“Data Science and Technology Entrepreneurship”
Spring 2014

(Offered jointly between Columbia Business School and Computer Science Department)
Course Codes - Computer Science: 4995-3, Business School: B8819-1

Professor : Sameer Maskey, PhD
Office Hours : 2-4pm, Mondays
Email : smaskey@cs.columbia.edu

Class Time : 4:10 - 6pm, Mondays
Class Location : URIS 142

Teaching Asst. 1 : TBA
Teaching Asst. 2 : TBA
Teaching Asst. 3 : TBA

Course Website : http://www.cs.columbia.edu/~smaskey/dste-spring2014/

Course Information

This course will pair up MBA students from Columbia Business School with Seniors/Master's/PhD students from Computer Science department to form teams of two (or more) who will be guided through an entrepreneurial experience of building a technology startup. The course will be very hands on! The course will also have a team of 20+ Industry Advisors/Mentors (CEOs, CTOs and VC Partners of various firms) who will engage with students to help them convert their idea into a sustainable technology business.

The course is primarily focused on building a technology startup. Student teams (composed of CS/Engineering and Business students) will test feasibility of the idea/innovation, build the product, develop customers, study sales channels and try to raise capital during the span of 4 months. Industry mentors will critique the student teams and their ideas through various stages of the startup implementation addressing such questions related to feasibility, market attractiveness, customer acquisition, metrics, launch strategy and more. The students will be able to interact with CEOs for business mentorship, CTOs for technical mentorship and VC firm partners for advice on the capital raising process.

Industry Advisors/Mentors :

One of the important aspects of the course will be a selected group of successful CEOs, CTOs of various technology companies and Partners of VC firms who have had experience in building startups. Their experience will be vital in helping shape the startups the students will propose for the course. We have 21 mentors/advisors who have already signed up to mentor students. Current list of mentors who have agreed to be Advisor/Mentor for the course can be found at http://www.cs.columbia.edu/~smaskey/dste/mentors-advisors
**Real Startups - last class:**


Fitronix - [www.fitronix.io](http://www.fitronix.io),


**Grading:**

This is a hands-on course! You as a team (CS and Business student together) are expected to take an idea and work towards launching a startup. You will be graded on the progress you make towards this goal. Deliverables include report on 5 sets of labs/exercises described below (Student Activities section).

**Course Stages**

**Stage 0**
- Matching process (Matching MBA students with CS/Engineering students)

**Stage 1** (2 weeks – Jan 21st – Feb 3)
- Idea to Design, Concept and Customer Discovery

**Stage 2** (5 weeks – Feb 4 – March 10)
- Minimum Viable Product development, Quantifying customer feedback

**Stage 3** (2 weeks – March 11 – March 31)
- Agile development, Data analysis of feature surveys, Iteration on MVP

**Stage 4** (2 weeks – April 1 – April 29)
- Launching the product, A/B testing

**Stage 5** (2 weeks – April 1 – May 5)
- Try to raise funds with VC network provided in the class

**Brief Course Syllabus :**


1. Startups
2. Business Model Canvas, Customer Validation, Technology Ventures
3. Minimum Viable Product Development
4. Scaling Startup Technology
5. Business Analytics and A/B Testing

6. Classification Techniques in Product and Customer Development

7. Quantifying Customer Feedback, Funnel Optimization

8. Raising Seed Capital for Startups

**Pitch Events for Students**

1. Initial Pitch Event – Feb 17, 2013 (4 External Judges)


**Student Activities**

1. Labs and Exercises
   
   i. Exercise/Lab 1: Business Idea, Customer Discovery: The first exercise is using data driven methods to find and validate the business idea, value proposition by talking to as many potential customers as possible.

   ii. Exercise/Lab 2: Minimum Viable Product Development and Quantifying Customer Feedback: The second exercise involves developing the product and quantifying customer feedback. This includes end-to-end development of the product and going out of the building to talk to potential customers. Computer Science students will be involved in product development work while Business students will be more involved in quantifying customer feedback of the product.

   iii. Exercise/Lab 3: Launch and Marketing: The third exercise includes launching the product and performing A/B testing to optimize the funnel.

   iv. Exercise/Lab 4: Funnel Optimization and Analysis: The fourth exercise is applying data science algorithms on initial sets of data obtained from customers to analyze and predict key growth and financial metrics/trends (costs, revenue, traction) and writing a report on changes to be made in the strategy to build a profitable business.

   v. Exercise/Lab 5: Prototype Demo and Raising Capital: The last exercise involves showing the demo to potential investors provided through the VC network in the class.