MSU AI Final Project

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Intro

The goal of this project was to develop an autonomous AI agent capable of functioning independently without any human intervention.

I will briefly go over how I built an AI Poker bot, and play hands against it in real time.

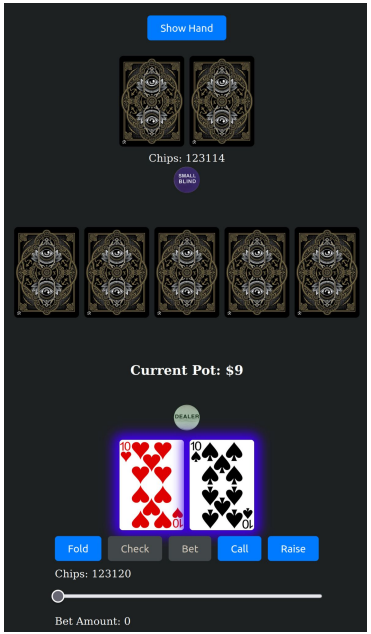
Components breakdown: Detailing the application architecture

Integration of AI with user interface for real-time gaming.

I will also go over an application of using a NN to recommend products to new customers for the first time.

Examples of personalized product recommendations based on initial inputs.

AI Poker Bot



This required a front end build, game logic, connecting the LLM, and many other significant challenges.

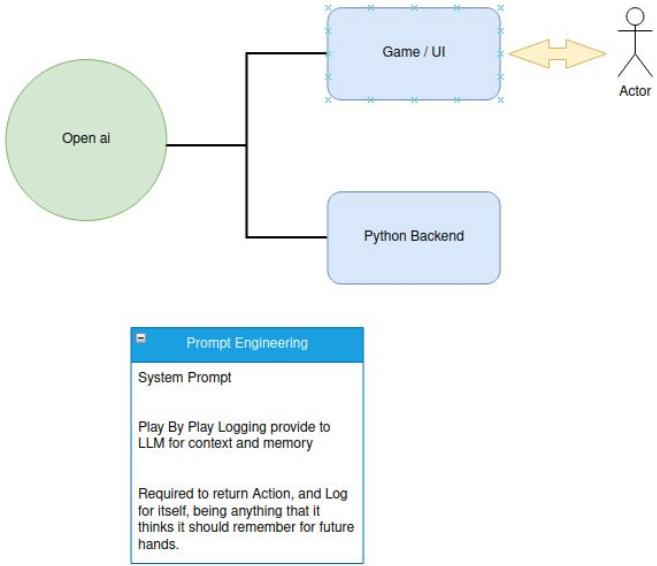
Made use of pre existing libs to make things easier (treys) on the game logic

I started off by having two controllable players, then giving functionality of player 2 to the LLM through many api endpoints, and destructuring of the response.

Live Demo

AI Poker Bot

High Level



Prompt Engineering

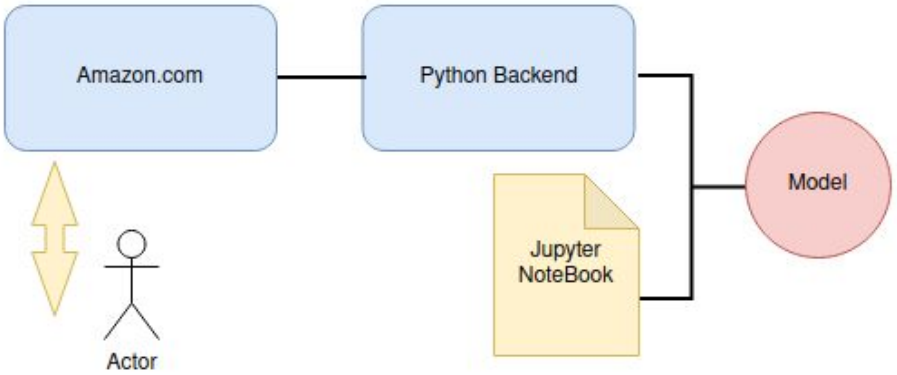
```
systemPrompt = (
    "You are a highly advanced large language model designed to function as a
    professional poker player in real-time games. "
    "Your primary objective is to adhere to a game theory optimal (GTO) strategy
    while incorporating randomness into your actions. "
```

```
"\\n"
"Example response format:\n"
"Action: Raise, Amount: 900, LLM_Note: Opponent has been consistently
aggressive on flush draws; adjusting range to compensate.\n"
"\\n"
"Remember, there is no human in the loop; you must make all decisions
autonomously, ensuring that each move optimizes your "
"potential for winning based on the given context and historical data."
```

Building a product recommendation system

Amazon Rec System

High Level



Made use of an Amazon products data set.

Built a synthetic data set of customers,

This included their demographics

Plus purchase history

Allowing the model to recommend products to new customers based on their demographics

Challenges and future state

Spent days on training with limited progress due to high computational demands and complexity.

Pivoted to using a Large Language Model (LLM) for quicker implementation and strategic versatility.

Future State

Multi agent poker game

Better customer dataset

Thanks!