**Coding Mind**

# AI 1 Course Syllabus

## Objectives

This course aims at introducing the basic concepts about AI and machine learning. We focus on using the `scikit-learn` library to build applications as well as digging into the theories. We break down the major topics into "Modules" that focus on each topic one at a time.

## Module Topics

1. Crash Course - A primer on Python before we jump into AI.
2. Introduction to AI - A conceptual discussion on what AI is, where it is used, and the basics on how most AI models function.
3. Regression Models - A discussion and implementation on linear and polynomial regression models and when to use regression models.
4. Classification - A discussion and implementation of classification models and when to use them over regression models.
5. Rock Paper Scissors Project - A project implementing both regression and classification models to make a rock paper scissors AI.
6. Clustering - A discussion and implementation of clustering models and when to use them over regression and classification models.
7. Sentiment Analysis - A discussion and implementation of what sentiment analysis is and a brief introduction to webscraping as a demonstration.
8. Web Deployment - A small foray into the world of web design as we deploy our AI projects to the Internet.
9. Mobile Deployment - A small foray into the world of app design as we deploy our AI onto a mobile application.
10. Cutting Edge AI - A preview into advanced AI as we play with new libraries in Google Colab.

## Topics and Schedule

| Module 0 | Topic - Crash Course |
| --- | --- |
| L0-1 | Python File Structure, Syntax, and Printing |
| L0-2 | Variables |

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| Module 0 | Topic - Crash Course |
|----------|----------------------|
| L0-3 | Boolean Expressions |
| L0-4 | Conditional Statements |
| L0-5 | Lists |
| L0-6 | Functions |

| Module 1 | Introduction to AI |
|----------|--------------------|
| L1-1 | Introduction to AI |
| L1-2 | Game Recommendations |
| L1-2 Project | Recommender System |

| Module 2 | Topic - Regression Models |
|----------|---------------------------|
| L2-1 | Linear Regression |
| L2-2 | Polynomial Regression |

| Module 3 | Topic - Classification |
|----------|------------------------|
| L3-1 | Intro to Classification |
| L3-2 | Support Vector Machine |
| L3-3 | Decision Trees and Random Forests |

| Module 4 | Topic - Rock Paper Scissors Project |
|----------|-------------------------------------|
| L4-1 | Rock Paper Scissors |
| L4-1 Project | A Better AI |
| L4-2 | Tournament |
| L4-3 | Cross Validation/Algorithm Comparisons |

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| Module 5 | Topic - Clustering |
|----------|--------------------|
| L5-1 | Clustering |
| L5-2 | Graphing Data |
| L5-3 | Everything About Machine Learning |

| Module 6 | Topic - Sentiment Analysis |
|----------|----------------------------|
| L6-1 | Sentiment Analysis |
| L6-2 | Webscraping |

| Module 7 | Topic - Web Deployment |
|----------|------------------------|
| L7-1 | Python Flask |
| L7-2 | Handling Requests |
| L7-3 | Deploying AI |
| L7-4 | Better Web Development |
| L7-5 | Upgrading Our Server |

| Module 8 | Topic - Mobile Deployment |
|----------|---------------------------|
| L8-1 | Intro to Thunkable |
| L8-2 | Designing Our App |
| L8-3 | Programming the App |

| Module 9 | Topic - Cutting Edge AI |
|----------|-------------------------|
| L9-1 | Cutting Edge AI |