

# Nathanael Lu

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## EDUCATION

Michigan State University Honors College

East Lansing, MI

BSE in Computer Science, Minor in Mathematics, Cumulative GPA: 3.93/4.00

Expected Graduation: Spring 2027

## SKILLS

**Programming Languages:** C++, Python, Javascript, Typescript, HTML, CSS, R, SQL

**Technologies:** Git, React.js, Next.js, Node.js, Firebase, Redis, Tailwind, Expo, Docker, Neptune.ai

## PROGRAMMING PROJECTS

### Neurocity Crown ( Javascript, React Native, Expo, Node.js, Firebase )

October 2023 – Present

- ❖ Developed an innovative AI-based EEG analysis tool utilizing Neurocity Crown; architected and implemented a React Native mobile application with a sleek Figma UI, integrating Expo frameworks and Firebase for robust authentication mechanisms.
- ❖ Applied data science principles to build and train a predictive machine learning algorithm, enhancing content personalization for Netflix users through data analysis, algorithm optimization, and leveraging neural networks for increased accuracy.
- ❖ Demonstrated proficiency in Agile software development practices, ensuring efficient project management following a strict timeline within collaborative, cross-disciplinary teams, and employing Scrum methodologies to meet project deliverables.

### Optiver Kaggle ( Python, Tensorflow, Pandas )

October 2023 – November 2023

- ❖ Directed a team in a Kaggle machine learning challenge, employing collaborative tools like GitHub and Jupyter Notebooks to develop an ensemble of models with TensorFlow; achieved high accuracy predictions and a respectable placement.
- ❖ Advanced predictive modeling through hyperparameter optimization using Optuna and Neptune.ai, and leveraged Pandas for sophisticated data manipulation, resulting in enhanced feature engineering and model performance.

### Liravis ( C++, libPCL, Git, LiDAR, Python, ROS2 )

October 2023 – Present

- ❖ Orchestrated a collaborative initiative between the AI Club and Autonomous Vehicles Club to develop an open-source library fusing LiDAR, Radar, and Computer Vision for enhanced autonomous navigation, doubling the analytical capability.
- ❖ Managed 10 students in the deployment of advanced computer vision algorithms for precise traffic sign recognition and real-time vehicle localization, elevating the project to a benchmark for safety and efficiency in autonomous vehicle research.
- ❖ Unified efforts of three development teams using C++20 and modular programming techniques, resulting in a robust library of tools, and cemented cross-club synergy by sharing knowledge and resources for mutual technological advancement.

### Personal Projects ( C++, Python )

March 2023 – Present

- ❖ Created engaging C++ [Solitaire video tutorials](#) that simplified complex data structures, achieving over 1000+ viewers—facilitated a deep understanding of complex data structures and algorithms through instructional content creation.
- ❖ Programmed an AI-powered [Mancala](#) game in C++, utilizing advanced data structures and functional programming techniques, resulting in a strategic game simulation that challenges and outperforms standard heuristics.
- ❖ Built a robust chess engine across Python and C++ platforms, integrating bitboards for efficient game state management and combining handcrafted evaluation functions with neural network models for superior AI decision-making capabilities.
- ❖ Engineered a [Turing](#) machine simulation in C++, applying object-oriented programming, template usage, and namespace management, while delving into computational theory, to derive substantial theoretical computer science insights.
- ❖ Rapidly prototyped an [Ultimate Tic-Tac-Toe](#) application, illustrating the practical use of bitboard data structures for instantaneous lookup and employing Nega-Max AI algorithm for strategic and effective game state evaluation.

## EXPERIENCE

### Helivox

Troy, MI

Chief HR Officer

August 2022 – July 2023

- ❖ Strategically established and led the foundational structure of a 100+ member 501(c)(3) multi-district educational nonprofit; spearheaded a large-scale, cost-free SAT simulation initiative that enhanced educational accessibility.
- ❖ Played a pivotal role in talent acquisition and development; recruited, onboarded, and provided in-depth training to a 10-person HR team and over 50 top-performing student volunteers, fostering an environment of learning and growth.
- ❖ Implemented robust operational procedures, including a streamlined document management system, comprehensive recruitment strategies, and meticulous quarterly reporting, ensuring organizational efficiency and effective conflict resolution.