

# Johnathan Uptegraph

Robotics Engineer | Systems Developer | Mechatronics Specialist  
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## *Summary:*

I see robotics as both a science and an art—where engineering meets creative problem-solving. I think like an engineer and develop like a designer, creating systems that perform under pressure and scale with purpose. With 2+ years of experience **deploying 50+ robots across \$25M+ installations** in major EV, medical, and defense industries, I specialize in solutions that launch fast, scale efficiently, and adapt to real-world constraints. From full-cell deployments to embedded prototypes using Raspberry Pi, ESP32, and Arduino, I bridge concept to execution. I've optimized motion paths, reverse-engineered undocumented PLC logic, and delivered reliable systems that keep production moving. Beyond the floor, I've prototyped assistive tech for individuals with cerebral palsy—developing sensor-driven, user-friendly systems in collaboration with university research teams. I'm actively expanding my capabilities in ROS 2 and Gazebo through simulation projects and self-directed study—building the tools to contribute to autonomy, perception, and human-centered system design. **I'm a systems-focused robotics engineer with real-world deployment experience—ready to transition into autonomy and humanoid development.**

## *Core Competencies:*

- **Robot Platforms & Tools:** KUKA, ABB, Fanuc, Yaskawa, RoboGuide, KRL, ROS 2
- **Embedded & IoT Systems:** ESP32, Raspberry Pi, Arduino, IMUs, Ethernet/IP
- **Programming Languages:** Python, Java, C#, C++, JavaScript
- **Frameworks & Operating Systems:** React.js, Angular.js, Linux, Git
- **Robot Motion & Path Control:** Joint/Cartesian Tuning, Multi-Robot Handshaking, Safety IO
- **Human-Robot Interaction:** HMI Design, Adaptive Interfaces, Sensor Fusion, Robotic Vision
- **CAD & Fabrication:** Fusion 360, 3D Printing, Rapid Prototyping, Soldering
- **Simulation & Animation:** RobotStudio, Unity, Unreal Engine, Blender, Maya, Gazebo

## *Professional Experience:*

### **Robotic & Controls Engineer | KC Robotics**

*May 2023 - Current*

- **Major EV Automotive Manufacturer – Material Handling & Grinding:** \$20M+ install of 25+ KUKA robots. Refined robot motion paths and PLC logic to reduce tool wear by 20%.
- **Medical Device Manufacturer – Welding & Handling:** 2 KUKA robots with 9+ custom EOATs for MRI machine welding. Re-designed PLC logic and integrated active cell monitoring via Modbus.
- **Automate 2025 Demo Cell - Pick & Place:** Programmed a robotic demo (ABB, KUKA, Fanuc) with handshaking logic for dynamic material handling of colored objects to form image patterns.
- **Defense Contractor (In Progress) - Material Inspection:** Integrating 15+ Fanuc robots for part inspection and handling. Optimizing RoboGuide paths, safety IO, and Rockwell Studio 5000 logic.

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## ***Academic Experience & Leadership:***

### **Miami University Machine Learning Research Assistant**

*August 2022 – October 2022*

- Developed and implemented linguistic prediction models utilizing Python and the Pandas.
- Research findings ***acknowledged in Social Network Analysis and Mining*** journal.

### **Miami University Robotics, Web, and Mobile App Development Teaching Assistant**

*August 2022 – December 2022*

- TA for Human-Robot Interaction, Advanced iOS Mobile App Dev, and Advanced Web Dev.
- Led 70+ students in coursework, labs, and project reviews with a 97% course-wide pass rate.

### **Lead Robotics Researcher – Assistive Drinking Device**

*January 2021 – August 2022*

- Prototyped an adaptive robotic drinking device tailored for individuals with Cerebral Palsy, integrating 3D-printed housing, food grade safe components, IMU sensor fusion with intelligent control algorithms powered by Raspberry Pi and Arduino.

## ***Personal Projects:***

- **Cori the Chore Robot (In Development):** Conducting personal research for robot simulation in Gazebo using ROS 2. Cori (The Chore Robot) will integrate IMU and LiDAR data via extended Kalman filtering for real-time state estimation and serve as a personal home assistant.
- **Smart Home Garage Door Switch:** Engineered an ESP32-based smart garage door controller with seamless Apple HomeKit integration, featuring a custom-designed and 3D-printed enclosure and incorporating Arduino for precise sensor input management.
- **3D Printing Mobile App:** Developed a user-friendly Swift mobile application leveraging the OctoPrint API and a jQuery backend for comprehensive remote control and monitoring.

## ***Educational Background:***

- **Bachelors in Emerging Technology – Miami University**
  - Minors: Computer Science & Simulations
  - 4x Miami University Dean's List Recipient & Department's Academic Excellence Award

## ***Certifications:***

- FANUC Handling Tool Operations & Programming (2024)
- EPLAN Electric P8 (2024)