JAMES OMONDI

Graduate Civil and Structural Engineer

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Ngong, Kajiado, Kenya

SUMMARY

Highly motivated Engineer with a strong background in Civil and Structural Engineering, complemented by expertise in Data Analysis and Machine Learning for innovative, data-driven problem solving. Proficient in Python and key analytical libraries such as NumPy and Matplotlib. Experienced in structural health monitoring, including the analysis of accelerometer data using Continuous Wavelet Transform (CWT) and the application of Transformer-based AI models. Additionally skilled in full-stack development, with hands-on experience in Flask, Next.js, PostgreSQL, Docker, and AWS—leveraging analytical thinking to build effective and scalable applications. Proven ability to manage construction projects and oversee on-site operations, integrating engineering acumen with advanced data techniques to tackle complex challenges. Eager to contribute to a dynamic and forward-thinking team.

PROFESSIONAL EXPERIENCE

Research Assistant

Mr. Paul Okoth, PhD Student University of Nairobi | May 2024-Present

- Working under Mr. Paul Okoth, focusing on a dissertation titled "Structural health monitoring using AI".
- Collected, cleaned, and analyzed data from vibration and displacement sensors using Numpy and displayed results using Matplotlib.
- Helped in calibrating IoT sensors installed on the bridge using data from Standard Axle Load weighbridges.
- Engaged with Transformer Algorithms to train an AI model in detecting overload on the bridges based on frequency of vibration.

Full Stack Software & AI Engineer

Hisani Systems Ltd | Nov 2023 - Present

- Collaborated with senior engineers to develop a food delivery booking application using Flask (backend), PostgreSQL (database), and Next.js (front end).
- Led a team in fine-tuning a Large Language Model customized to work with a Medical ERP.
- Involved in integrating AI with the medical ERP.
- Gained practical experience in deploying applications to an EC2 instance using Docker containers managed by an ECS service.
- Learned service monitoring techniques using OpenLens.
- Contributed to maintaining and adding features to a legacy Medical ERP solution.

Data Analyst

Department of Civil and Structural Engineering, Moi University | Sep 2023 - Apr 2024

- Developed a Python program for the analysis of accelerometer data from vibration sensors using Numpy.
- Converted vibration data to frequencies of vibration through Continuous Wavelet Transform (CWT) utilizing the Pywt library.
- Utilized vibration frequency values for the structural health monitoring of a bridge.

Attaché Junior Site Engineer
BIXA East Africa Medical Construction | JUN - SEP 2023

- Supervising construction activities at various sites.
- Involved in the floor plan and dimensioning of proposed hospital buildings.
- Managed logistics and oversaw aspects of construction projects.
- Contributed to the structural design of buildings.

Attaché Junior Civil Engineer
Kenya National Highways Authority | JUN - AUG 2022
- Assisted in the supervision and inspection of road works.
- Prepared Program of Works documents.
- Created topographical maps and conducted topographical surveys.
- Performed testing of material properties in the materials laboratory.
- Assisted in the creation of road alignment surface profiles and the design and inspection of bridges.

EDUCATION

Moi University

Bachelor's Degree in Civil and Structural Engineering
Second Class Honours (Upper Division)
Studied from 2018 – 2024

Ramba Boys High School

 K.C.S.E
 A - (79 pts)
 2014 – 2017

CERTIFICATIONS

- Data Analytics Essentials Certificate offered by CISCO.

- Introduction to Data Science offered by CISCO.

SKILLS

- **Programming Languages**: Python, JavaScript

- **Engineering Software:** Civil 3D, ETABS, AutoCAD, ArchiCAD, Tekla Structures.

- **Data Analysis & Machine Learning:** Numpy, Matplotlib, Pywt (Continuous Wavelet Transform - CWT), Transformer Algorithms, Data Analysis Skills, Tableau, Excel.

- **Tools & Frameworks:** Flask, Django, Next.js, PostgreSQL, Github, Docker, AWS (EC2, ECS, S3, RDS), OpenLens.

- **Soft Skills:** Problem Solving, Adaptability, Critical Thinking, Strong organizational and time management, Exceptional communication and interpersonal skills.

REFERENCES

1. Prof. Eng. Stanley Shitote
Departement of Civil and Structural Engineering, Moi University | Senior Lecturer | Project Supervisor | shitote@hotmail.com

2. Larry Wasena
Managing Director, Hisani Systems LTD | wasenailarry@yahoo.com | +254112204251

3. Mr Paul Okoth
University of Nairobi | PhD Student | okothpaul04@gmail.com +254725281716

4. Eng. Brian Esetia
Kenya National Highways Authority | Assistant Engineer | +254706133182