



# MINH TRAM

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## EDUCATION

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### Master of Science in Computer Science

**Expected May 2022**

Coursework: Artificial Intelligence, Neural Networks, Machine Learning

Current GPA: 4.00

Research Thesis: Interactive AR to Robot Interface

University of Texas at Arlington - Arlington, TX

### Bachelor of Science in Computer Science

**Aug 2017 - June 2020**

Coursework: Algorithms, Operating Systems, Artificial Intelligence, Robotics

GPA: 3.58

University of Texas at Arlington - Arlington, TX

## PROJECTS

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### IROS 2020 OCRTOC

*Open Cloud Robot Table Organization Challenge*

- Utilized NVIDIA DOPE to detect physical objects for robot arm detection and organization tasks
- Eliminated hardware integration by simulating hardware characteristics using ROS and Gazebo 9 simulator
- Created unified development environment to eliminate software discrepancies by creating a Docker image

### REAL-TIME VR-2-ROBOT HEAD

*Interactive human-to-robot vision*

- Designed 3-axis head motion simulator to drive mounted stereo camera for user's head motion tracking
- Reduced hardware-software lag time by 40% by packing sensor data through Serial-to-USB asynchronously
- Implemented vision and sensor based homing sequence to synchronize robot and human pilot head
- Utilized ZED, Unity, and Oculus SDK to stream live video feed for real-time pilot headset visualization

### MINI LINUX

*Minimal Working Example UNIX simulator*

- Implemented bash-like CLI for command handling to provide an effective, interactive command interface
- Incorporated persistent FAT32 file system for permanent data storage through file system virtualization
- Added multithreading functionality to allow parallel and background software execution by using fork()
- Ensured safe thread handling to prevent resource hog and deadlocks by utilizing semaphores and scheduling

## EXPERIENCE

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### Graduate Research Assistant

**Aug 2020 - Present**

*Active research in robotics and interactive AR pose estimation fusion*

- Implemented OpenCV, PyTorch, Intel RealSense for objects detection and pose estimation on Jetson Nano
- Reduced model training time by porting development environment to higher-end machines using Docker
- Created synthetic training data for object pose detection using Unreal Engine 4 and NVIDIA's NDDS
- Trained object detection model from 3D stereolithography files for IROS 2020 OCRTOC competition

## TECHNICAL SKILLS

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**Proficient:** Python, ROS, CUDA, L<sup>A</sup>T<sub>E</sub>X, git, Docker || **Familiar:** C++, Java, PyTorch, Tensorflow, Unity

**Hardware:** NVIDIA Jetson, Universal Robot UR5e, Oculus VR, Intel RealSense, Zed Stereo Camera