

Oyindamola Omotuyi

414 Old Chemistry Building, University of Cincinnati, 2600 Clifton Avenue, Cincinnati, Ohio, 45220
[oyindamola.github.io](https://github.com/Oyindamola) | omotuyoa@mail.uc.edu | www.linkedin.com/in/oyindamolaomotuyi | <https://github.com/Oyindamola>

EDUCATION

Ph.D. in Mechanical Engineering **2018 - 2023 (Expected)**
University of Cincinnati, Ohio **MSc. (Graduated 2021)**
Research Focus: Reinforcement Learning, Controls, State Estimation, AI, and Computer Vision GPA 3.9/4.0

Bachelor of Science in Systems Engineering **2011 – 2016**
University of Lagos, Nigeria GPA 5.0/5.0
Senior Design Project: Design and Fabrication of an Unmanned Aerial Quadcopter System
Award: Valedictorian, Overall Best Graduating Student in the University

SKILLS

Programming	Python, C++, Pytorch, TensorFlow, Sklearn, Keras, OpenCV, MATLAB, C#, ReactJS, HTML, CSS
Software/Libraries	NVIDIA Isaac Sim, Isaac Gym, Open AI Gym, ROS, Gazebo, RVIZ, APM Autopilot, DroneKit, Visual Studio, PCL, Eclipse, Autodesk Inventor, Autodesk Maya, Mathematica, LaTeX
Hardware/OS	Linux, NVIDIA Jetson Nano, Raspberry Pi, Arduino Uno, Odroid, Intel Realsense D435i, Adafruit IMU Sensors, Wheel Encoders, Pixhawk
Version Control	Git, Bitbucket

PUBLICATIONS AND PRESENTATION

CONFERENCE PUBLICATIONS

Omotuyi, O., & Kumar, M. (2022). *Learning Decentralized Controllers for Segregation of Heterogeneous Robot Swarms with Graph Neural Networks.* In the International Conference on Manipulation, Automation, and Robotics at Small Scales (MARSS), Toronto, Canada.

Omotuyi, O., & Kumar, M. (2021). *UAV Visual-Inertial Dynamics (VI-D) Odometry using Unscented Kalman Filter.* *IFAC-PapersOnLine*, 54(20), 814-819.

Omotuyi, O., Pokhrel, S., & Sharma, R. (2021). *Distributed quadrotor uav tracking using a team of unmanned ground vehicles.* In *AIAA Scitech 2021 Forum* (p. 0266).

Ayomoh, M. K., **Omotuyi, O. A.**, Roux, A. J., & Olufayo, O. A. (2018). *Robot navigation model in a multi-target domain amidst static and dynamic obstacles.* In *Proceedings of the IASTED International Conference Intelligent Systems and Control (ISC 2018)* (pp. 44-51).

POSTER

Omotuyi, O., Kumar, R., & Kumar, M. “Real-Time Automated Vehicle Crash Detection and Reporting System”. 21st Annual Pilot Research Project Symposium

Kumat, A., **Omotuyi, O.**, Deshpande, A. M., Calabrese, N., Kumar, M., “Autonomous Mobile Robot Localization and Navigation system using camera and inertial measurement unit (IMU) in an indoor environment”. 2019 AIAA Intelligent Systems Workshop, July 2019.

PRESENTATION

Oyindamola Omotuyi, James Wells, Aditya M. Deshpande, Rumi Kumar, Manish Kumar. “Laser-Based EKF Localization on TurtleBot3 Robot.” 44th Dayton-Cincinnati Aerospace Sciences Symposium. March 2019.

RESEARCH AND ACADEMIC PROJECTS

- University of Cincinnati Research Council grant project on Indoor Telehealth Drone.
- AprilTag Based-SLAM with known and unknown correspondences on Turtlebot3 mobile robot using ROS/Gazebo.
- Classification of Traffic Light Signals, MNIST, and Fashion-MNIST dataset using Computer Vision Techniques.
- Cooperative Push by Swarm of Ground Robots using an Emergent Local Communication Strategy.
- Attitude Control of a Quadrotor using Linear-quadratic regulator(LQR) and PID Controller.
- Autonomous Waypoint Navigation Path-Following of the StratoSurfer fixed-wing UAV.

RELEVANT WORK AND RESEARCH EXPERIENCE

- Digital Futures Fellowship**, *Dept. of Mechanical Engineering, University of Cincinnati* **Aug. 2022 - Present**
- Developing human digital twin based on motion modeling for industry-level applications.
 - Collaborating with other fellows and industry partners in developing state-of-the-art algorithms for industry 4.0/5.0 revolution projects.
- Product Marketing Manager Intern, Robotics**, *NVIDIA Corporation* **May 2022 - July 2022**
- Developed complex deep reinforcement learning environments for autonomous mobile robots and UAVs using NVIDIA Isaac Gym integration with the NVIDIA Isaac Sim 2022.1 June release.
 - Authored several blogs featured in Mateusz Weekly Robotics newsletter, ROS News for the Week, NVIDIA at ICRA with over 38,000 impressions and 400 likes, etc.
- Graduate Research Assistant**, *Dept. of Mechanical Engineering, University of Cincinnati* **Aug. 2021 - April 2022**
- Designed the hardware and software stack for keyboard control and obstacle avoidance of an indoor remotely semi-piloted unmanned aerial vehicle for medical supplies delivery and patient communication.
 - Developed robust vehicular crash detection and reporting systems using CNN based on video and audio inputs.
- AI Marketing Engineer Intern**, *NVIDIA Corporation* **May 2021 - Aug. 2021**
- Authored the first **NVIDIA Conversational AI eBook**, an highly educational resource for business decision-makers and software developers at the enterprise.
 - Collaborated with cross-functional teams to develop marketing assets for NVIDIA Isaac Gym.
 - Contributed to the research paper "Isaac gym: High performance gpu-based physics simulation for robot learning"
- Graduate Teaching Assistant**, *Dept. of Mechanical Engineering, University of Cincinnati* **Aug. 2018 - May 2021**
- Pioneered with a team the design of a new course curriculum and design projects on Intelligent Mobile Robotics.
 - Supervised students on projects utilizing EKF-SLAM with AprilTags Landmarks on Turtlebot3 in ROS/Gazebo.
 - Tutored 12 students on building and controlling the NVIDIA Jetson Nano Robots.
 - Prepared lecture materials and taught ROS and Gazebo.
 - Content Management for Mechanical Engineering department's First Graduate Program brochure and Webpage.
- Undergraduate Research Assistant**, *Robotics Lab, University of Lagos, Nigeria* **Feb. 2016 - Oct. 2016**
- Supervised a team of robotics projects such as obstacle avoidance robot car and home automation systems.
 - Built with a team a remote-piloted quadcopter for the University of Lagos Graduation exhibition honored by Lagos state, Nigeria Governor.
- IT Onsite Support Analyst Intern**, *Schlumberger Nigeria Limited, Lagos, Nigeria* **Jun. 2015 - Jan. 2016**
- Improved users IT support experiences while managing the operations of one of the major locations in Lagos.
 - Reduced the risk of total shutdown due to a widespread fault of networking and server systems.
 - Initiated the development of the first Information Technology unit intern handbook.

HONORS AND AWARDS

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| • 1st Place, NVIDIA Riva (Speech AI) Intern Hackathon | 2021 |
| • Graduate Student Engineer of the Month , CEAS, University of Cincinnati | 2020 |
| • People's Choice Poster Presentation Award , 2020 Pilot Research Project Symposium | 2020 |
| • Pilot Research Project Award , University of Cincinnati's Education and Research Center | 2020 |
| • University Graduate Scholarship , University of Cincinnati | 2018-Present |
| • EducationUSA Opportunity Fund Scholar , EducationUSA Lagos Nigeria | 2018 |
| • First Engineering Graduate in Nigeria with a perfect CGPA of 5.00/5.0 , University of Lagos | 2016 |
| • Award of Academic Excellence , The Association of Professional Women Engineers of Nigeria | 2016 |

LEADERSHIP AND VOLUNTEERING EXPERIENCE

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| • Secretary , Mechanical and Materials Engineering Graduate Student Association | 2020-2021 |
| • Mechanical Engineering Rep , Prospective Graduate Student Orientation, University of Cincinnati | 2020 |
| • Graduate Student Life Panel Member , Mechanical Engineering, University of Cincinnati | 2019 |
| • Nigerian Corper's Peer Educator Trainer , NYSC Community Development Service | 2017-2018 |
| • UNILAG Lean In Circle, organized and participated in meet-ups for ladies in STEM and Web Development Hackathon with mentors from Andela Company. | 2015-2018 |

PROFESSIONAL AFFILIATIONS

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| 2020 | Reviewer, AIAA Science, and Technology Forum and Exposition | Cincinnati, Ohio |
| 2020 - Now | Student Member, UC-IEEE | Cincinnati, Ohio |
| 2018 - Now | Student Member, National Society of Black Engineers | Cincinnati, Ohio |
| 2017 - Now | Member, Mentor & Alumni, EducationUSA Advising Center | Lagos, Nigeria |