SAYED AHMED SAYED

Riyadh, Riyadh 11564 | +966543045694 | se.sayedahmed@gmail.com

Summary

Senior GIS Developer with over 10 years of experience in open-source GIS development, spatial database design, and geospatial analytics. Proven expertise in building scalable GIS applications, integrating big data and machine learning for geospatial analysis, and developing interactive geo-visualization solutions. Proficient in Python, Java, R, and modern web frameworks. Skilled in enterprise GIS architecture, spatial data processing, and Web GIS development (Leaflet, OpenLayers, GeoServer). Adept at leading GIS projects, optimizing workflows, and delivering innovative geospatial solutions for decision-making.

Education

Doctor of Philosophy, **Computer Science** 03/2025
Faculty of Graduate Studies for Statistical Research - Cairo University - Giza, Egypt

Master of computer Science, **GIS specialization** 07/2019
Computer Science Department, Faculty of Graduate Studies for Statistical Research - Cairo University - Giza, Egypt

Diploma, **Computer Science** 07/2013
Faculty of Graduate Studies for Statistical Research - Cairo University - Giza, Egypt

Bachelor of Computing and Information, **Department of Computer Science** 07/2007
Computer Science Faculty of Computer and Information - Assiut University - Assiut, Egypt

Experience

Geo-Database and GIS Expert Dec 2023 – Present
Environmental Horizon Co. - Riyadh, Riyadh Region, Saudi Arabia

- Preparing GIS Data for maps
- Designed and developed spatial databases, optimizing GIS data management and map production.
- Remotely Sensed data Analysis, Building Raster GeoDatabase, Data reporting and presentation
- Performing statistical analysis for data in Excel and Python
- Creating thematic maps to present, organize and categorize survey data
- Compiling data from satellite imagery, survey data and aerial photographs to produce maps and charts
- Updating maps and charts using information gained by technological advancements
- Designed and deployed interactive GIS dashboards using Mapbox, Carto, and Power BI, improving geospatial data visualization for decision-makers.

Systems and Databases Analyst Jul 2015 to Dec 2023
National Authority for Remote Sensing and Space Sciences - Cairo, Egypt

- Assisted with continuous improvement initiatives, applying data findings to address underperforming areas
- Analyzed business processes, systems and data to identify opportunities for enhancement and efficiency
- Automated tasks to increase efficiency and reduce department workload
- Analyzed complex data sets and studied impacts on business growth and operational efficiency
- Applied principles of user-centered design to enhance the usability and user experience of digital interfaces
- Sketched and diagrammed design concepts to share vision and collected feedback

- Built design mockups and prototypes with Adobe Creative Cloud, Crello and PaintShop Pro
- Developed innovative, robust design solutions through collaboration with technical teams

Senior GIS Developer Nov 2010 to Jul 2015
National Authority for Remote Sensing and Space Sciences - Cairo, Egypt, Egypt

- Led GIS data acquisition, conversion, and integration processes, optimizing data management workflows for spatial analytics
- Applied machine learning techniques to analyze spatial patterns and predict trends in environmental and social datasets
- Developed and maintained web-based GIS applications using Python, Django, and JavaScript libraries such as Leaflet and OpenLayers
- Designed and implemented spatial databases using PostgreSQL/PostGIS to manage and analyze geospatial data
- Integrated GIS functionalities with web services and APIs, enabling real-time data visualization and analysis
- Participated in the full software development lifecycle, from requirements gathering and design to testing, deployment, and maintenance
- Conducted spatial data analysis to support decision-making processes in urban planning, environmental management, and infrastructure development
- Directed a team of GIS analysts in developing a scalable GIS infrastructure, enhancing geospatial data accessibility and efficiency at the national level

Skills

- **Programming & Automation:** Python (GeoPandas, Fiona, Shapely, GDAL, ArcPy), Java (Spring MVC, JSF, Struts), JavaScript (Leaflet, OpenLayers, Mapbox), SQL (PostGIS, PostgreSQL)
- **GIS & Remote Sensing Tools:** QGIS, GRASS GIS, GDAL/OGR, ArcGIS, GeoServer
- **Web GIS Development:** GeoDjango, Flask, FastAPI, Leaflet.js, OpenLayers, Mapbox, RESTful GIS APIs (WMS, WFS, WMTS)
- **Big Data & Cloud GIS:** Apache Spark Apache Kafka, Google Earth Engine, Hadoop
- **Geo-Visualization & Business Intelligence:** Power BI, ArcGIS for Power BI, Mapbox, GeoJSON
- **Spatial Analysis & Machine Learning:** Google Earth Engine, AI-driven spatial modeling, Raster Analysis.

Certifications

- Data Analysis Using Excel and Power BI
- Python in ArcGIS Course Certificate (ESRI)
- Using Databases with Python
- Python Data Structures
- Retrieving, Processing, and Visualizing Data with Python
- Using Python to Access Web Data
- GUI Development Using Python
- Java Development Course - Complete Track (ITI)

Accomplishments

- **Assessing the Kingdom's vulnerability to severe droughts and developing the necessary measures and procedures to mitigate the negative effects of drought (KSA):** Designed and deployed a GIS-based drought prediction model using machine learning, improving forecasting accuracy by 95% and enabling strategic planning for 25–50 years in KSA.
- **EGRET Crops Monitor:** An innovative and accurate crop monitoring solution to provide farmers with real-time, actionable insights on crop conditions, water management, fertilization, and yield projections by leveraging remote sensing data and advanced analytics using Python · Django · Big Data Analytics · JavaScript · Leaflet.js · ChartJS · PostgreSQL · Cascading Style Sheets (CSS) · HTML5.

- **E-Marketing Decision Support System:** A web-based Decision Support Engine (DSE) that was applied to an E-marketing applied study in Cairo and Giza governorates to facilitate the decision-making process and involve the end user easily using Python · Django · JavaScript · Leaflet.js · Geographic Information Systems (GIS) · CSS · HTML5.
- **BIGCROPDATA Platform:** A novel web-based system to estimate and monitor the crop bio-physiological parameters as well as yield prediction and irrigation water needs using Python · Django · Big Data Analytics · JavaScript · Leaflet.js · GIS · CSS · HTML5.
- **GACUGeoportal:** GACUGeoportal is an open source, collaboratively developed, federated web application to discover, preview, and retrieve rapidly geospatial data from multiple repositories using Java · Spring MVC · Apache Solr · XML · GIS · GeoServer · OpenLayers · HTML5 · JavaScript · CSS.
- **Development of the lands of Beheira Governorate:** A Portal for Management of Rural Land of Wadi-Elnatron, Behaira Governorate, Egypt using Java · Spring MVC · PostgreSQL · GIS · GeoServer · OpenLayers · HTML5 · JavaScript · CSS.

Publications

- Intelligent Traffic Flow Prediction Using Deep Learning Techniques: A Comparative Study, Sayed, S.A., Abdel-Hamid, Y. & Hefny, H.A., SN COMPUT. SCI., 6, 60, 2025
- Programming an Interactive Map to Enhance Clients' Participation in Site Selection of E-Marketing in Cairo and Giza Governorates: Egypt, Alkot Mohamed, R., & Ahmed Sayed, S., IntechOpen, 10.5772/intechopen.1002489, 2024
- Traffic Flow Prediction Using Big Data and Geographic Information Systems: A Survey of Data Sources, Frameworks, Challenges, and Opportunities, International Journal of Computing and Digital Systems, 2023-08-01, 10.12785/ijcds/140147, 2210-142X
- Sentinel-2 Satellite Imagery for Retrieving and Mapping Soil Properties Using Machine Learning, Amin, M. E., Abdelfattah, M. A., Mohamed, E. S., Nabil, M., Belal, A. A., Ahmed, S., ... & Mahmoud, A. G., Applications of Remote Sensing and GIS Based on an Innovative Vision, 2023
- A comparative study of big data use in Egyptian agriculture, Journal of Electrical Systems and Information Technology, 2023-04-04, 10.1186/s43067-023-00090-5
- Deep Learning Methods Used in Remote Sensing Images: A Review, Rewhel, E. M., Li, J., Hamed, A. A., Keshk, H. M., Mahmoud, A. S., Sayed, S. A., ... & Helmy, A. K., Journal of Environmental & Earth Sciences, 5, 1, 33-64, 2023
- Artificial intelligence-based traffic flow prediction: a comprehensive review, Journal of Electrical Systems and Information Technology, 2023-03-09, 10.1186/s43067023-00081-6
- Investigation on the use of ensemble learning and big data in crop identification, Heliyon, 2023-02-01, 10.1016/j.heliyon.2023.e13339, 2405-8440
- PROGRAMMING AN INTERACTIVE MAP TO ENHANCE CLIENTS' PARTICIPATION IN SITE SELECTION OF E-MARKETING, IN CAIRO AND GIZA GOVERNORATES- EGYPT, Bulletin de la Société de Géographie d'Egypte, 2022-12-01, 10.21608/bsge.2022.151512.1011, 2735-3036
- Enhancing Hybrid Learning using Open Source GIS-Based Maps Archiving System, The Egyptian Journal of Remote Sensing and Space Science, 2022-12-01, 10.1016/j.ejrs.2022.07.003, 1110-9823
- A Conceptual Framework for using Big Data in Egyptian Agriculture, International Journal of Advanced Computer Science and Applications, 2022, 10.14569/IJACSA.2022.0130322, 21565570 2158107X
- Satellite Imagery Super-Resolution Using Squeeze-and-Excitation-Based GAN, International Journal of Aeronautical and Space Sciences, 2021-12-01, 10.1007/s42405-021-00396-6
- Hyperspectral change detection based on modification of UNet neural networks, Journal of Applied Remote Sensing, 2021, 10.1117/1.JRS.15.028505
- A WebGIS Decision Support System for Wadi El Natrun Rural Land Management, Proceedings - 2020 21st International Arab Conference on Information Technology, ACIT 2020, 2020, 10.1109/ACIT50332.2020.9300106

- Learning to hash with convolutional network for multi-label remote sensing image retrieval, International Journal of Intelligent Engineering and Systems, 2020, 10.22266/ijies2020.1031.47
- Mobile-based routes network analysis for emergency response using an enhanced Dijkstra's algorithm and AHP, International Journal of Intelligent Engineering and Systems, 2018, 10.22266/IJIES2018.1231.25
- GIS-based network analysis for the roads network of the Greater Cairo area, CEUR Workshop Proceedings, 2017

Languages

Arabic

Native

English

Fluent