Course Title: A Crash Course in Artificial Intelligence
Course Code: WSP 152
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Course Summary:

The term “artificial intelligence” seems to be everywhere. But what exactly is AI? How does it compare with the workings of the brain? How does it get built? And what are the social and ethical issues surrounding it? This crash course workshop will equip you with an understanding of AI’s fundamental concepts, including neural networks and deep learning, so you can intelligently converse with AI practitioners, evaluate AI in the news and consider this new technology’s future.

Artificial intelligence (AI) is inspired by our understandings of how the human brain learns and processes information and has given rise to powerful AI techniques known as neural networks and deep learning. Much of deep learning in artificial intelligence uses the neuron, the cellular unit of the brain, as its biological inspiration. This course will provide an introductory overview of Artificial Intelligence techniques and place a particular emphasis on neural networks and deep learning but will also look at other techniques. We will discuss how current AI platforms compare and differ with how the brain works, and cover how systems actually “learn” and how to build a neural network. We will also discuss the real-world applications of neural networks. Where possible we will also use pre-built exercises where students can run machine learning code examples.

By the end of the course, the aim is for students to have a good intuition of how AI techniques work so as to be able to a) converse with neural network practitioners and companies; b) be able to critically evaluate AI news stories and technologies; c) consider what the future of AI can hold and what barriers need to be overcome with current neural network models.

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 bring a fully charged laptop.

*Please Note: This course will not have a grade (NGR) Courses taken for NGR will not appear on official transcripts or grade reports.

Please contact the Stanford Continuing Studies office with any questions
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Outline:

Lecture 1: Part 1
Overview of AI, Machine Learning, Deep Learning
How does a neural network work?

Lecture 1 Part 2
Perceptrons, neural networks with real numbers.
Advanced neural networks: Convolutional Neural Networks,
End-To-End Neural Networks, LSTMs

Lecture 2 Part 1
Evaluating AI Systems, over and under fitting
How to run an AI project; speech recognition, healthcare, examples.
Investing in AI.

Lecture 2 Part 2
Ethics of AI, Privacy
Future of AI, where is strong AI going to come from?
AI and consciousness

Required Reading:
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)