

## Abstract

The UXA-90 Robots were unusable in storage at Kennesaw State University since they were purchased in 2016. With just factory manuals and poorly translated documentation and little to no resources online, it was clear an investigation was needed to determine how to use the robots safely.

A risk assessment was conducted, and this team created a certification program to ensure the safety of the individuals and the robots. A website was created to host the documentation of the assessment and certification for ease of access. After all students working on the robots were certified, all teams were given the greenlight to begin work.

To increase the accessibility of the robots, our team developed a React native mobile app integrated with a custom REST API. This API has full control of the robot via ROS 2.0, replacing the old and outdated software.

## Certification

### Certified All Teams in:

- Proper Handling
- Setup and Basic Operation
- Safety Mitigation Steps

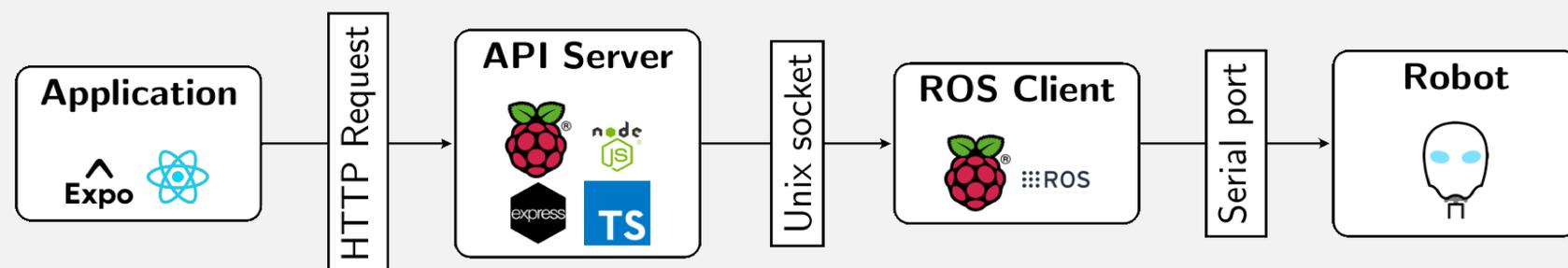
## Materials and Methods

- **Raspberry Pi 4** – Main computer for the robot
- **Robot Operating System 2.0 Codename Humble** - Used for communication between REST API and the robot via a serial port
- **Node.js and Express.js** - JavaScript Environment and Library to build and run the API server to control the robot
- **Expo and React Native** – Build tools and framework used to develop the app that calls the API

## Results

- Rewrote existing manuals
- Created a training certification with a focus on safety
- Rewrote and modernized existing ROS code to ROS 2.0
- Designed and developed a REST API server with ROS integration
- Designed and developed a React Native App to control the robot

# Obsolete humanoid robots, unused for years, can now be controlled by phones using a React Native app and custom REST API.



Team Website



Certification Documentation



GitHub

