MOHAMMAD AZEEM KHAN
GIS ANALYST

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WORK EXPERIENCE

Deep Learning Engineer & Geospatial Data Analyst   07/2023 - Current
Research Studio Austria, Salzburg

Led the development and implementation of a Mask R-CNN model, achieving 85% accuracy in detecting and geolocating more than 10,000 solar panels across the Salzburg region. This analysis identified areas with high solar panel density, potential areas to increase in energy generation.

Key achievements:

- Developed a custom deep learning pipeline using Mask R-CNN in PyTorch for image segmentation, bounding box generation, and precise location detection of rooftop solar panels from satellite imagery
- Achieved 85% accuracy in detecting and geolocating 10,000 solar panels across the Salzburg region
- Analyzed data to identify regions with high solar panel density and optimal locations for future installations, contributing to potential increase in sustainable energy generation
- Developed interactive web map using JavaScript, HTML, and CSS, integrated with QGIS data visualizing solar panel data for informed decision-making
- Demonstrated skills in Python, JavaScript, HTML, CSS, VS code, QGIS, and ArcGIS Pro for data analysis, visualization, and automation

Student Research Assistant   07/2022 – 01/2023
TUM Precision Agriculture Lab, Munich

- Digitized historical crop field data from paper records and handwritten documents into standardized formats using MS Excel
- Conducted data cleaning and quality control procedures to ensure data accuracy and consistency
- Established a comprehensive database using MySQL to store and manage historic and future yield & farming data, ensuring efficient data retrieval for research purposes

Structural Engineer   06/2019 - 08/2020
Liza Infrastructures Pvt. Ltd., Delhi

- Led the construction of a 5-story apartment building, managing a team of 15 workers and overseeing all aspects of project execution
- Planned and scheduled daily activities, ensuring adherence to deadlines and budget constraints
- Monitored project progress, identified and resolved potential issues proactively, and implemented corrective actions
- Communicated effectively with stakeholders, including project owners, architects, and subcontractors, ensuring alignment and resolving conflicts

GIS Developer Intern   06/2019 - 08/2020
Webkey India Pvt. Ltd., Delhi

Developed and implemented an interactive web map application to enhance the user experience in accessing the business location information for Webkey India's online platform

Key Achievements:

- Developed dynamic web maps using Leaflet.js, HTML, CSS, and JavaScript, showcasing business locations across the country & integrated with a live database, resulting in increase in real-time data refresh rate and improved accuracy
- Implemented key features like search functionality with keyword and category filters, and optimized map performance for mobile devices and various browsers leading to improvement in user engagement
- Collaborated effectively with cross-functional teams to ensure seamless integration of the web map within the website
- Proficiency in frontend development technologies: HTML, CSS, JavaScript, Leaflet.js.

EDUCATION

Master of Science: Geospatial Engineering   10/2020 - 06/2023
Technical University of Munich, Germany

Bachelor of Technology: Civil Engineering   08/2015 - 05/2019
Aligarh Muslim University, India

SKILLS

- Data analysis & visualisation
- Python/SQL
- JavaScript, HTML, CSS
- Leaflet/Openlayers
- Mapbox/Bootstrap/React.js
- PostgreSQL/PostGIS

- AutoCAD
- ArcGIS (Desktop, Pro)
- QGIS
- Microsoft Office
- VS code, Git

LANGUAGES

English

Fluent

Hindi

Native

German

Intermediate

Urdu

Native

ACADEMIC PROJECTS

ILMIS: Integrated Land Management Information System using ArcGIS   04/2022 – 07/2022

- Developed a Digital Cadastral Data Base (DCDB) to support an integrated Land Information System for Munich region
- Performed hydrological analysis (Fill, Flow Direction, Flow accumulation, Extract Streams)
- Key tasks: Digitization, Climate modeling, Population calculation, and Real Estate evaluation, Generated flood risk maps

Lightning Data Visualization on a WebMap using React.js & Leaflet   08/2021 – 03/2022

- Extracted and cleaned 10GB worth of lightning strike data from a netCDF dataset, converting it into a highly efficient CSV format for web visualization
- Built an interactive web map using React.js for responsive design and Leaflet.js for advanced mapping functionalities & implemented dynamic popups displaying comprehensive details about each lightning strike (date, intensity, location)
- Integrated a layer control system allowing users to filter and customize data visualization for deeper exploration
- Toolls used: HTML, CSS, JavaScript, React, Leaflet, VS code, Github

Environmental Monitoring and Analysis   01/2021 – 04/2021

- Led a comprehensive environmental monitoring project in ArcGIS, analyzing surface water changes and landscape alterations
- Conducted data preparation, including image pre-processing and mosaicking for Sentinel-2 satellite imagery, and data cleaning and merging for ALKIS data
- Calculated NDVI & NDWI for surface water monitoring and developed methods for monitoring surface sealing changes10
- Utilized ArcGIS tools for creating change maps, surface maps, and sealing masks, visualizing and analyzing environmental dynamics over time

Analysis and Design of multi-storey commercial building   01/2019 - 06/2019

- Developed a detailed 3D model of a 5,000 sq m commercial building using AutoCAS software
- Designed earthquake-resistant foundations and optimized beam sizes to reduce material costs by 15%
- Performed structural analysis using Staad Pro, ensuring compliance with building codes and exceeding seismic load requirements by 20%