Jake Ryan

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EDUCATION

Bachelor of Science: Major Computer Science, Minor Mathematics, University at Buffalo, The State University of New York, **May 2024**
GPA: 3.8/4.0

SKILLS & TOOLS

Languages: Python, Java, C/ C++, Scala, Arduino
Machine Learning & Data Management: PyTorch, TensorFlow, Pandas, NumPy, Scikit-Learn
Web Development: HTML, CSS, JavaScript
Tools: IntelliJ, DataSpell, PyCharm, Jupyter, Visual Studio, Git, Google Drive, Microsoft Office

COMPUTER SCIENCE PROJECTS

Deep Learning Convolution Neural Network: Python, PyTorch

- Convolutional Neural Network model that takes a grayscale image of a handwritten digit and outputs the corresponding digit label using the MNIST dataset.

Machine Learning Model Predicting Penguins Gender: Python, Pandas, NumPy, Scikit-Learn

- Employ a Logistical Regression based model using gradient descent with a sigmoid activation function to minimize a mean squared error loss function with a prediction accuracy of 95%

Automated Mask Project: Arduino, HTML, CSS

- Worked in a team of 5 engineers to develop a modular system that connects with standard sewing machines to automate the production of face masks during the COVID-19 pandemic

Implementation of Pintos Operating System: C

- Design and implementation of various optimizations to Stanford University's Pintos Project operating system framework for x86 instruction set architecture
- Thread priority scheduler with donation capable of chaining and nesting without busy waiting
- System call capabilities and an on-demand paging system for lazily loading files from disk to improve startup performance

Dynamic Multipool Memory Allocator: C

- Implementation of Malloc in C using a multipool design optimized for allocation speed and efficient memory usage

WORK EXPERIENCE

Student Assistant Intern, New York State Department of Transportation: June 2023 – Present

- Overlooked a team of 4 implementing a phishing simulation campaign to improve department cybersecurity, conducted data analysis and created visualizations of the results.
- Researched latest SIEM/SOAR tools and ERM frameworks to improve security systems.

Teaching Assistant, CSE 421/521 Operating Systems: January 2023 – May 2023

- Course taught in C using Pintos, topics include, interrupts, thread scheduling systems, file systems, synchronization, and system calls.
- Duties included mentoring, grading, conducting project meetings, and technical assistance.

RELEVANT COURSEWORK

Completed Courses: Data Structures, Algorithms, Operating Systems, Quantum Computing, Linear Algebra, Calculus 3, Differential Equations, Discrete Structures, Probability, Machine Learning, Computer Vision and Image Processing, Microprocessors

AWARDS & INVOLVEMENT

Member, Tau Beta Pi Engineering Honors Society, University at Buffalo, February 2023 - Present
Member, IEEE Student Chapter, University at Buffalo, February 2023 – Present