

## Muhammad Hashir Ilyas

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### Education

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#### NUST UNIVERSITY

MS Software Engineering, Machine Learning

2021

Thesis [Context Based Sentiment and Emotion Analysis for an automated email response system]

#### PMAS ARID AGRICULTURE UNIVERSITY RAWALPINDI

BS CS

2015

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### Experience

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#### DATABASE ADMINISTRATOR/ LEAD DEVELOPER

August 2022 – Present

- **Digitalization of many aspects of the University's Day to Day operations** including (admissions, fee collection, ID card generation and exams).
- **SOPs and Policies Development:** Crafted comprehensive Standard Operating Procedures (SOPs) and policies crucial for the university's smooth functioning, ensuring adherence to regulatory standards and best practices in data management and system usage.
- Oversaw the design, implementation, and maintenance of databases critical to university operations, ensuring optimal performance, security, and data integrity.
- Implemented robust backup and recovery strategies to safeguard sensitive university data, mitigating potential risks and ensuring continuity in case of system failures.
- Identified and executed database performance tuning measures, enhancing system efficiency and responsiveness, thereby optimizing overall database operations.

Islamabad

#### GIS Developer

April 2022 – August 2022

- **Developed comprehensive SOPs** outlining the procedures for data acquisition, ensuring accuracy and consistency in GIS data collection, storage, and management.
- **Acted as a liaison** between the Clean Green Pakistan [CGP] (formerly known as Ten Billion Tree Tsunami Program), Ministry of Climate Change, United Nations Development Program and my firm, facilitating effective communication and collaboration between the all entities.
- **Led the development of a web-based GIS project** for the CGP, enabling users to visualize and explore different plantation sites as well as zoological sightings across Pakistan. Implemented interactive features allowing users to filter sites based on provinces, districts, tehsils, and site names.
- **Designed and implemented an internal GIS module** specifically tailored for the CGP, providing comprehensive functionality to assist program managers in monitoring and analyzing the progress of plantation and monitoring activities.
- Incorporated features within the GIS module to display various attributes associated with each plantation site and zoological sightings, enabling users to access detailed information about specific sites and understand their ecological impact.
- Visualization of the impact of the forestation/plantation to a specific site as well as zoological impact.

Islamabad

#### GIS Developer

April 2019 – April 2022

- As the team leader, I successfully managed and coordinated the implementation of multiple projects, ensuring the timely delivery of high-quality solutions.
- **Designed and developed the system architecture** for various web-based GIS projects, ensuring scalability, performance, and integration of advanced GIS functionalities.
- **Established and managed servers** to support project requirements, ensuring smooth functioning and optimal

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performance.

- **Conducted thorough research** to identify the latest GIS technologies and features relevant to the real estate sector. Implemented innovative solutions to enhance the web GIS experience.
- Team lead in the digitization of artifacts of **Taxila** and **Lahore** museum as well as upgradation of the websites of their respective websites. The Project was sponsored by **UNESCO**.
- Led the development of an online roof measurement tool, catering to a **European** client. This tool allowed users to measure their roofs and estimate the required materials based on the area.
- Led the development of a web-based system that allowed users to analyze changes in land mass categories [**Scotland**]. Enabled users to draw areas of interest on the map, measured different land categories, compared with previous years' data, and provided real-time output on land change. Implemented functionalities for data uploading, tiling imagery, and scheduled tasks.
- Led the development of a web-based system that allowed mining companies to review the excavation progress on different sites [**Canada and US**]
- Digitization and Visualization of city footprint (building, bazars, streets) with millimeter accuracy of **Manama (Bahrain)**
- Led research and development in a collaborative project between HEC, Air University, and the industry on **Digital Land Mapping for Large Real Estate Projects**. Developed an advanced online GIS system for housing societies in Pakistan, integrating **land acquisition management, dynamic plot reporting, underground utility visualization, and 3D real estate mapping**. The system featured **interactive land calculations (bought, remaining, and unowned land), polygon splitting, attribute allocation, and Open Street Maps integration** with dynamic plot rendering, on-click details, and automated report generation. Additionally, it provided **underground utilities network visualization with defect identification and pinpointing**. Developed a **3D web-based real estate portal** for large-scale projects, enabling users to **visualize plots as 3D objects, access high-resolution drone imagery, explore LOD1 and LOD2 data, and generate downloadable PDF plot status reports**. Implemented **zooming, plot selection, and online plot purchasing options** for an enhanced user experience. All projects were developed under the **Technology Development Fund of HEC**, advancing digital land mapping and real estate visualization in Pakistan.

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Nov 2015 – Dec 2018

### Web Developer

- Undertook diverse projects and played a pivotal role in designing and developing innovative GIS solutions for different industries, including real estate, education, content management, and enterprise resource planning.
- **Led the development of a web-based GIS solution for the Australian** real estate sector. This solution provided detailed reports for construction and development projects, encompassing the location, neighboring properties, and the economic, environmental, and cultural impact. I collected and digitized data, matched it with relevant information from databases, and created a fast-loading local tiling server. I was responsible for the creation of the entire GIS module.
- **Developed a web-based GIS solution, Geo Blog**, allowing users to discover articles and blogs based on geographical location, enabling targeted content consumption.
- Contributed to the development of a cloud-based school management system, enabling real-time monitoring and control of daily school activities. This comprehensive system included modules for accounts, students, academia, finance, staff management, SMS portal, and multi-branch management, providing students and parents with personalized login details for accessing fee records, test results, exam results, homework, and attendance.
- Designed and implemented Graphify, a solution enabling users to visualize data from Excel sheets in the form of graphs for enhanced data understanding and analysis.
- **Developed a web GIS CMS solution** for construction companies [**USA, UK**], facilitating the monitoring of building construction, as well as tracking repairs, maintenance, and customer complaints. The system included task assignments to workers, hiring and managing subcontractors and maintaining profiles.
- Created a highly customizable portal for sending SMS messages to many recipients, such as customers and employees, with extensive customization options.
- **Contributed to the development of an Enterprise Resource Planning (ERP)** system, empowering companies to streamline and monitor daily operations. The system included modules for accounting, HR, tenders/invoices, meeting scheduling, and more.

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## Projects

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1. **Web GIS Modules for Clean Green Pakistan [UNDP Sponsored Project]:** A web-based GIS project that allows the users to view the different plantation sites as well as zoological sightings across Pakistan along with the different attributes of each site. The user can filter the sites based on the provinces, districts, tehsils and site names. The user can also view the before and after pictures of how the plantation affected the said site on the map.
2. **Digital Land Mapping for Large Real Estate Projects [HEC and Air University Collaboration Project]:** A 3D web based real estate portal that shows the plots as 3D objects, high-res drone imagery of that area as tile layers with zoom level from 1-21, it also allows the option to show the LOD1, LOD2 data. People can browse through the portal and select plots they wish to buy. A report will be generated which will show the status of the plot (bought, sold, available) which is downloadable in the form of pdf. The portal also provides the option to buy the plot online. I was the team lead in the project and responsible for the server creation and management as well.
3. **Space Intelligence [Scottish NGO Sponsored Project]:** A web-based system that allows the user to view the changes in the land mass of certain categories in the region of Scotland. The user can draw an area of interest on the map and the system will measure the different categories of land present in the area e.g (bogs, land marshes, forest, grasslands etc) and compare it with the previous year's data and give an output regarding the land change. The system allows the admin to upload new dem imagery, upload tiff imagery, schedule tiling of the imagery. The system calculates the area change in real time. I was the team lead in the project and responsible for the server creation and management as well.
4. **Excavation Overview [USA and Canda Based Project]:** Led the development of a web based GIS project that allowed the clients to view how much of a target area was excavated and how much dirt has been unearthed from a site of interest.
5. **Fazaia Housing Society (Kamra) [Airforce Sponsored Project]:** An online land acquisition module created for the Fazaia Housing Society(kamra). The module allows the user to view the local land (Mouzas and Khasras etc) on the map and allows for the calculation of the total land bought, remaining land and not owned land. It also allows the user to split a polygon whether it is Khasra or Mouza into various polygons and allot attributes to them. I was the team lead in the project and responsible for the server creation and management as well.
6. **Capital Smart City (GIS Module):** An online GIS module created for the Capital Smart City that allows the user to generate a report of their plot as per the Capital Smart City's prescribed format. The map has a base layer of the Open Street Maps with the Master plan tiled on top of it with all the interactive plots being rendered on the run time. The user can click on the plot to get its details and can also generate the plot's report. I was the team lead in the project and responsible for the server creation and management as well.
7. **Top City (Utilities Network):** An online GIS module demo created for the top city to visualize all the underground utilities network for the city. The module had the option to visualize the defects in the utilities network and allows precise pinpointing of the defects within the utilities network.
8. **Roofr [Europe Based Project]:** An online roof measurement tool developed for a foreign client. It allows the users to measure their roof and give an estimate of how much material will be required based on the area that they have; I was the team lead in the project and responsible for the server creation, development and management as well.
9. **Blockbrief Report Generation System [Australia Based Project]:** A web-based GIS Solution for the real estate sector of Australia. The Local Government Authority of Australia requires a detailed report for any construction/development project which details the location of the plot/location and the types of the properties near it coupled

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with the economic, environmental and cultural impact of the project. The customer could enter the address of the area of which he wanted the report to be made or select on the map and a report will be generated for that location. For this project I first set out for the collection of data which was then digitized and matched with the relevant information in different databases that were provided by the client. For the purpose of the web map to load faster local tiling server was made. The user was shown the whole report on the web page where he could interact with it and see the report and could also download it. I partook as a developer in this project and was responsible for the creation of the whole GIS module.

10. **Geo Blog:** Geo Blog is a web-based GIS Solution that allows the user to see the articles/blogs by their geographical location allowing them to get the articles that they want that correlate to a specific location.
11. **School Management System:** A cloud-based school management system that allows the user to monitor and control the daily school activities in real time. It includes various modules like accounts, students, academia, finance, staff management, SMS portal, management of various branches. It also includes providing every student his/her and their respective parents with their login details as well so they can see their fees paid, test results, exam results, homework and attendance.
12. **Graphify:** A solution that allows the user to output the data from excel sheets in helpful form of graphs for better visualization of the data.
13. **Builders Hut:** A web GIS and CMS solution for construction companies which allows the company to monitor the building construction and also keep track of the repair, maintenance, customer complaints. Tasking the tasks to workers hiring subcontractors and assigning them profiles.
14. **SMS Portal:** A highly customizable portal that allows you send sms to many people e.g your customers, employees etc.
15. **ERP:** An Enterprise Resource planning system that allows the companies to control, streamline and monitor their daily operations with many modules such as accounting, HR, tenders/invoices, meeting scheduler and many more.

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## Skills

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### Technical:

- Symfony
- Laravel
- CodeIgniter
- React
- Python
- TensorFlow
- Angular
- PHP
- JavaScript
- MySQL
- PostgreSQL
- MSSQL
- Web GIS
- Leaflet
- Open Street Maps
- Google Maps
- Cesium JS
- Potree
- GDAL
- HTML
- CSS
- Bootstrap
- Tailwind
- ArcGIS
- ESRI API
- ESRI Portal
- QGIS
- Global Mapper
- Geo Server
- AWS EC2
- AWS RDS

### Language:

- English [Fluent]
- Urdu [Fluent]