Nicholas Konovalenko

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EDUCATION:

Boston University – Boston, MA May 2023
M.S. Artificial Intelligence
Relevant Coursework: Machine Learning, Deep Learning, Data Mining, Computer Graphics, Image & Video Computing

University of Michigan - Ann Arbor, MI May 2022
B.S.E. Computer Science
Relevant Coursework: Machine Learning, Computational Linguistics, Computer Vision, Deep Learning for Computer Vision

RELATED EXPERIENCE:

Microsoft – SWE Intern May – August 2022
- Scaled internal tool's data by 300% using a C# & Kusto/SQL backend
- Filtered query results with high efficiency through custom Typescript and React-Redux components
- Implemented feature flag testing to check safety of changes without requiring redeployment to prod
- Designed a threat model and security review document for feature security compliance

Amazon Lab126 – SDE Intern May – August 2021
- Created an automated computer vision testing platform, reducing time taken per test from 3 minutes to 15 seconds
- Processed 50 MB of data per 100 millisecond window, resulting in throughput of 0.5 GB per second
- Engineered a multi-threaded approach to keep increase on ARM Core's CPU/RAM below 10% for a producer-consumer pattern

Quicken Loans – SWE Intern June – August 2020
- Scaled loan document ingestion platform with web application saving 3,100+ hours of dead time
- Designed a full stack web application to dynamically generate code based on business analyst input
- Created a backend orchestrator REST API using C# that communicates with UI, DynamoDB, and other services
- Exposed models of document input schemas via NuGet package generation script and CI/CD pipeline

PROJECTS:

OpenGL Animated Vivarium November 2022
- Animated predator/prey movements using Inverse Gaussian Potential Fields and Matrix Transforms
- Created 3D models of spiders and scorpions with moving joints using OpenGL polyhedrons
- Rotated creatures with quaternion multiplication, detected collisions with minimal bounding spheres
- Computed Phong illumination and shading of meshes with OpenGL Shading Language vertex & fragment shaders

NeurIPS 2022: MineRL BASALT Competition October 2022
- Tied for 1st in the Intro Track "Obtain Diamond Shovel" task, scoring 1571 points
- Used a Video PreTraining (VPT) model, in addition to a CNN, beating the baseline model performance by 1000 points
- Implemented Q-Learning on the MineRL Gym environment, with the agent learning to chop a tree

Lean Engine Open Source Contributor April 2022
- Contributed Relative Moving Average (RMA) indicator to the open source project by QuantConnect
- Wrote unit tests to check functionality as part of the repository's CI pipeline

Go AI Bot May 2021
- Implemented multiple agents (Naïve, Minimax, MCTS, CNN) that play the board game Go
- Trained a CNN on AWS, achieving 98% accuracy on 100 games and 30% accuracy on 5000 games
- Optimized MiniMax approach by comparing Depth pruning and AlphaBeta pruning, and encoding with Zobrist Hashing
- Visualized Agent vs Human gameplay by developing a Javascript frontend

Invezt Android App September – December 2020
- Developed Android app that draws Support & Resistance lines on stock candle charts using OpenCV and ARCore libraries
- Implemented Django backend on Nginx web server that would communicate with MySQL database and Kotlin frontend
- Deployed backend to DigitalOcean Cloud Ubuntu LTS instance

LEADERSHIP:

President of University of Michigan Chess Team May 2021 – May 2022
Vice President of External Affairs at Michigan Hackers April 2020 – May 2021
University of Michigan Residential Advisor May 2019 – May 2021