Isaac Senyoh

Kumasi, GH | +233(0)247745641| isaacsenyoh9@gmail.com| senyoIsaac.github.io |linkedIn.com/isenyoh

EDUCATION

BSc. Civil Engineering, *Kwame Nkrumah University of Science and Technology, Kumasi* Sept. 2020 – Sept 2024
Honor: First Class (CWA: 74.05/100, Equivalent GPA (WES): 3.86/4.00)
Relevant Courses: Elementary Structures, Steel and Timber Design, Structural Dynamics, Structural Engineering, Systems Engineering, Reinforced Concrete Design

SKILLS

Languages: English
Programming Languages: Python, Java, LaTeX, MySQL, VBA
Software: Microsoft Office Suite, AutoCAD, ETABS, Civil 3D, Midas Civil, Abaqus
Computational Tools: OpenSeesPy

RESEARCH INTEREST

- Artificial Intelligence and digital twin systems in civil engineering
- Structural health monitoring and operational modal analysis of bridges and buildings
- Performance-based design of structures.

RESEARCH EXPERIENCES

Supervisor: Dr. Kenneth Adomako Tutu, *Department of Civil Engineering, KNUST, Kumasi*.
Researcher Aug. 2023–Sept.2024
Research Topic: *Evaluation of Asphalt Concrete Pavement Temperature Predictive Models*

- Collected daily field and atmospheric temperature data.
- Processed and analyzed one year of temperature data using Microsoft Excel and python machine learning libraries
- Evaluated and validated the accuracy of existing asphalt pavement temperature prediction models.

Capstone Project
Structural Health Monitoring Web Application
ALX Software Engineering Capstone Project Aug. 2025 – Present

- Develop a full-stack Django web application simulating real-time structural health monitoring for bridges and buildings, generating synthetic sensor data (vibration, strain, temperature) with configurable thresholds.
- Implement a dynamic dashboard using Chart.js to visualize structural integrity status (Normal/Warning/Critical) with automated anomaly detection and event logging.
- Design a role-based authentication system (Engineers/Managers/Viewers) with JWT token security and customized permission levels for data access.
- Optimize PostgreSQL database queries to handle high-frequency sensor data streams while maintaining responsive frontend performance.
- Document system architecture and API specifications

Structural Design of a Warehouse for the Boankra Integrated Logistics Terminal Jan. 2024 –May. 2024

- Built structural analysis tools via OpenSeesPy, an open-source python framework
- Streamlined and organized analytical results into a customized Excel spreadsheet to facilitate efficient reinforcement design and optimization of steel sections.
- Developed and programmed structural design checks—such as shear, bending, and lateral-torsional buckling—aligned with the requirements and methodologies outlined in BS 5990

ACADEMIC PROJECTS

Concrete Technology, *Predictive Analysis of Concrete Characteristic Strength using Machine Learning*

- Collected and explored data on compressive strengths for various recipes of concrete mix during my internship program.

- Trained a supervised machine learning predictive model for compressive strength of concrete

Computers And Structural Analysis

Truss System Analysis

- Implemented Finite Element Method using python to solving 2D Truss problems.
- Improved the user interface (UI) by implementing Pygame module which gave realistic diagram of the truss frames and Tkinter for field inputs.

Structural Dynamics

- Implemented Duhamel Integral in python to model the responses of bridges to dynamic crowd loading.
- Modeled the response of known systems to the Elcentro ground motion data.
- Showcased an animation of the response using python programming frameworks.

INDUSTRY EXPERIENCES

Graduate Structural Engineer, *CPLEX Engineering Company. Ltd* Sept.2024 – Present

- Design composite steel plate girder bridges in compliance with Eurocode standards.
- Prepare detailed design calculations, construction, and lifting drawings aligned with Eurocode requirements.
- Conduct comparative and cost analysis reports on bridge design options to support informed decision-making, considering material quantities, construction costs, and lifecycle factors in accordance with industry standards.
- Construction drawings automations in AutoCAD using VBA.

TEACHING EXPERIENCES

- Assisted lecturers in delivering course content for "Introduction to Computer Programming."
- Provide theoretical music instruction in trumpet and piano to children in church and brigade band settings

VOLUNTEER EXPERIENCES

Statistician, *Mt. Sinai Society Methodist Church, Bohyen Circuit* Jan. 2024 – Present

- Maintain and monitor church database systems, including member records, contributions, and attendance and overall growth of church.
- Ensure accurate data entry and generate reports to support church administration and activities.

MC Bauchemie Ghana, *Kwame Nkrumah University of Science and Technology, Kumasi*
Student Volunteer 18th – 19th July 2024

- Participated in and completed a two-day concrete training program.
- Engaged in both theoretical and practical sessions on concrete technology.

Engineers Without Borders, Kwame Nkrumah University of Science and Technology, Kumasi
Graduate Volunteer *Jan. 2022 – Present*

- Bridge Team Core Member actively involved in the ULLO Bridge project.
- Assist in accelerating project development through design support, coordination, and field activities.

HACKATHONS AND COMPETITIONS

Participant, *RWESCK WASH Innovation Challenge, KNUST* Edition 2024

- Presented a trained SVM model to predict and quantify leakages in ULLO SHS water distribution system
- Built a web app including dashboard features on streamlit to provide continuous monitoring
- Was awarded GH¢ 1000 in the preliminary rounds.

Finalist, *KNUST CoE Makers Fair* Edition 2022

- Presented an intelligent transport system (ITS)bus tracking mobile application
- Achieved 2nd place out of 10 teams during the preliminary stage and was awarded GH¢ 1000 in the finals.

IYMC, *International Youth Math Challenge* Edition 2021

- Semi-finalist
- Received a special honor for submitting solutions as digitally written document