# Ziyao Yin (Theodore)

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## EDUCATION

**Duke University GPA: 3.71/4.0** — Durham, NC
**Master of Engineering (M.Eng.) Mechanical Engineering** — Aug 2023 -Dec 2024
**Graduate Certificate in Robotics & Autonomy**
*Courses: Advanced Robotics, Model Predictive Control, Data Science and Machine Learning for Science and Engineering, Intro to Medical & Surgical Robotics, Business Fundamentals for Engineers, Management in High-Tech Industries*

**Rose-Hulman Institute of Technology** — Terre Haute, IN
**Bachelor of Science (B.S) Computer Science** — Sept 2019 - May 2023
Dean's List, Rose-Hulman Global Scholarship
*Courses: iOS App Development, Cross-Platform Mobil Development, Web Programming, Database Systems (SQL), Artificial Intelligence, Data Structures & Algorithm Analysis, Design & Analysis of Algorithms, Theory of Computation, Computer Networks*

## PROJECTS

- **UR5e Robot Arm Arcade Game (Gazebo, ROS, Planit, Python) http://tinyurl.com/bpapea6f**     *Fall 2023*
  - Developed an interactive game with the UR5e robotic arm which can follow motion plans from ROS. UR5e arm movements was simulated and optimized in Gazebo and Planit to introduce three different trajectories as game difficulty
  - Created a custom 3D-printed Rim module using SolidWorks to fit onto the UR5e robotic arm's gripper
  - Programmed an Arduino sensory system with a LCD display and motion sensor to track gameplay data and time metrics
- **Aircraft Orientation using Convolutional Neural Networks (Python, AlexNet)**     *Fall 2023*
  - Trained a machine learning model using the AlexNet architecture to accurately determine the orientation of aircraft (Roll, Pitch, Yaw) with a synthetic dataset of aircraft images through a custom Java program, simulating various flight conditions
  - Trained the CNN with a combination of real and synthetic images, achieving high accuracy with a limited dataset
- **Web & Mobile Applications**     *Spring 2023*
  - **Rose Market (Flutter Dart, Firebase)** https://corssplat-finalproject.web.app: Developed and published a cross-platform (Web, Android, iOS) application with Flutter Dart and Firesbase. Implemented user-specific authentication with Firebase and automated email alert for user engagement. Integrated dynamic photo updating capability for merchandise listings
  - **Zone - iOS Message Application (Swift, Firebase)** http://tinyurl.com/ycx778zu: Led the creation of an iOS messaging app using Swift and Firebase, featuring real-time chat capabilities, Firebase-backed storage for message updates, and user profile customization with photo uploads, complemented by Figma-designed interface mockups
- **Human Robot Collaboration Project (Java)**     *Fall 2022*
  - Created Java tile cleaning robot which is able to move across predefined 2D grid and responding to user-generated instructions. Implemented automation process with STRIPS and A* algorithms for pathfinding and object collection
  - Incorporated Stanford CoreNLP toos to enable robot with ability to understand basic command line movement instructions, and to detect user sentiment and respond with predefined responses, improving user experience
- **Load-Store Architecture Processor (Assembly, Xlinux)**     *Fall 2022*
  - Created Java tile cleaning robot which is able to move across predefined 2D grid and responding to user-generated instructions. Implemented automation process with STRIPS and A* algorithms for pathfinding and object collection
  - Incorporated Stanford CoreNLP toos to enable robot with ability to understand basic command line movement instructions, and to detect user sentiment and respond with predefined responses, improving user experience

## EXPERIENCE

**Research - DDoS Mitigation https://tinyurl.com/2565nz4b** — Rose-Hulamn Institute of Technology
Python, C#, MergeTB, Ansible-playbook — *Aug 2022 - May 2023*
  - **25th CERIAS Security Symposium:** Presented research work in Purdue for student poster presentation
  - Introduced a countermeasure the combination of cryptographic challenges and network filtering in mitigating volumetric DDoS attacks. Simulated and analyzed proposed solutions using MergeTB and automated process using Ansible-playbook

**Software Development Intern - Rose-Hulman Ventures** — Terre Haute, IN
ASP.NET, Typescript, C#, SQL, Micro-service API — *July 2022 - May 2023*
  - Designed and implemented user-friendly UI/UX for a front-end webpage, enhancing navigability and visual appeal
  - Created new full-stack infrastructure and micro-services API that allows the users to validate entries with database

**Student Volunteer - Programming In the Community & Connecting With Code Camp** — Terre Haute, IN
Python, Scratch — *2021 - 2023*
  - Worked on interactive coding workshops for children, teaching them to build simple games and fostering an interest in technology. Design and implement a coding curriculum tailored for young learners in local elementary schools

## SKILLS SUMMARY

- **Coding**: Java, Python, Flutter Dart, JavaScript, C, C#, C++, TypeScript, Swift, MySQL, Scheme
- **Development Tools**: ROS, Arduino, Matlab, Github, Firebase, ASP.NET, Gazebo, Planit, CAD
- **Communication**: English and Chinese (Proficient), Japanese (experienced)

## EXTRACURRICULAR

**Vice President, Society of Asian Scientists and Engineers** — *Jan. 2022– May 2023*
**Vice President, Photography Club** — *Sept. 2020 – May 2023*