineering. Fast-paced introduction to key tools and techniques (command line, dotfiles, text editor, distributed version control, debugging, testing, documentation, reading code, deployments), featuring guest appearances by senior engineers from successful startups and large-scale academic projects. Over the course of the class, students will build a command line application, expose it as a web service, and then link other students' applications and services together to build an HTML5 mobile app. General principles are illustrated through modern Javascript and the latest web technologies, including Node, Backbone, Coffeescript, Bootstrap, Git, and Github.

Prerequisites: Basic computer science as per CS106B. Recommended: some familiarity with HTML, CSS, and Javascript.

Motivation



Why should you take this course?

- Course is ideal for
 - STEM grad student who'd otherwise code for up to six years w/o knowing software engineering
 - Undergrad who knows how to balance a tree, not how to deploy a website
 - Interested in startups, want to learn from people who've actually done and scaled them
 - Broad understanding of startups, not just code
- May be challenging
 - Startups are hard; "there is no speed limit"
 - Programming/project course; CS106B req'd
 - Lot of material introduced rapidly
 - Will require a lot of work for the A+

Course logistics

The Hows

Course Info

- Location: Hewlett 201
- Time: T/Th 11-12:30
- Dates: 1/7/2013 - 3/22/2013
- Units: 3
- Grading: Letter or Credit/No Credit
- Office Hours:
 - BSS: Th 12:30-3pm, [Clark Center NeXus/S222](#)
 - Charlie: T 12:30-2pm, [Clark Center NeXus/S222](#)
 - Office hours begin at lunch in NeXus, then move to S222
- Textbook
 - All lecture notes online; nothing to buy
 - Accessible from [course page](#)

Course Info

- Web

- *Primary Course Site (logged-in students)*
<https://stanford.coursera.org/cme184-001>
- *Convenience site (mobile/ logged-out/ public)*
<http://startup.stanford.edu>
- *Public MOOC (date TBD)*
<http://coursera.org/course/startup>

- Help

- [Discussion Forums](#)
- [Facebook Page](#)
- Email: {balajis, crguo, pande} at stanford

- Grading

- 10% Participation, 40% HW, 50% Project

Participation

- Class participation is 10% of grade
 - Guest speakers putting in significant effort; want good audience
 - Larger class improves peer-grading
- Experiment: Attendance via FB page
 - facebook.com/StartupEng
 - Will create an event for each lecture/guest lecture
 - [Event for Lecture 1](#)
 - Like that FB event while in-class to show attendance
 - (username, geo-IP, time) tuple thus defines attendance; pull from page API at end of class to score participation
 - Scales to web course; excuse to check FB *once* in class :)

Participation Carrot

- Tell your friends
 - Currently at 100 students, 1 late day
 - If we get to 150 students, 2 late days
 - If we get to 200 students (max), 3 late days
 - startup.stanford.edu -> axess.stanford.edu
- Why participate
 - Will make guests feel welcome
 - Will improve your own project via more peer feedback, code reviews, APIs/libraries to choose from

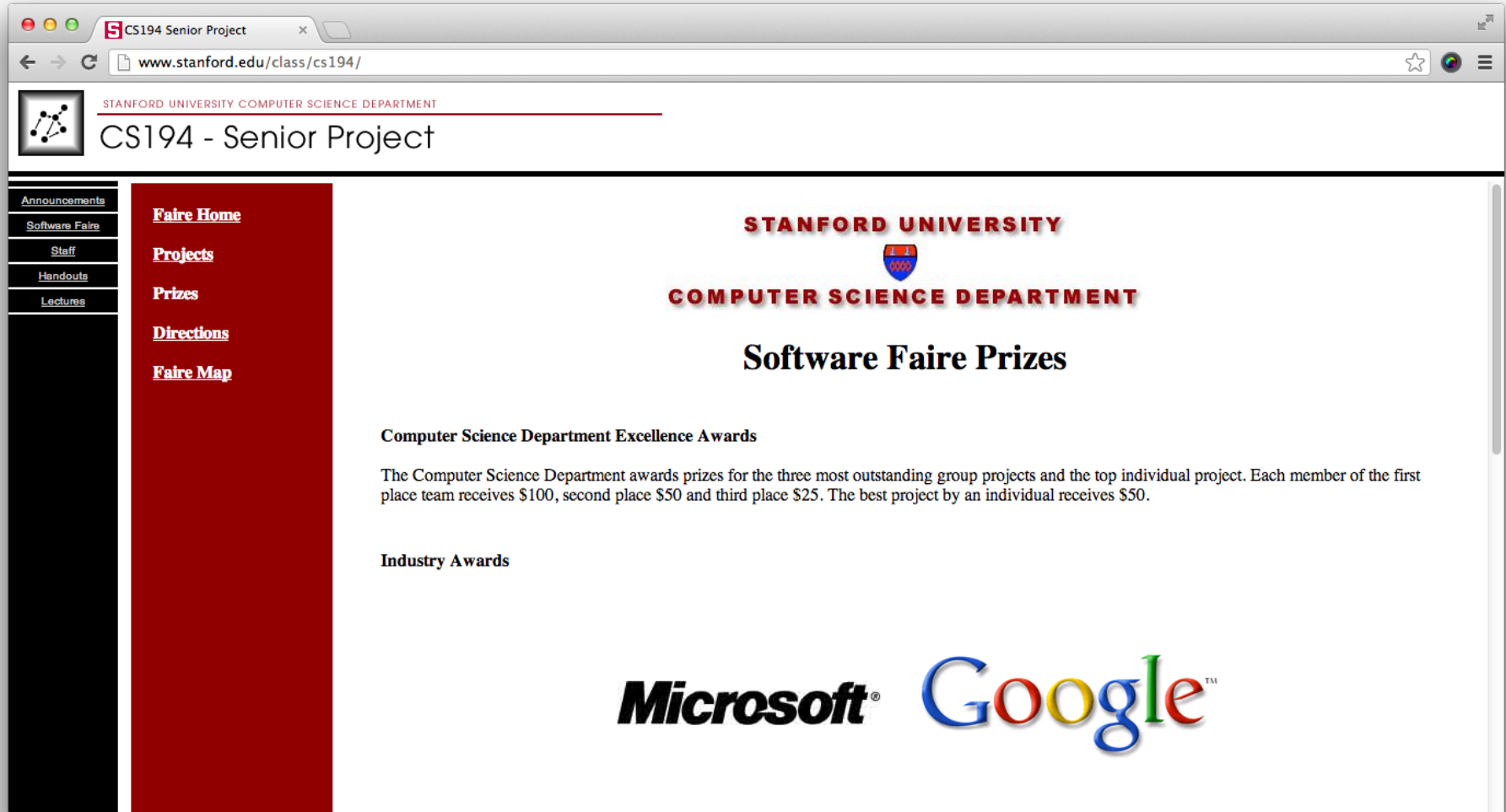
Assignments

- First Half
 - Programming assignments and quizzes
 - Objective answers, set up for auto-grading
- Second Half
 - Final Project: HTML5 Mobile App
 - All commits on github
 - Collaboration via API call or code import only
 - Three components to final project grade
 - auto-graded (style checking, 404s, etc.)
 - peer-graded (use rubric to grade peers on specified criteria)
 - panel-graded (judges for prize tracks; more on this later)

Final Project: Overview

- Simple Mobile HTML5 app
 - First, build an open-source command line app/library in node.js
 - Then, expose it as a webservice on Heroku, returning JSON in response to requests
 - Then combine at least two other students' APIs/libraries with yours for final app
 - All development on github
- Collaboration via API call or code import only
 - Sneak preview: [Yegge on Amazon's platform](#)
 - "All teams will henceforth expose their data and functionality through service interfaces....Teams must communicate with each other through these interfaces"

Final Project: Prizes ala CS194



The screenshot shows a web browser window with the address bar displaying `www.stanford.edu/class/cs194/`. The page header includes the Stanford University Computer Science Department logo and the text "CS194 - Senior Project". A left sidebar contains a navigation menu with links: "Announcements", "Software Faire", "Staff", "Handouts", "Lectures", "Faire Home", "Projects", "Prizes", "Directions", and "Faire Map". The main content area features the Stanford University Computer Science Department logo and the title "Software Faire Prizes". Below this, the section "Computer Science Department Excellence Awards" is followed by a paragraph: "The Computer Science Department awards prizes for the three most outstanding group projects and the top individual project. Each member of the first place team receives \$100, second place \$50 and third place \$25. The best project by an individual receives \$50." The "Industry Awards" section is partially visible at the bottom. Logos for Microsoft and Google are displayed at the bottom of the page.

CS194 Senior Project

www.stanford.edu/class/cs194/

STANFORD UNIVERSITY COMPUTER SCIENCE DEPARTMENT

CS194 - Senior Project

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Software Faire Prizes

Computer Science Department Excellence Awards

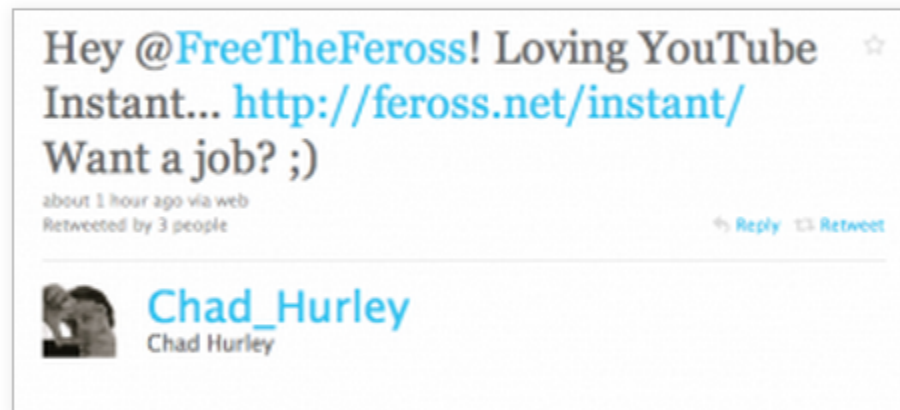
The Computer Science Department awards prizes for the three most outstanding group projects and the top individual project. Each member of the first place team receives \$100, second place \$50 and third place \$25. The best project by an individual receives \$50.

Industry Awards

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Final Project: Prizes ala CS194

Stanford student creates YouTube Instant, gets job offer from YouTube CEO



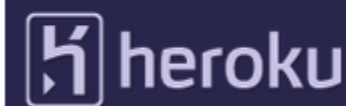
September 10, 2010 1:27 PM

9 Comments

Matthew Lynley



Guest Lecturers



- Many of the most successful startups in Silicon Valley
- Final schedule soon; first guest likely Th 1/17
- May record videos for online if overflow
- Lunch after class w/ speakers (signup form)

MOOC aspects

- Benefit of being on-campus
 - Office hours, personal interaction
 - Hackathons
 - Guest speakers, lunches, individual contact with startups
 - Will also have many of the advantages of a MOOC, e.g. we'll re-record lectures afterwards
- Later
 - After this course ends, will ultimately do public MOOC at coursera.org/course/startup; useful for off-campus or alumni friends.

Hackathons

- Would like to do 2-4 hackathons this quarter
 - Room/time TBD, but likely Th/Fr evening
 - Get final projects ramped up earlier
 - Food/EANABs provided
- Goals of Hackathons
 - Instructor/TA/Peer feedback
 - More in-depth, less constrained than lecture
 - Awesome, awesome always good

Summary

Things to remember

Summary

- Things to do
 - Visit website: <https://stanford.coursera.org/cme184-001>
 - Do [background reading](#)
 - Like [FB Event](#) to show your attendance
 - Invite friends; if we get to max enrollment, 3 late days
 - First assignment out on Thursday, but you can get started on Javascript by going through [Eloquent Javascript](#) (the whole thing is relevant)

