Thomas D. O'Connor

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Education

UMass Lowell: BS in Computer Science, Minor in Business Administration, Honors College 2024
GPA: 3.76 [Dean's List 6x, Chancellor's List 1x, Magna Cum Laude]

Skills and Tools

Concentrations: **A.I. • Machine Learning • Data Analysis**
Languages: C, C++, Python Software: Github, MS Office, Tensorflow, Keras, Matplotlib
Environments: Windows, Linux Other: SQL, HTML, CSS, Javascript, LaTeX, Java

Professional Work Experience

Machine Learning Research Assistant • MSNEP Lab at UMass Lowell May 2024 - Present

- Development of ML simulations to optimize collective behavior in complex systems.
- Augmentation of various ML academic publications for use as graduate coursework.
- Development of reports and data visualizations for presentations to non-technical staff.

Academic Projects

Financial Analysis Software (FAS) • Honors Capstone Project 2024

- Built using HTML, CSS, Python, Keras/Tensorflow and Javascript.
- FAS is a web app that processes historical financial data and algorithmically predicts future performance of individual stocks using financial statement ratios.
- Leverages a neural network to predict future stock prices trained on reported SEC filings.
- Skills used: API Interactivity, financial data cleaning, information pipelining, GUI design.

Algorithmic Image Recognition system • Machine Learning • ML RA 2024-2025

- Built using Python and Keras, leveraging convolutional neural networks.
- System for processing images, classifying the contents as one of 10 classes in CIFAR-10.
- Adapted to classify the malignancy of skin abnormalities with 75% accuracy.

Horizontal Gaze Nystagmus Detector • Internet of Things Fall 2024

- Visual test administration using CSharp & Xaml, predictive RNN using Keras LSTM.
- Using Tobii 4c eye tracker, real-time eye tracking and prediction of nystagmus beats.
- Algorithm to normalize raw sensor data and extrapolate velocity from Tobii SDK API.
- Interactive visualization program to replay tests using memoized eye tracking data.

Zillow Listing - Lead Level SVM • Artificial Intelligence Spring 2024

- Built using Python and SKLearn, leveraging support vector classifiers.
- System for processing unstructured english descriptions of home listings in Flint Michigan, classifying the intensity of lead content in the running water of the homes.
- Natural language processing using Word2Vec. Feature extraction using regex search.

Personal Projects

Retro Games: C++, emulates the classic design of arcade games from the 1980s. 2023-2025

- Pacman: Designed a frame-rate stabilized physics engine with AI opponents.
- Pong: Features an axis-aligned-bounding-box collision system with a reflex-AI opponent.
- Snake: Implemented a latched physics engine with a deque for the snake body.
- Blackjack: Multiplayer terminal-based card game (basis for AI, game theory analysis).

Related Courses

Artificial Intelligence & Machine Learning [Python, Tensorflow, Keras, Matplotlib] Spring 2024
Internet of Things [Android app dev, Integrated circuits] Fall 2024
Financial Management, Accounting, BIS [Access, Excel, Word, Powerpoint] 2022-2023

Additional Work Experience

CDL Shuttle Driver & Dispatcher • UMass Lowell Transportation, Lowell MA Jan. 2023 - Apr. 2024

- Skills gained: Time management, oral communication and customer service.

Line Cook, Prep Cook, Dishwasher • Il Camino, Leominster MA May 2021 - Sept. 2024

- Skills gained: Teamwork, performance under pressure and attention to detail.