Bryan **Gass**

Graduate Computer Science Student

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Summary

Current full time graduate student at WPI. Interested in topics surrounding the intersection of mathematics and computer science in coursework and research centered around intelligent systems. Plans for the future are to continue learning topics within machine learning while also exploring, similar, cutting edge approaches within the realm of research. This is with the intent of beginning to find a foothold in formal research with the hope to move on to a PhD position.

Work Experience

Colgate-Palmolive

Piscataway, NJ

Data Science Intern

Jun. 2021 - Dec. 2021

- Researched, developed, visualized and maintained models, using large data sets, that optimized essential strategy for Colgate supply chain
  - The company's use of these models reduced shipping costs, reduced emissions and gave automated alerts to underlying variables to potential problems
- Prepared, preprocessed, and managed large data sets for aforementioned models
- Created dependencies to safeguard company data pipelines

Nuance-Microsoft

Burlington, MA

Research Engineering Intern

Jun. 2020 - Aug. 2020

- Worked under the guidance of Neeraj Deshmukh, manager for the Automatic Speech Recognition (ASR) team
- Implemented a documentation framework for the mrecutil C++ library using Doxygen

Teledyne Marine Systems

Falmouth, MA

Engineering And Information Technology Intern

Jun. 2019 - Aug. 2019

- Worked alongside, Bob Melvin, Vice President and Rick Olsen, Head of I.T. Operations
- Under Bob Melvin, built and managed the platforms of operations for various engineering projects
- For Rick Olsen, assisted in server destruction, construction, subsequent upgrades and creating documentation to help future employees.

Education

Worcester Polytechnic Institute

Worcester, MA, United States

M.S. in Computer Science, Concentration In Machine Learning

Aug. 2021 - May. 2022

Worcester Polytechnic Institute

Worcester, MA, United States

B.S. in Computer Science, Minor in Mathematics

Aug. 2018 - May. 2021

- Major Qualifying Project: Under the guidance of Elke A. Rundensteiner, used Machine/Deep Learning methods trainable on real world incompletely labeled data sets.
  - Research topics were built around positive unlabeled-learning disjunctive concepts in ILP and least general generalization
- Interactive Qualifying Project: Worked with O.R.A.M. to develop and build an app that aids refugees
  - Features of the application were focused toward educating and protecting refugees and/or potential asylum seekers.

Cape Cod Community College

Barnstable, MA, United States

A.S. in Mechanical Engineering

Sep. 2016 - May. 2018

- Worked as a tutor in the mathematics department
- Aided students in topics: calculus 1-3 as well as linear algebra

Projects

CS-541, Deep Learning: Deep Q-Learning

Worcester, MA

Individual Project

Mar. 2021 - May. 2021

- Used Python, PyTorch and OpenAI's Gym to implement the paper "Playing Atari with Deep Reinforcement Learning"
- The agent that was implemented was designed to play the game of pong among other Atari games
- Created accompanying visualizations to explain the principles around Deep Q-Learning using Manim (created and popularized by 3Blue1Brown

CS-3733, Software Engineering: Mobile/Web App

Worcester, MA

Group Project

Mar. 2021 - May. 2021

- CS-3733 Software Engineering in collaboration with Brigham & Women's Hospital. This course had nine person student teams working in a class competition to apply Agile development methodologies and software design patterns in Java to create an indoor pathfinding application, map builder, COVID-screening survey, and integrated service request modules for Brigham & Women's Hospital. The software systems that student teams created were to inform the hospital representatives about potential features, user interfaces, or design approaches that they might consider implementing.
- As a lead software engineer, I helped gather software requirements by survey and interview, creating user stories, scenarios and storyboards. I was responsible for writing the map editor components of the application. Specifically I designed/worked on the pathfinding, zoom/pan and node/edge placement subsystems of the application through the creation of UML use case, class, sequence, and activity diagrams. I was the technical leader of the team.

CS-541, Deep Learning: Age Predictor

Worcester, MA

Individual Project

Jan. 2021 - Mar. 2021

- Used Python, NumPy and matplotlib to create an accurate predictor for the age of a person, given a grey scaled image of their face
- The predictor was based off a linear regression model as well as an added L2 regularization term. Mean square error was used to evaluate the cost
- Stochastic gradient descent was used to optimize over the dataset

Iris Dataset Classifier

Worcester, MA

Individual Project

Dec. 2020 - Mar. 2021

- Used Python, NumPy and matplotlib to preprocess and visualize data from the iris dataset to prepare it for classification, using K-nearest neighbors
- In order to lower dimensionality to better visualize principal component analysis was used prior to visualization

CS-4342, Machine Learning: Wine Classifier

Worcester, MA

Group Project

Jan. 2020 - Mar. 2020

- Used python, scikit-learn and numpy to create a classifier on high dimensional wine quality data from UCI's wine dataset.
- Used a multitude of statistical tools to preprocess and learn from the dataset, including the use of principal component analysis, K-nearest neighbours, support vector machine, and ensemble decision tree.
- Used matplotlib to visualise error associated with each classifying tool

CS-4341, Artificial Intelligence: Gomoku

Worcester, MA

Group Project/Competition

Aug. 2020 - Nov. 2020

- Used Python and C++ to build an agent that played the game of Gomoku
- The agent used the minimax and alpha beta pruning algorithms along with a customized evaluation function to determine score
- The agent was put into a class competition and beat the 8 other teams who participated

CS-4445, Data Mining: Moneyball

Worcester, MA

Individual Project

Oct. 2020 - Dec. 2020

- Used python, pandas and numpy and data pulled from Major Leagure Baseball to create a program that replicated the historical baseball events surrounding Moneyball
- Given both team and player data, cleaning and processing of the data was performed to accurately find the best players in the year 2001
- Similar processing was done to find both best players given a funding threshold within 2001

CS-4445, Data Mining: FaceMash

Worcester, MA

Individual Project

Oct. 2020 - Dec. 2020

- Used python, pandas, flask, jinja and numpy to create a server that hosted a website that replicated the popular prank website "FaceMash" originally created by Mark Zuckerburg
- FaceMash employed the use of an elo ranking system that was redone from scratch as well as a database to store elo rankings of people who participated in the website

CS-543, Computer Graphics: Ray Tracer

Worcester, MA

Individual Project

Jun. 2020 - Aug. 2020

- Used JavaScript and HTML5 to develop a basic ray tracer
- The ray tracer used was for the creation of shadows, lighting, as well as reflective surfaces.

Keywords

Artificial Intelligence, Machine Learning, Deep Learning, Computer Vision, Data Mining, Natural Language Processing, Digital Image Processing, Software Engineering, Data Science, Data Analytics, Algorithms, Python, C/C++, Calculus 1-4, Linear Algebra, Differential Equations, Statistics, Probability, TensorFlow, PyTorch, Scikit-Learn, pandas, NumPy, Pandas, Research, Databases, PL/SQL, Oracle SQL, SQL, Java, JavaScript, Object-Oriented Programming