

JACK MADDEN

jamadden@umass.edu ◊ 781-812-6366 ◊ <https://www.linkedin.com/in/jack-madden-7baba0224/>

EDUCATION

University of Massachusetts Amherst

May 2025

Bachelor's of Science in Computer Science & Pure Mathematics

Overall GPA: 3.61/4.0

RELEVANT COURSEWORK *ITALICS INDICATE FALL 2024 COURSEWORK*

Graduate Algebra, Graduate Analysis, Artificial Intelligence, Abstract Algebra 1, Abstract Algebra 2, Complex Analysis, Algorithms, Linear Algebra Computer Networks, Operating Systems, Programming Methodologies

PROJECTS

N-gram language model

<https://github.com/jmadden12/ngram-models>

C++, Language Models

- Implemented C++ program based on Jurafsky and Martin's *Speech and Language* processing to generate English-like words probabilistically.
- Added novel feature to language model to account for position of n-gram.
- This feature made the joint probability distribution more sparse but the model more convincing.
- Processed corpus of 300k most common English words on internet.

Blackjack Basic Strategy Trainer

<https://github.com/jmadden12/blackjack-bs-trainer>

C, CSV files, implementation

- Implemented low-resource command line program which allows user to train Blackjack Basic Strategy.
- Implemented history system so user can track progress over time.
- Wrote CSV parser to parse CSV file of recommended actions in blackjack

EXPERIENCE

Siroonian Technologies

May 2024-

IT worker, part time

Norwell, MA

- Using C# and Milestone API to develop surveillance camera system
- Fixing computers, printers

Chen Research Group

May 2022-January 2023

Research Assistant

Amherst, MA

- Rewrote 10 year old code for the Molecular Playground project, which allows users to manipulate and explore molecules with hand gestures.
- Rewrote client program in Python such that it would work with a simple webcam where previously it required expensive and hard to configure IR equipment.
- Used the Mediapipe project for hand detection and implemented new zoom and translation gestures.
- Wrote a GUI to make interaction with program easier.
- Program now recognizes the correct gesture 93% compared to 10% for the previous program.
- Used Java to extend and modify the open source library JMol to fit the project's needs

TECHNICAL STRENGTHS

Programming Languages

C, C++, Java, Python, SQL

Tools

Git, Linux

Libraries

C++ STL