Course Title: A Crash Course in Artificial Intelligence
Course Code: TECH 152
Instructor: Ronjon Nag, PhD, Adjunct Professor in Genetics, Stanford School of Medicine; Visiting Fellow, Stanford Center for the Study of Language and Information; President, R42 Group

Class Sessions and Recording
Meeting days and times: Wednesdays, 7:00pm-9:00pm (PT)
Meeting location: Zoom

The class sessions will be recorded. Students are encouraged to attend live where questions and discussions happen. If Students signed up for credit or letter grade are unable to attend live, they must watch the recording and send a few lines of what they learned in the class.

Course Features:
• Live session
  o Lecture, discussions, and Q&A
  o Requires interaction and active participation
  o Guest speakers
• Assignments & Coursework
  o Assignments and course materials posted in Canvas
  o Required discussions in Canvas
• Instructor will hold office hours

Target Audience/Prerequisites
This introductory course is open to students of all levels. No computer science or programming experience is needed, but a middle school math level (eg. simple algebra) is expected, with any further material covered in class.

*Please see course page for full description and additional details.
**Required Books/Materials:**

*Make your own Neural Network: A Gentle Journey through the Mathematics behind Neural Networks* and *Making your own using Python Computer Language* by Tariq Rashid (2016)

**First Assignment:**

Read pages 10-50 of *Make your own Neural Network*, by Tariq Rashid

**Grade Options and Requirements:**

Due to its short format, this course may not be taken for Credit or a Letter Grade. If you require proof of participation, your instructor will provide Certificates of Attendance. Please contact the instructor after completing the class. The Continuing Studies office does not issue these certificates.

**Tentative Weekly Outline:**

**Week 1:** Class structure, Broad overview of AI, machine Learning, Deep Learning
- How does a neural network work? Perceptrons, Neural networks with real numbers.
- Playing with Tensorflow Playground

**Week 2:** Evaluating AI Systems, over and under fitting,
- Advanced neural networks: Convolutional Neural Networks, Playing with Google Collab Neural Networks:
- Correlation and Causal Inference
- Applications: Speech Recognition, handwriting recognition, AI for climate change
- LSTMs, End-To-End Neural Networks, Reinforcement Learning
- Generative Adversarial Networks

**Week 3:** Careers in AI How to run an AI project
- How to get advantages in AI development
- Natural Language Processing and Understanding: Methods, Applications and Frontiers
- Generative AI and ChatGPT
Week 4: AI in Healthcare

AI for drug discovery
AI in longevity
Boundaries of humanity: intelligence in humans, machines and animals; Societal implications of AI