

Carson Phelps

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Education

MASSACHUSETTS INSTITUTE OF TECHNOLOGY – GPA 4.8/5.0

Cambridge, MA

Computer Science and Engineering

May 2026

Coursework: Fundamentals of Programming, Design and Analysis of Algorithms, Real Analysis Q, Probability and R.V.

Work & Professional Experience

AMADEUS – ML/Generative AI Engineering Intern

May 2024-Current

- Built a Retrieval Augmented Generation (RAG) pipeline orchestrated using LangChain for an AI chatbot that supports the maintenance team's ability to respond to customer reported problems
- Designed and executed experiments in Azure Databricks to optimize LLM performance for summarization and generation, vector database size, and Azure Search AI methods, resulting in highly accurate retrieval performance on reformatted and summarized prompts
- Pre-processed and cleaned data using pandas and summarized with prompt engineering techniques
- Developed a user interface using Gradio, currently in performance testing with the maintenance team, which stores queries and response statistics in MySQL to monitor precision and recall
- Practiced good documentation habits to detail upper-level strategy and plans to use advanced rag techniques for function calling and network tasks

MIT CSAIL – Math and Simulation of Cooperation Undergraduate Researcher

Jan – May 2024

- Created iterated prisoner's dilemma simulations inspired by the Axelrod Simulations. Highlighted the strength of cooperation by programming economic factors and aspects of real-world decision making like trust and resource scarcity
- Built neural networks in PyTorch to initialize dynamic bot-decision making and unique game constraints
- Practiced object-oriented programming to create simulation software while implementing game format adjustments

WICHITA COLLEGIATE SCHOOL – IT Services Intern

June – July 2023

- Performed maintenance on staff reported concerns on integration of technology in the classroom
- Learned how to interpret and modify wiring diagrams for various electrical systems

Extra Curriculars

MIT VARSITY FOOTBALL– Team Captain

Aug 2023 – Current

- Nominated for MIT Male Freshman Athlete of the Year as the team's starting running back

MIT CODE FOR GOOD – Volunteer SDE Consultant

Feb– May 2024

- Implemented a survey system and developed a corresponding algorithm to effectively match students with educational mentors as a part of a team completing server-side web development for an existing UI
- Gained experience with Rest APIs, version control, and TypeScript to deliver effective solutions in a team setting

Projects & Honors

ML NFL Draft Prospect Evaluation Tool

- Developed a Machine Learning model using XGBoost and Scikit Learn Python packages to predict 4-year WAR (Wins above Replacement) for NFL Draft prospects based on combine metrics and college output.
- Reweighted statistics based on their impact on winning using a random forest model and computed team ratings using the Massey Matrix to identify draft value steals and provide a tangible alternative to Jimmy Johnson Trade Chart

IAP PokerBots Competition

- Utilized monte carlo counterfactual regret minimization to enable strategic, exploitative poker play
- Practiced with probability, random variables, and statistics to develop mathematical maturity.
- Competed in MIT's auction format PokerBots competition finishing in the top 15 and peaking at the top of the ELO-based leaderboards using our Python bot

MyPlayer 2k Jump Shot Simulator

- Created a jump shot simulator using an Arduino for my friends and I to practice our shot timing
- Stored and analyzed timing data using Python, identifying biases and patterns in shot performance.
- Implemented web scraping techniques to complete the shot database.

Honors: Jack Kent Cooke College Scholar and Young Scholar, National Merit Finalist, AP Scholar with distinction, Wichita Collegiate Highest Scholastic Performer, 17th place in National French Exam, MIT Football Offensive Rookie of the Year