Asif Khan — GIS Specialist

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About Me

I hold a master's degree in Remote Sensing and Geo-informatics science, coupled with over six and a half (6.5) years of professional experience. My expertise encompasses satellite image processing, geospatial data processing,analysis, mapping, capturing, attribute data handling and two years of specialization in crafting electronic navigational charts(ENCs) and paper charts through S-57 Composer and Paper Chart software.

I possess robust proficiency in Python scripting and Feature manipulation engine (FME), employing these skills to develop scripts and tools for process automation and customization. This includes adeptly extracting and processing data from MDB, Excel workbook, PDF, CAD files, Text files various other formats, attribute handling and managing, showcasing my expertise as a GIS specialist.

I have practical experience working with GenAI, utilizing OpenAI LLMs for custom application, Gemini multimodal(processing, analysis, conversion of text, audio and video formats), and integrating other large Language Models (LLMs) within the Langchain framework. Additionally, I leverage third-party APIs such as Hugging Face to craft robust solutions, google search engine api for real time data, Wikipedia api for extracting data, showcasing proficiency in cutting-edge technologies for advanced GIS tasks.

Technical Skills

Programming skills: Python scripting, Feature Manipulation Engine(FME) for ETL,Model Builder for workflow automation.

Geo-spatial Tools: ArcGIS pro,ArcGIS suite,QGIS,Erdas Imagine,Global Mapper,S-57 Composer,Paper chart composer,dKart Inspector.

Database Management: PostgreSQL(intermediate),PostGIS,Data Migration, SQL Querring, Data Design.

GenAI: OpenAI LLMs(GPT-3.5,DALL-E,TTS,Whispher),LangChain(Prompts,Agents,Chains),Gemini (multi-modality) and Hugging Face. Integration of openai api,google search engine api,Wikipedia api, data from local drive and other third party api's in LangChain framework and working with multi-modals, text to text, text to speech and speech to text.

Udemy Certification: The complete Geospatial data science with python course.

Microsoft office skills: MS Word,MS Excel,MS Powepoint,MS Access.

Experience

Applus Velosi — **Dubai, UAE**
GIS Specialist — *Nov-2022–Present*

Projects:

- Data Collection and Condition Evaluation of Roads Infrastructure Assets in Al Ain Region(AACM) for 13000km lane kilometer's.
- Data Collection and Condition Evaluation of Road and infrastructure Asset of Dubai(RTA) for 7000km lane kilometer's.

Key roles and responsibilities.

- LCMS data is transformed(machine processing) into MDB files, each of which contains various tables. Within these MDB files, the tables of interest, namely Rut, Roughness, IRI,Texture and GPS points, are converted into their corresponding feature classes. This conversion process is accomplished using Python scripts and FME ETL, resulting in reduced processing time and enhanced accuracy. The GPS coordinates from the GPS table are matched with the desired table based on changes and populated survey headers, facilitating the transformation into point feature classes.
- Subsequently, the GPS point file is employed to generate road lines, which are subsequently assessed for geometric accuracy using the most recent satellite imagery.
- Once the geometry has been corrected and validated, the process of populating attribute data begins. This involves manually inputting information such as road names and lane numbers, cardinal extension id.
- After the essential data has been populated and confirmed, additional attributes such as direction, cardinal direction, sectioning, and section numbers are added using a Python script.
- Once the attributes and geometry have been populated and verified, the IRI, Rut, Roughness, and texture tables, which were previously created, are then filled in for each 100-meter section of the road using predefined templates.
- Distress data is received from engineering in MDB files, and these files are converted into feature class, which is split into point distress feature class and line distress feature class.
- Line distress features are then divided onto pms sections if required and then recalculate quantities and then converted into point feature class and merge with existing point feature class to get final distress point feature class.
- Next step follows, distress integration into respective pms section.
- After distress integration the shapefile of this distress with pms file is move to paver software to calculate PCI and deducted values and which are then populated into pms section.
- Following the creation of road lines with population data and precise geometry, the next step involves integrating them into the desired templates and subsequently pushing them into the client's database.
- Generating maps to depict survey coverage on both a weekly and monthly basis.

Bahria system enterprise and technologies(BEST) Karachi,Pakistan

Assistant Cartographer *Jul-2020–Oct-2022*

As an assistant cartographer, I produced electronic navigation charts and paper charts following UKIHO guidance. I also conducted satellite image analysis to identify creeks in the Indus Delta and performed geometry calculations for diverse water boundaries, including EEZ, Contiguous Zone, Territorial Sea, and Internal Waters

Key roles and responsibilities.

- Proficient in producing Electronic Navigational Charts (ENCs) and paper charts.
- Skilled in handling vector data and seamlessly integrating it with GIS.
- Experienced in georeferencing fair sheets and paper charts with precision, achieving up to 0.2mm accuracy using Hypack and Caris GIS.
- Adept in Satellite Image Processing and classification for delineating coastlines and creeks in the Indus Delta region.
- Accomplished in creating layouts and managing various miscellaneous tasks.
- During the course of my work, I produced various categories of ENC's and paper charts, including coastal (03), overview (01), and harbor (02).

Pakistan Telecommunication (Pvt)limited(PTCL) Karachi,Pakistan

GIS Technician *Aug-2019–May-2020*

Throughout the course duration, I have actively engaged in conducting surveys using Garmin 10x, establishing GIS databases, generating unique identifiers for network elements, and analyzing maps to track wireless outages and fiber cuts, as well as producing wire-line infrastructure maps.

Key roles and responsibilities

- Mapping and creating unique codes (LICs) of all physical assets and network elements of PTCL, including exchanges,OFC repeaters, DSLAM, Towers, BTS, optical fiber cable, etc
- Mapping and creating rings for transmission systems of Nokia, Huawei and ZTE.
- Collaborating with the development team to meet project deadlines and laying new footprint of network coverage.
- To supervise and assist regional GIS POC for carryout GIS related tasks (Survey, updating Geodatabase, etc.).
- To create maps of weekly and monthly for availability,outage and battery backup for analysis.
- To create and update coordinates of daily optical fiber cuts with associated cables for analysis.
- To create maps of Network connectivity for the corporate and development department.
- To update and maintain a database of wire-line (Working fiber, payload, etc.) wireless(DRS links, BTS attributes, etc.) and fuel consumption and power bills.

Engineering Consultant International Limited(ECIL) Karachi,Pakistan
Assistant GIS Analyst *May-2019–Aug-2019*

During the early stages of my career and throughout this period, my work primarily involved manual tasks such as digitization, data population, data merging, and more.

Key roles and responsibilities

- Digitization of road network and parking lot of Al-Ain city on latest ortho satellite imagery.
- Populating attributes in digitized line and polygon features.
- Sectioning of road networks 100meters and 1meters and then populating distress data using spatial join with distress tables.
- Geometric correction using topology and based on satellite imagery.
- Quality checking/assessments of attributes..
- Creating layouts.

Education

Institute of space technology
MS in Remote Sensing and Geo information Science, Islamabad *2015–2019*

University of Karachi
MSc in Environmental Science, Karachi *2011–2013*

Federal Urdu University of Arts, science and technology Karachi
BSc in Mathematics, Karachi *2008–2010*

University Project Engagements

- Thesis Title: Temporal analysis of media (copper cables to fiber optic) shifting in telecommunication using GIS.
- Geo-spatial temporal analysis of snow covered area for Passu glacier.
- Flood plain analysis of Hunza River using HEC HMS, HEC Geo RAS, satellite data and ground flow data.
- Selection of suitable sites for small dams for Awaran district Balochistan using AHP and MSDM.
- Mapping of Glacial lakes outburst flood (GLOF) using remote sensing and GIS techniques.
- Flood plain analysis of Hunza River using HEC HMS, HEC Geo RAS, satellite data and ground flow data.

Interests

Tech Enthusiast: Passionate about exploring and staying updated on the latest advancements in technology, with a particular focus on emerging trends and innovations.

Sports: Watching and playing football.

Reference

Reference will furnish be upon request