James Gaboriault-Whitcomb

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Education

Youngstown State University **Expected May 2027**

Bachelor of Science in Computer Science | 4.0 GPA *Youngstown, OH*

- Member of Honors College
- Dean's List and President's List

Work Experience

Machine Learning Research Assistant **May 2024 - July 2024**

Lawrence Berkeley National Lab *Berkeley, CA*

- Scaled and optimized a high-performance track particle reconstruction graph neural network (GNN) pipeline using data from CERN, doubling inference and training speeds
- Developed a visualization pipeline to stream output data into properly formatted plots, tables, and directories utilizing SciPy, Matplotlib, and Hydra, enhancing data analysis efficiency
- Delivered ongoing research and results to the Department of Energy, and presented findings at Indico Conference and IEEE International Conference on Big Data

Relevant Course Work

Calculus 1, Calculus 2, Programming and Problem Solving, Data Structures and Objects, Computer Organization, Advanced Object-Oriented Programming

Projects

Chess Engine | *C++, SFML*

- Designed and developed a mailbox style chess engine in C++ using object-oriented design practices
- Implemented an A.I. opponent utilizing the minimax algorithm optimized with alpha-beta pruning
- Created full graphics and animations, including the display of the board, pieces, valid legal moves, check, and checkmate using the SFML library
- Included complex moves, such as castling, en passant, and pawn promotions

Spritesheet Lab | *Next.js, React, MongoDB*

- Developed a user-centric website for royalty-free sprite sheets, attracting 10 active users
- Implemented session-driven account registration and login processes, and email-based two-factor authentication
- Designed an advanced gallery page with MongoDB for enhanced search and filtering functionality
- Successfully deployed and hosted the website at spritesheetlab.com

Maze Pathfinding Benchmarking Tool | *Python, Pygame*

- Developed a path-finding algorithm benchmarking tool equipped with visualizations
- Implemented three path-finding algorithms (A*, Breadth-First-Search, Depth-First-Search), and a maze-generating algorithm (Prim's Algorithm)
- Enabled users to generate random or create custom mazes to gauge the algorithms' solution efficiency

Technical Skills

Languages: C++, Python, Java, C#, JavaScript, HTML, CSS

Technologies/Frameworks: Next.js, React, Django, Django Rest Framework, Tailwind, Git, MongoDB