CLINTON ENWEREM

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GitHub · ResearchGate · LinkedIn · Google Scholar · ORCID iD

EDUCATION

ROBOTICS & ARTIFICIAL INTELLIGENCE NIGERIA (RAIN)　　　　　　　　**Ibadan, Nigeria**

RAIN is Nigeria's Premier Robotics & AI Research Centre.　　　　　　　　　　　*Mar 2020 – Date*

Certificate in Robot Development & Automation, *Expected Graduation: Feb 2021.*

- Independent research: **ORB-SLAM** implementation with a monocular camera for a ground robot messenger.
- Relevant Modules: Advanced Control Theory for Mobile Robots, AI for Humanoid Robotics, Product Design and Development, Control Theory & IoT, Practical Electronics, Embedded Systems.

UNIVERSITY OF NIGERIA, NSUKKA　　　　　　　　　　　　　　　　**Enugu, Nigeria**

Bachelor of Engineering in Electrical Engineering, *First Class Honors.*　　　　　*Jan 2014 – Aug 2018*

- GPA: 4.73/5.00 (WES iGPA: 3.84/4.00).
- Undergraduate Thesis: Speed Control of a Separately-Excited DC Motor using a PI and a PID Controller.
- Relevant Coursework: Control Systems Engineering I & II, Discrete Control Systems, Computational Methods, Industrial Electronics, Physical & Applied Electronics I & II, Measurement & Instrumentation, Power Semiconductor Devices & Circuits.

RESEARCH INTERESTS

Reinforcement Learning, Robot Perception, Model-Predictive Control, SLAM, Vision-based Navigation.

RESEARCH EXPERIENCE

UNIVERSITY OF NIGERIA, NSUKKA　　　　　　　　　　　　　　　　**Enugu, Nigeria**

Graduate Research Assistant　　　　　　　　　　　　　　　　　　　*Sep 2018 – Dec 2020*

- Improved the disturbance rejection of a 120V SEDC motor using IMC (24% increase) and IMC-feedforward (~87% increase) controllers and studied system robustness using active disturbance rejection control.
- Proposed, designed, and tested a new IMC-based combined-control structure, which increased a DC motor's performance by ~ 54%.
- Identified the relationship between system performance and delay-approximation in FOPTD processes, reviewed recent and relevant literature for 7 research projects, and edited publication-ready manuscripts.

Undergraduate Research Assistant　　　　　　　　　　　　　　　　　*Aug – Oct 2017*

- Developed PID-compensated feedback systems with MATLAB that improved disturbance cancellation in FOPTD processes by ~66%.

RELEVANT PROFESSIONAL EXPERIENCE

ROBOTICS & ARTIFICIAL INTELLIGENCE NIGERIA (RAIN)　　　　　　　　**Ibadan, Nigeria**

Part-time Robotics Instructor　　　　　　　　　　　　　　　　　　*Sep 2020 – Date*

- Teach an introductory robotics class once a week to a Grade 7 pupil.

Robotics Trainee　　　　　　　　　　　　　　　　　　　　　　　*Mar 2020 – Date*

- Worked with a team to prototype a Flight Controller, transmitter, and receiver for a quadcopter using an ATmega328P MCU, an MPU6050 IMU, a QMC5388L magnetometer, and a barometer.
- Built a teleoperable and ROS-compliant miniature ground vehicle with obstacle-avoidance capabilities using a Raspberry Pi 3 single-board computer and an ultrasonic ranger. GitHub Repo.

MINDMACHINE UNLIMITED　　　　　　　　　　　　　　　　　　**Lagos, Nigeria**

A technology company that trains and provides expert developer talent for start-ups in Lagos, Nigeria.　　*May – Sep 2019*

Full-stack Web Developer

- Built the backend for adding and editing vehicle issues and inspections on a client's Fleet Management website, using NodeJS and MongoDB.

MARTSIE POWER AND CONTROL ENGINEERING LIMITED　　　　　　　**Lagos, Nigeria**

An engineering company that builds industrial automation solutions; former Industrial Service division of SIEMENS Nigeria.　　*Jun – Oct 2017*

Electrical Engineering Intern

- Designed and constructed two three-phase automatic changeover switches.
- Worked with a 5-man engineering team to develop and install three-phase motor starters, distribution boards, mains failure panels, cable trays, and cable ladders for various clients.

TECHNICAL SKILLS

- **Programming languages and mathematical packages**: *Experienced* in MATLAB, Python, ROS, Gazebo, C++, Git, & Web (HTML, CSS, JavaScript, NodeJS). *Beginner* in LaTeX, OpenCV, and Machine learning libraries (Numpy, Control, Matplotlib).
- **Computer-aided design/engineering**: *Working knowledge* of SolidWorks, Fusion 360, LTSpice, Simulink, Proteus, Altium Designer, 3D printing, CNC machining, sensors, MCUs, PLC programming.
- **Others**: Linux (Ubuntu), Windows OS, Microsoft Word, Excel, PowerPoint, Visio, Project.

PUBLICATIONS

Journal papers (peer-reviewed)

- I. Okoro and **C. Enwerem**. "Robust Control of a DC Motor," *Heliyon*, vol. 6, no. 12, pp. 1-8, 2020, **doi**: 10.1016/j.heliyon.2020.e05777.
- I. Okoro and **C. Enwerem**. "Performance Assessment of a Model-based DC Motor Control Scheme," *Journal of Applications of Modelling and Simulation*, vol. 3, no. 3, pp. 145-153, 2019.

Conference papers

- I. Okoro and **C. Enwerem**, "Model-based Speed Control of a DC Motor Using a Combined Control Scheme," *2019 IEEE PES/IAS PowerAfrica*, Abuja, Nigeria, 2019, pp. 1-6, **doi**: 10.1109/PowerAfrica.2019.8928856.
- I. Okoro and **C. Enwerem**. "Internal Model Control of a DC Motor," IEEE *1st International Conference on Mechatronics, Automation and Cyber-Physical Computer Systems (MAC)*, Owerri, Nigeria, 2019, pp. 1-5. Proceedings are available at http://bit.ly/3t14ZmD.

CONFERENCE PRESENTATIONS

Oral Presentations

- I. Okoro and **C. Enwerem**, "Model-based Speed Control of a DC Motor Using a Combined Control Scheme," Power Economics and Energy Innovations in Africa, International Training Institute, Abuja, Nigeria, 2019. Presentation Slides.

TEACHING AND LEADERSHIP EXPERIENCE

- Taught an **Instantaneous Gradient Descent** class for an Advanced Control Theory course at RAIN. *Oct 2020*
- Led extramural electrical engineering classes for colleagues in college. *Mar – Jul 2017*
- Taught college-level math to first-year students in a campus fellowship. *Feb 2017*
- Public Relations Officer, Better Keep All Design Digital (BKADD) Electronics Club, University of Nigeria. *Sep 2016 – Feb 2017*
- Assistant Technical Coordinator, Winners' Campus Fellowship, University of Nigeria. *Sep 2016 – Feb 2017*
- Group Lead for ECE 381 & ECE 382 Electronics Lab Modules, EE Department, University of Nigeria. *Mar – Sep 2016*
- Conducted O-level Physics classes for 20 students at a remedial college. *Apr 2015*

HONORS AND AWARDS

- Scholar, Stanford Exposure to Research and Graduate Education (SERGE). *2020*
- Recipient, Opportunity Funds Program Scholarship, EducationUSA, US Consulate General. *2020*
- Sole Recipient, Door Foundation Leadlight Scholarship Award, RAIN, Nigeria (~$2271 for a year). *2020*
- Recipient, Agbami Science & Technology Scholarship Award, Chevron (~$500 annually for 3 years). *2017*
- Awarded the MTN Foundation Scholarship (~$1000 annually for 4 years) for top academic performance. *2015*
- High School Valedictorian, Class of 2013 (Science Club President; 9/9 distinctions in college entrance exams). *2013*
- Top 10 in State-wide Cowbell Mathematics Competition, Promasidor Nigeria. *2012*

ONLINE COURSES

- AI for Robotics, Udacity (audited).
- Hello (Real) World with ROS – Robot Operating System, Delft University of Technology through edX (audited).
- Robot Arm Kinematics, Queensland University of Technology (QUT) Robot Academy (audited).
- SolidWorks for Mechatronics Design, LinkedIn (audited): Designed a 6DOF manipulator (CAD file: http://bit.ly/2YiQJru)

PROFESSIONAL MEMBERSHIPS

- Member, Black in Robotics (BiR). BiR Website. BiR is a US organization that promotes Black representation in robotics.
- Graduate Member, The Nigerian Society of Engineers (GMNSE). Member ID: G66265. Membership Certificate.