**Project 4 Proposal: Optimizing Blackjack Strategies**

**Team members:**

* Jacob Fischbach: Creating PowerPoint presentation
* Jacob Klucher: Set up Actor Critic Method template, help with plots and optimization, created model\_test
* James Elander: Creating Blackjack model using Python
* Clarissa Nunez: Project Proposal, ReadMe, make plots and help with Actor-Critic optimization
* Luke Milton: TBD

The goal of this project is to develop and analyze optimized strategies for playing Blackjack using machine learning algorithms. Specifically, we will use various techniques to build a model that predicts the best possible moves based on the player's current hand, the dealer's upcard, and the game state. This will allow us to evaluate and improve the performance of Blackjack strategies and generate recommendations that enhance the player's chance of winning.

To accomplish this, we will first create a Blackjack environment that will train an Actor Critic Reinforcement Learning network. This will then optimize the decision-making process for Blackjack players by using machine learning to predict the best action of either hit or stay based on the game's current state.

**Technologies used:**

* Machine learning with Keras and TensorFlow
  + Used to create the Actor Critic Default Program
* Python Pandas
  + Used to create Blackjack game
* Python matplotlib
  + Create plots for model predictions

**Schedule:**

Monday 3/17: Beginning stages of planning and proposal

Tuesday 3/18: Further planning, creation of repo, proposal, code for Blackjack environment, presentation outline

Thursday 3/20: Integration between Blackjack environment and machine learning model

Monday 3/24: Testing of model, plotting data for analysis

Tuesday 3/25: Finalizing any loose ends, work on presentation

Thursday 3/27: Presentation day