Desmond Kangah

Msc Civil Engineering

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PROFESSIONAL SUMMARY

Geospatial engineer and surveyor specializing in GeoAI, using AI and machine learning to analyze spatial data, automate processes, and deliver innovative solutions for urban planning, environmental monitoring, and infrastructure development. Skilled in GIS, remote sensing, and spatial programming.

EDUCATION

- **MSc in Civil Engineering** Aug. 2024 - Present
  Louisiana State University, Baton Rouge, LA – Concentration: Geodesy and Geomatics *Current GPA 4.0/4.0*
- **BSc in Geomatic Engineering** University of Mines and Technology, Tarkwa, Ghana, CWA 81.24/100 Sep 2018 - 2022

Relevant Courses

- GIS and Remote Sensing
- Photogrammetry
- Machine Learning
- Spatial Software Design
- Geodesy
- Deep Learning
- Computer Vision
- GNSS

SKILLS

Softwares Geospatial Tools Geemap, Leafmap, Google Earth Engine, QGIS, ArcGIS, SNAP, ISCE2, GMT, ENVI, SNAP
Languages: HTML/CSS, JavaScript, Python, Matlab
Tools: Git, VS Code, PostgreSQL, ISCE2 Tools, Geospatial packages
Other Skills: AutoCAD, Civil 3D, Photoshop, Microsoft Office Suite, LaTeX, Vscode, Spyder.

WORK EXPERIENCE

- **Teaching and Research Assistant** Aug 2024 - Present
  Louisiana State University, Baton Rouge, LA
  - Processing and analyzing InSAR data for land subsidence monitoring
  - Assisted in teaching surveying courses
  - Conducted research on AI for land use classification
  - Developing web-based GIS application for urban planning
- **Chief Surveyor** Jan. 2024 - Aug. 2024
  MAC Partners, Mining, Accra,
  - Conducted topographic surveys for Processing Plant construction
  - Created CAD 3D models for Plant site planning and development
  - Setting out of infrastructure and plant designs for construction
  - Conducted drone surveys for power line routing, and volume calculation
- **Teaching and Research Assistant** Jun. 2023 - Dec. 2023
  University of Mines and Technology, Tarkwa, Ghana
  - Teaching GIS and remote sensing for free
  - Teaching surveying and it applications using GNSS devices, total stations, and drones
  - Guided students in their final year projects
  - Helping lecturers in research work and publications
- **Assistant Surveyor** Oct. 2022 - May. 2023
  Ghana Highway Authority, Accra, Ghana
  - Conducted road surveys for road construction and maintenance
  - Created CAD drawings for road designs
  - Assisted in setting out of road alignments
  - Conducted drone surveys for road corridor mapping
- **Assistant Surveyor (Part-Time)** Oct. 2019 - Dec. 2021
  Wilhelm Construction, Tarkwa, Ghana
  - Conducted topographic surveys for road construction
  - Created CAD drawings for road designs
  - Assisted in setting out of road alignments
  - Conducted drone surveys for road corridor mapping.

PROJECTS

- **InSAR Analysis for Land Subsidence Monitoring** Sep. 2024 - Jan. 2025
  Used InSAR data to monitor deformation in East Baton Rouge Parish Transportation Network. I use sentinel-1 data and processed it using PSI and SBAS techniques. The results were validated using GNSS data and final velocity maps were created.

- **Land Use and Land Cover Segmentation** Feb. 2025
  Used Unet deep learning to segment land use and land cover from satellite images into classes. The techniques involved labeling the data, data augmentation, training the model, and evaluating the model performance. A model deployment was done using using Hugging Face to automate segmentation of new images.

- **Landslide Susceptibility Mapping** Dec. 2024
  Used remote sensing and GIS to map landslide susceptibility zones in East Baton Parish using AHP and logistic regression. I exploited whitebox, Gee, Geemap and ArcGIS for create the various layers and the final susceptibility map.

- **Common Grid Software** Nov. 2023
  I did developed this software through a contract with two mining company to automate the process of creating common grids for mine coordinating. The software was developed using using Matlab App designer and geodetic formulas and parameters.

- **3D Coordinate Transformation Software** Jul. 2021 - Aug. 2022
  Bsc. Geomatic Engineering final year project. Developed a software to transform 3D coordinates between different coordinate systems. The software was developed using C-Sharp and Visual Studio.

- **Water Quality Analysis** June. 2021 - Jul 2022
  In this project, I analyzed the water quality of Lake Bosomtwe using Google Earth Engine. I used Landsat data to monitor the water quality of the river. The results were validated using field data and the final map was created using ArcGIS.

- **RainFall Forcast using ARIMA** Aug. 2022 - Dec. 2022
  This project was a contract from Benso Palm Plantation Factory. I used ARIMA to forecast rainfall for the next 5 years using their rainfall collected data for 30 years. The data was collected from the Ghana Meteorological Agency and the model was trained and tested using Python. The results were validated using field data and the final forecast was created.

Online Courses (Certificates)

- **Applied AI Lab– Worldquant University** Jan. 2025 - Present
  In this course, I am mastering Computer vision, Deep learning, Machine learning and Transfer learning. I have already some competition project such as endengered species classification, image segmentation, object detection, and face recognition using YOLO, CNN, Transfer learning on ResNet and Pytorch.

- **Spatial Software Design – University of Tennessee** Jan. 2025 - Present
  In this course, I learned how to design and develop spatial software using Python, JavaScript, and HTML/CSS. I mastered the use of git and github for version control and collaboration. I created my own website using github.io and automated GIS processes using Python.

- **PostgreSQL for Spatial Query – DataCamp and Open Geospatial Solutions** Jan. 2025 - Feb. 2025
  In this course, I learned how to use PostgreSQL for spatial queries. I mastered the use of PostGIS for spatial queries, spatial joins, and spatial analysis.

- **Deep Learning for LULC Classification – Kaggle and 650 AI Lab** Feb. 2025
  In this course, I learned how to use deep learning for land use and land cover classification and segmentation. I mastered the use of Unet, ResNet, and EfficientNet for LULC classification.

- **InSAR Training Course – University of Alaska** Oct. 2024 - Dec. 2024
  In this course, I learned the basics of InSAR, how to process InSAR data, and how to interpret the results. I mastered the use of ISCE2 Tools, SNAP, and GMT for InSAR processing.

- **GIS Programming – University of Tennessee** Sep. 2024 - Jan. 2025
  In this course, I learned how to use Python to automate GIS processes, making use of Xarray, Rasterio, pandas, and efficient use of GIS tools. I mastered the use of whitebox, Geemap, Leafmap, and Google Earth Engine for GIS programming.

- **Deep and Machine Learning – Pantech Solutions** March. 2024 - Dec. 2024
  In this course, I learned the basics of deep learning, machine learning, and computer vision. I mastered the use of Python, Tensorflow, Keras, and Pytorch for deep learning and machine learning.

- **Google Earth Engine for Geospatial Analysis – Study Hacks** Jul. 2024
  In this course, I learned how to use Google Earth Engine for geospatial analysis. I mastered the use of Google Earth Engine for land cover classification, change detection, and time series analysis.