Emerald Henry

henryemerald33@gmail.com +2347039918524
◇ http://henrii1.github.io

EDUCATION

Covenant University *September 2017 - July 2022*
B.S. in Mechanical Engineering (*First Class Honors)* GPA: 3.87/4.0
Online Certifications and courses:

Stanford Machine Learning (CS224W): Graph Neural Networks

Stanford Machine Learning (CS234W): Reinforcement Learning

Stanford Machine Learning (CS224N): Natural Language Processing and Deep Learning

Google Machine Learning Certificate: Advanced Computer Vision

EXPERIENCE

Clinton Health Access Initiative *January 2023 – Present*
Data Support (Director: Dr Chizoba Fashanu)

- Supported with Monitoring and Evaluation of the Malaria and Essential Medicines program
- Developed the oxygen facility database and dashboard for the National oxygen program.
- Supported in the development of the National Malaria Entomological Database.
- Support with scripting data collection tools for the Malaria and Essential Medicines program.
- Support in Proposal Development for the Malaria Program.

Molecular Biology and Computations Lab *August 2022 – January 2023*
Researcher (Principal Investigator: Conrad Omonhinmin)

- Conducted a performance focused comparative analysis between two computational modeling techniques (convolutional neural networks and vision transformers), and drafted the publication.
- Conducted research on the application of a specific computation technique (Transformers) in medical image analysis.
- Explored various pathology slide-staining procedures in order to obtain a standard procedure for the lab.

The Energy and Environment Research Group *October 2021 - August 2022*
Student Researcher (Principal Investigator: Olayinka Ohunakin)

- Collaborated in writing proposals aimed at obtaining funding for ongoing and new research.
- Developed a wind turbine power curve model with state of the art performance, requiring specialized data preparation techniques and neural networks.
- Developed a technique for detecting faulty wind turbines in a wind farm by combining statistical tests, Kolmogorov-Smirnov's test and neural networks.

Hebron Motorsports (part-time) *January 2020 - June 2022*
Assistant Team Lead (Advisor: Olayinka Ohunakin)

- Coordinated the design and manufacture of a semi-professional racecar with the aim of demonstrating that racecar manufacture could be cost effective if component materials are replaced with property-equivalent locally available alternatives.
- Drafted work plans for design and manufacture, job descriptions for each team member and other relevant project inception documents as well as documents required during project implementation

PUBLICATIONS

[1] **Vision Transformers in Medical Imaging: A review**, Accepted 2023
Emerald Henry*, Onyeka Emebo, Conrad A. Omonhinmin

[2] **Conditional Monitoring and Fault Detection of Wind Turbines Based on Kolmogorov-Smirnov Non-Parametric Test and Neural Networks**, In-Review 2023
Emerald Henry*, Olayinka S. Ohuankin, Ezekiel Victor

[3] **A Neural Network-Based Wind Turbine Power Curve Models Using Several Wind Farms' Influencing Parameters and Topography,** (A Book Chapter) 2022
Olayinka S. Ohuankin, **Emerald Henry***, Ezekiel Victor

[4] **Techno-economic assessment of offshore wind energy potential at selected sites in the Gulf of Guinea,** published 2023
Olayinka S. Ohuankin, Olaniran J. Matthew, Emmanuel O. Atiba **Emerald U. Henry**, Victor Ezekiel

[5] **Design and Implementation of the electrical system of a mini-racecar**, preprint 2022
Emerald Henry

PROJECTS

Quantile Filtering Algorithm

- Created a novel filtration algorithm that appends user defined quantiles on a probability distribution of unfiltered data, it is comparative to SOTA filtration techniques, and is continuously utilized for data filtration within the Energy and Environment Research Group

Confidence Level Estimation Technique

- Developed a statistical technique for detecting underperforming turbines within a wind farm by defining bin-wise confidence levels that are based on the Euclidean distance between data points in a plane specified by wind speed and power output

Electro-Pneumatic Gear Shifting System Design

- Designed a single integrative schematic circuitry for the system
- Programmed the microcontrollers for automatic control using C++
- Designed a schematic circuitry for the safety system circuit board
- Created the circuit board's computer aided design using Altium designer software
- Built and Implemented this design on the racecar

PSA Dashboard and Database (Essential Medicines Program)

- Oversaw the development of the most comprehensive PSA (Oxygen Facility) database and dashboard for all facilities in country, to be used by the National Oxygen program.
- Oversaw the development of the Oxygen Resource Mapping Database that consolidates all activities by partners in the oxygen space to aid the National Oxygen program plan activities.

LEADERSHIP AND VOLUNTEERING

Enactus (PeTCity) *March 2019 – May 2021*

- Developed a sustainable payment scheme for community members that attached a stipend that is calculated based on the weight of plastic waste they collect from their community.
- Oversaw the development of our PET-Brick production machine and assisted in brick production.
- Presented our business model to potential donors and partners.

Hebron Motorsports *January 2020 – May 2022*

- Received funding for the manufacture of a semiprofessional racecar pilot and developed a business model for at scale manufacture.
- Developed business plans, funding proposals and financial projections in line with our business model.
- Mentored newer teammates on drafting business proposals and cost effective manufacture.

AWARDS

Top 1% of Graduating Students, 2022

Best Undergraduate Research Project, 2022

Covenant University Covid-19 Challenge Winner, 2020

TECHNICAL SKILLS

Computer Skills: Python (Pytorch, Tensorflow …), Shell, GIT, HTML, SQL.