

# Nwangwu, Stephanie Adaeze

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Portfolio: <https://www.mygreatlearning.com/eportfolio/stephanie80>

## EDUCATION

**Covenant University, Ota**

Nigeria.

*Bachelor of Engineering in Electrical and Electronics Engineering*

Aug 2023

**Grade:** First Class Honors, CGPA: 4.52/5.0

**Class Rank :** Top 10% out of 75

**Thesis:** Towards Sustainable Electrification: A Microgrid Design for Enhancing Power Accessibility in Oyo State, Nigeria (Engineer John Amanesi Abubakar)

**Relevant Courses :** Engineering Management, Electrical Power Systems Engineering, Engineering Mathematics, Data Communications and Computer Network, AUTOCAD, MATLAB, MIT Data Science and Machine Learning: Making Data Driven Decisions

## RESEARCH INTERESTS

Renewable Energy Systems, Data Science, Battery Storage Systems, Sustainable Buildings, Photovoltaic Cells.

## UNIVERSITY PROJECT

**Department of Electrical & Information Engineering, Covenant University**

Ogun, Nigeria

*A solar microgrid with battery storage, MPPT, battery mode controller and DC-DC boost converter*

Sep 2022 – Aug 2023

- **Objective:** Delivered islanded power to an underserved region using renewable energy technology.
- **Optimization:** Integrated a Maximum Power Point Tracker (MPPT) to maintain the PV panels at their optimal voltage and current, maximizing performance under variable weather conditions.
- **Energy Storage:** Utilized battery storage to capture excess energy during peak sunlight hours for use during low sunlight periods, ensuring uninterrupted power supply.
- **Output Enhancement:** Employed a DC-DC boost converter to amplify PV output, making it adequate to meet the energy demand of the load.
- **Battery Management:** Implemented a battery mode controller to ensure safe, reliable, and efficient operation of the battery system.

## RESEARCH EXPERIENCE

**Department of Electrical & Information Engineering, Covenant University**

Ogun, Nigeria

*Undergraduate Research Assistant*

Nov 2022 – July 2023

- Performed an in-depth analysis of multiple renewable energy sources for community power supply, leveraging internet resources and HOMER Pro software.
- Imported and processed data in HOMER Pro to conduct a comprehensive evaluation of various renewable options.
- Simulated diverse microgrid configurations to identify the most cost-effective solution. Given the wind speed limitations (below 5 m/s), the optimal system was a PV/Battery/Converter setup, featuring Jinko Solar JKM300M-72 panels, an inverter, and Discover 12VRE-3000TF batteries.
  - Developed a MATLAB model incorporating Maximum Power Point Tracking (MPPT), a DC-DC boost converter, and a battery mode controller to ensure consistent power quality and uninterrupted electricity supply.

**Department of Electrical & Information Engineering, Covenant University**

Ogun, Nigeria

*Lead Researcher*

Oct 2022 – April 2023

- Researched global mini- and micro-grid systems, with a focus on renewable energy.
- Evaluated renewable energy systems in Africa and globally.
- Analyzed the potential global impact of mini- and micro-grids in Nigeria.
- Identified key challenges in deploying mini- and micro-grid systems in Nigeria.

## TEACHING EXPERIENCE

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### Covenant University

*Tutor*

Ogun, Nigeria

Jun 2020 – Sep 2020

- Taught Organic Chemistry remotely during the COVID-19 pandemic, covering key topics such as hydrocarbons, functional groups, reaction mechanisms, and organic synthesis, while adapting lessons to support students' understanding in a virtual learning environment.

## PUBLICATIONS, PEER-REVIEWED

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- **S.Nwangwu**, J. Abubakar, and F. Omolala, "The impact of stand-alone systems in Nigeria's energy distribution sector and present-day challenges faced," \*IOP Conference Series: Earth and Environmental Science\*, vol. 1322, 2023, p. 012010, Sustainable, Clean and Emerging Energy Technologies Conference 2023, Nsukka, Enugu State, Nigeria, 23-28 July 2023, doi: 10.1088/1755-1315/1322/1/012010.
- F. S. Timilehin, **S.Nwangwu**, and J. Abubakar, "Towards sustainable electrification: A microgrid design for enhancing power accessibility in Oyo State". MDPI (in review)

## PROFESSIONAL EXPERIENCE

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### Ngozi-Okonji Iweala Polls Limited

*Research Data Analyst*

Abuja, Nigeria

Oct 2024 – Present

- Troubleshoot hardware and software issues, applying security patches to resolve system problems and maintain operational efficiency.
- Research the latest trends in information technology to ensure the organization remains current and competitive.
- Participated in interdisciplinary projects, including a rotation with the Bill and Melinda Gates Foundation team.
- Conduct data analysis on reproductive, maternal, and newborn child health using DHIS2, performing cross-tabulation across 10 states and presenting key insights through PowerPoint presentations.

### Petroleum Technology Development Fund

*Energy Management Systems Analyst*

Abuja, Nigeria

July 2024– Oct 2024

- Developed the initial project proposal for the Energy Management System to transition the PTDF office off-grid, addressing tripled electricity costs.
- Ensured compliance with regulatory and industry codes while preparing a long-term sustainability plan.
- Collaborated with the team to refine the proposal, incorporating design optimization, cost-benefit analysis, and implementation strategies.

### Protergia Energy

*Technical Assistant Intern*

Remote Abuja, Nigeria

April 2024– July 2024

- Assisted in the planning and execution of mini- and micro-grid deployment projects, ensuring efficient project management.
- Conducted feasibility studies and site inspections to assess the suitability of renewable energy solutions for diverse locations.
- Provided technical analysis and recommendations to support data-driven decision-making.

### Urban Shelters Limited

*Electrical Building Services Engineer Intern*

Abuja, Nigeria

April 2022– Sep 2022

Collaborated with the Project Manager to create electrical designs using AutoCAD software, ensuring precision and compliance with project requirements.

- Performed distribution calculations, with a focus on integrating renewable energy technologies into designs.
- Acted as Assistant Project Manager when required, supervising construction site artisans to ensure proper execution of project tasks.

### Transmission Company of Nigeria

*Electrical Engineer Intern*

Abuja, Nigeria

Sep 2021– Oct 2021

- Conducted research on different fault types in transmission substations, analyzing their causes and potential impacts.
- Monitored protective devices, including relays and miniature circuit breakers, to ensure proper operation during fault occurrences.

## **VOLUNTEER EXPERIENCE**

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### **Luminous Life foundation**

*General Secretary*

Remote, Nigeria  
Jun 2024- Present

- Organized and documented key project meetings and outcomes, ensuring alignment on project timelines and resources. for the solar lantern initiative, while remotely overseeing the outreach process and progress updates from local team members.
- Prepared and managed financial statements of contributions, tracking the allocation of resources and maintaining transparency to support the foundation's commitment to delivering impactful, community-centered energy solutions.

### **Green Building Council Nigeria**

*Content Writer*

Abuja, Nigeria  
Nov 2023- Nov 2024

- Responsible for sourcing, curating, and crafting engaging news content on the latest trends and innovations in green building. Key duties include researching and writing weekly articles that spotlight sustainable practices, cutting-edge projects, emerging technologies, and advancements in green building design and construction.

### **The seeds of Transformation**

*Social Media Manager*

Remote, Nigeria  
Aug 2022- Present

- Lead management of an Instagram page, curating daily Christian content—including devotionals and music recommendations—while supervising a team of designers and video editors to ensure consistent, high-quality content and engagement.

## **SKILLS AND COMPETENCES**

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- **Technical Skills:** Homer Pro, MATLAB/Simulink, Python, MySQL, AUTOCAD, Microsoft Applications (Excel, Word, and PowerPoint)
- **Personal Skills:** Problem-solving, Teamwork, Adaptability, Project Management, Diligence, Leadership, Creativity, Adaptability, Time management.
- **Certification:** Global Energy and Climate Policy, Microsoft Excel-Excel from Beginner to Advanced, The Ultimate MySQL Bootcamp: Go from SQL Beginner to Expert, MIT Data Science and Machine Learning: Making Data Driven Decisions.

## **AFFILIATIONS**

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- Nigerian Institute of Electrical and Electronics Engineer(Abuja Chapter)
- Black in AI