Course Title: Using Artificial Intelligence and Design Thinking in Product Development
Course Code: SCI 66
Instructor: Dr. Ronjon Nag
5 weeks, October 20 – November 17, 7-8.50pm, Tuesdays

Course Summary:

Artificial intelligence (AI) is now a core technology for many products. But how does AI work? How do we design AI products that people actually need as opposed to simply adding new features? This course will provide an introductory overview of AI techniques and then transition into a workshop format where students will design AI products based on a design thinking paradigm. Along the way, we will also inspect what lies beyond deep learning and explore the implications to society as humans participate in a human-centered AI world. Through hands-on exercises, we will learn how to build and apply deep learning and discuss the real-world applications of neural networks. Then, using design thinking, we will break into groups and learn how to design products that address the latent needs of customers. By the end of the course, students will have a greater understanding of deep learning and product design so they can converse with neural network practitioners and companies; drive, and participate in, design teams of AI products; and be able to critically evaluate AI news stories and technologies. The intention of this course is to be a holistic offering, delving into the mathematics of AI and a disciplined design thinking approach. Students can bring their own ideas to work on and invite fellow students to join, or project topics will be provided.

Note this course not particularly about AI models - though we will be covering at a surface level - rather it is about how to build AI products. For the former, it is recommended to take SCI 52 either before or at the same time.

Grade Options and Requirements:

- Grade Requested (NGR)
  - This is the default option. No work will be required; no credit shall be received; no proof of attendance can be provided.

- Credit/No Credit (CR/NC)
  - Students must attend at least 80% of class sessions, and contribute to web discussions.

- Letter Grade (A, B, C, D, No Pass)
  - Students must attend at least 80% of class sessions and create and participate in a group project presentation.

- Notwithstanding the grade options, students are required to actively participate in group projects.
Tentative Weekly Outline:

Week 1:
What is Artificial Intelligence
- Neural Networks and Deep Learning
- Supervised and Unsupervised learning
- Symbolic Systems
What is Design Thinking – a disciplined approach
- The design process
- Solving wicked problems
- Developing the problem and the solution at the same time

Project groupings: students may suggest projects inviting other students to join or be assigned a project

Homework: Researching background of assigned project

Week 2:
Specific issues in designing AI products
Data collection
Threshold of usefulness
User expectation management
Online Design Thinking – a disciplined approach using the Mural online tool
Asynchronous brainstorming
Disciplined language
Remote working in team
Interview guide creation
Using disciplined language in interviews
Undertaking real interviews
Extracting latent needs from Interviews

Homework: Undertaking interviews, building design thinking latent need framework on Mural, identifying the persona users for the project

Week 3:
The Business of AI
How can you compete with Big Tech?
Efficient computational sourcing?

Please contact the Stanford Continuing Studies office with any questions
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continuingstudies@stanford.edu
650-725-2650
What kind of team do you need?
The entrepreneurial process
How to price AI products
  - Embedded
  - Apps
  - Software as a Service
The lean start-up approach adapted for AI products
Business model canvas adapted for AI products

Product feature set analysis
  Cost benefit analysis of each feature
Discovering and using pre-trained AI systems to accelerate development
Testing user acceptance of accuracy levels
Generating story boards of product use

Homework: Creating the business model canvas for the assigned product.
Creating the storyboard for your product

Week 4
  Continued product development
  Disciplined design process for projects
  Generating affinity diagrams, cause and effect in your AI system
  Testing your AI system
  Disaster stories of AI systems gone wrong

Pitching your product to investors
  How are investors in AI different
  Funding routes
  How and where to pitch
    - Angel groups
    - Accelerators
    - Venture Capitalists
    - Corporations

Homework: Create project presentation

Week 5
  Project presentations
    Each team presents pitch, design and business model canvas.
  Wrap up
    Feedback on viability of pitches and next steps.