Uthman Tijani

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EDUCATION

University of South Florida (USF)   Aug 2023 — May 2025
Master of Science, Computer Science

The Federal University of Technology Akure (FUTA)   Jan 2017 — Aug 2023
Bachelor of Engineering, Mechanical Engineering

PUBLICATIONS

1. Adrian Lozada, **Uthman Tijani**, Villa Keth, Hong Wang, and Zhao Han. "Anywhere Projected AR for Robot Communication: A Mid-Air Fog Screen-Robot System," 2025 ACM/IEEE International Conference on Human-Robot Interaction (HRI), 2025. **Top HRI conference. 25% acceptance rate**.

2. Adrian Lozada, Villa Keth, **Uthman Tijani**, Michael Klein, and Zhao Han. "A Controller for Robots to Autonomously Control Fog Machine," 8th International Workshop on Virtual, Augmented, and Mixed-Reality for Human-Robot Interactions at HRI 2025.

3. **Uthman Tijani**, Hong Wang, and Zhao Han. "Towards Reproducible Language-Based HRI Experiments: Open-Sourcing a Generalized Experiment Project," 2024 ACM/IEEE International Conference on Human-Robot Interaction (HRI), 2024. **Top HRI conference. 61.3% acceptance rate (Short Contribution)**.

RESEARCH EXPERIENCE

Research Assistant | *Reality Autonomy and Robot Experience (RARE) Lab, USF*   Aug 2023 — Dec 2024
Advisor: Prof. Zhao Han

- Led and mentored 2 undergraduate researchers to develop an autonomous mid-air fog screen-robot system.
- Developed ROS packages for robot localization and autonomous navigation on the Fetch mobile manipulator robot employing 2D laser and 3D RGB-D camera sensors.
- Integrated custom fog-screen projection node into ROS navigation stack for mid-air human-robot interaction (HRI) experiments.
- Conducted structural and functional testing of prototypes, refining designs based on real-world feedback in SolidWorks.
- Developed embedded hardware controller for fog machine autonomous control.
- Developed a modular software package for language-based HRI experiments in robotics.
- Published 3 research papers in top-tier robotics conference (HRI), contributing to advancements in robotics.

Undergraduate Researcher | *Mechanical Engineering Department, FUTA*   Jan 2022 — April 2023
Advisor: Prof. Dahunsi Olurotimi
Undergraduate Thesis: Development of a Three-Wheel Mobile Robot Utilizing Differential Drive

- Designed, built, and simulated a 3-wheel mobile robot in Simulink, applying kinematics modeling and PID motor control.
- Developed a hydraulic-based excavator proof-of-concept, analyzing its mechanism and force distribution.
- Implemented a 4-way traffic light control system using Arduino, focusing on embedded logic and actuator integration.

TEACHING EXPERIENCE

Teaching Assistant | *University of South Florida*   Aug 2023 — May 2025
Responsibilities include grading, holding office hours to help students understand the course, proctoring exams, and leading review sessions to go over important topics.

- CGS 1540: Intro to Databases for IT (Aug 2024 - May 2025)
- COP 4710: Database Design (May 2024 - July 2024)
- COP 3515: Advanced Program Design (Jan 2024 - May 2024)
- COP 3514: Program Design (Aug 2023 - Dec 2023)

Professional Experience

Robotics Engineer | *Liensy Robotics*   **Oct 2021 — Aug 2022**
Robotics Intern | *Liensy Robotics*   **May 2021 — Oct 2021**
- Designed, assembled and tested a custom-made 24 x 24in CNC milling machine, optimizing precision & stepper motor control.
- Developed a line follower robot using an Arduino microcontroller and an infrared (IR) sensor.
- Developed a ROS publisher-subscriber node, and a service-client node.
- Implemented wireless communication for smart home lighting control by integrating MQTT protocol with a Raspberry Pi.
- Designed a CAD model using SOLIDWORKS for four and six-DOF robot arms, and a potato Washing machine in an automated potato chips production line.

Data Science Intern | *Hamoye AI Labs*   **July 2020 — Dec 2020**
- Contributed to 3 open-source projects by analyzing data and building multiple high accuracy predictive ML models. [GitHub] [Article] — [GitHub] [Article]
- Developed neural network models for object detection with satellite images to track human footprint in the Amazon rainforest.
- Built a machine learning classification model for managing the quality metric of global ecological footprint.

Honors & Awards

Dr. Joy A. O'Shields Honorary Scholarship in Engineering | *Donor: Lakecia Gunter*   **Aug 2024**
CRA-WP Grad Cohort for IDEALS   **Jan 2024**

Grants

NSF I-Corps Site subgrant | *$3,000*   **Jan 2024 — July 2024**
- Source: NSF's Innovation Corps (I-Corps) Site at the University of South Florida
- Role: Zhao Han (PI), **Uthman Tijani (Entrepreneur Lead)**, Hong Wang (Entrepreneur Lead)

USF Engineering Alumni Society (EAS) Conference Grant | *$250*   **March 2024**
Conference Presentation Grant Program (CPGP), USF Student Government | *$500* **March 2024**

Mentoring

Undergraduate Researchers:
- Adrian Lozada - CRA UR2PhD | Anywhere Robot Communication with Mid-Air Fog Screen | May 2024 - Aug 2023
- Villa Keth - CRA UR2PhD | Anywhere Robot Communication with Mid-Air Fog Screen | May 2024 - Aug 2023

Community Engagement & Leadership

Intl. Teaching Asst. (ITA) Volunteer | *JGHC and ITA Culture Exchange Program, USF*   **Fall 2023 — Spring 2024**
- Helped with the completion of the Global Experience Requirement for JGHC undergraduate students.
- Engaged in weekly sessions, exploring diverse aspects of our respective cultures.

ITA Volunteer | *ITA/CSD Volunteer Collaboration, USF*   **Fall 2023 — Spring 2024**
- Helped Communications Sciences and Disorders (CSD) undergraduate students gain international perspectives and experience in providing personalized language support.
- Paired with an individual CSD student to address specific language aspects such as pronunciation, grammar, vocabulary, fluency, and cultural nuances.

Volunteer | *The Solid Path Initiative, Nigeria*   **Jan 2021 — April 2024**
- Worked with a team of 35 members and successfully donated food items to about 100 Muslims in Iju Community, Ondo State, to mark the holy month of Ramadan.
- Participated in prison visitation and meal donations at the Ondo State Custodial Center Olokuta.
- Made monthly monetary contributions to assist ailing and disadvantaged members of the public.

Financial Secretary | *FUTA MSSN Final-Year Students*   **Dec 2021 — April 2023**
- Oversee the association's bank account and keep records of all generated funds and expenses.
- Work with the fundraising team to obtain funding for the construction of the MSSN hostel.

Professional Development

CRA UR2PhD Graduate Student Mentor Training Program   **May 2022 — July 2024**
- Computing Research Association (CRA) course on effective mentorship and best practices.

Institut de Robòtica i Informàtica Industrial, CSIC-UPC, Barcelona | *Robotics and AI Summer School*   **July 2022**
- Workshop on Deep Learning, Assistive Robotics, Human-Robot Interaction (HRI), and Robots Navigation.

Technical Skills

Programming	C/C++, Python, MATLAB
Frameworks & Tools	ROS, RViz, Gazebo, Simulink, Webots, CoppeliaSim, GitHub, Linux, Docker, Unity/Vuforia
AI/ML	TensorFlow, PyTorch, Scikit-learn, Numpy, Pandas, Seaborn, Matplotlib
Hardware & Prototyping	SolidWorks, Arduino, Raspberry Pi, PCB Design, 3D Printing, Laser-cutting

Talks

- **Lightening Talk**. "Projected Augmented Reality for HRI Using Fog Screen in Open Environments", Computing Research Association CRA-WP Grad Cohort Workshop, Minneapolis, MN. **April 2024**

- **Oral Presentation**. "Towards Reproducible Language-Based HRI Experiments: Open-Sourcing a Generalized Experiment Project", 2024 USF Graduate Research Symposium, Tampa, FL. **March 2024**

- **Poster Presentation**. "Towards Reproducible Language-Based HRI Experiments: Open-Sourcing a Generalized Experiment Project", HRI 2024, Boulder, CO. **March 2024**

Media

- Computing Research News, "Summer Courses Are In Session: UR2PhD Is Supporting The Next Generation of Researchers", June 2024.