

# ZAIN-UL-ABIDEEN NASIR

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## EDUCATION

### Binghamton University

Master of Science, Computer Science, AI Track | GPA: 3.95/4.00

Expected May 2024

### Binghamton University

Bachelor of Science, Computer Science | GPA: 3.95/4.00

Dec 2022

## WORK EXPERIENCE

### Graduate Research Assistant

Jan 2023 - Present

*Jayson Boubin, Binghamton University*

- Apply deep Q-learning algorithms for map navigation, utilizing two-part neural networks for optimal policy determination
- Design low-latency data pipelines for drone video streams with OpenCV, enabling real-time object detection
- Retrain and evaluate object-detection models in PyTorch to identify plant health in forest environments
- Implement edge-based SLAM navigation techniques for autonomous drones in dense outdoor settings
- Integrate network analysis for client-server drone communication, improving latency and eliminating data loss
- Streamline algorithm deployment through Docker containers for increased portability
- Adapt SLAM algorithm for drone applications via Nvidia Jetson

### Teaching Assistant

Jan 2023 - Present

*Computer Science Dept., Binghamton University*

- Teach lectures on operating systems, and design and analysis of algorithms
- Manage lab sessions, explaining topics such as xv6 kernel hacking, file systems, and scheduling
- Proctor exams, ensuring academic honesty and integrity of the course
- Provide individualized assistance to students through office hours, clarifying course concepts
- Guide students in setting academic goals and offered career advice for their personal and professional development

### Software Development Intern

Jun 2022 – Aug 2022

*Advertising Specialty Institute*

- Extended the design library through 20 reusable frontend components coded in Typescript
- Implemented product-sharing feature in Angular, enhancing conversion rates by 18%
- Incorporated 30 interaction tests in Storybook, improving code quality and eliminating user-interface issues
- Supervised a team of four and developed a webpage for the company networking event
- Collaborated within a cross-functional team of 20, utilizing Jira to streamline project workflow

### Undergraduate Research Assistant

Jun 2021 – Jun 2022

*David Liu, Binghamton University*

- Investigated data schemas for time-series stack traces
- Customized Protocol Buffers to serialize energy data for Linux-based systems
- Ported application-level energy-awareness framework to Android
- Executed experiments to test energy-awareness on mobile apps, such as YouTube

## PROJECT EXPERIENCE

- **Ball-following Robot:** Ball detection & tracking in ground-robots with ROS, OpenCV, and TurtleBot
- **Spotted Lantern Fly Detection Through Drones:** Real-time aerial pest and disease detection with PyTorch and Parrot drones
- **Autonomous Map Navigation:** Reinforcement learning-based map navigation in dynamic game environments
- **Pathfinding Visualizer:** Java program to visualize A\* pathfinding algorithm in real-time

## TECHNICAL SKILLS

- **Languages:** C++, Python, Java, Javascript, Typescript
- **Machine Learning:** Object Detection, Computer Vision, Reinforcement learning
- **Frameworks & Tools:** PyTorch, Docker, Git, React, Next JS, Nvidia JetPack