

SHAHBAZ ATTA AWAN

Senior GIS / Data & AI Architect

20+ Years | Hajj & Crowd Management | Smart City | Big Data

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Lahore, Pakistan

Open to Relocation

Experience: 20+ years

Oman Property Investment Visa
(in process)

PROFESSIONAL SUMMARY

Senior GIS / Geospatial Data Architect with 20+ years of enterprise experience designing and delivering large-scale mapping, routing, IoT, and real-time spatial analytics platforms.

Integrated modern generative AI and LLM engineering, Retrieval-Augmented Generation (RAG) architectures, Vector databases, and AI-driven automation workflows (n8n, Claude Code) into enterprise data pipelines to enhance spatial analytics, automated reporting, and intelligent decision-making systems.

KEY HIGHLIGHTS

- ✓ 3 IEEE Peer-Reviewed Publications on Hajj Systems
- ✓ 10+ Years KSA On-Site Experience (Makkah)
- ✓ Shipped 3 Production Hajj Crowd-Management Platforms

- ✓ Architected Multi-Tenant Big Data Platform (Millions of Events/Day)
- ✓ AVP-Level Leadership at Systems Limited
- ✓ Vision 2030 Ready: NEOM, Aramco, GASTAT Alignment

CORE TECHNICAL COMPETENCIES

Engineered RAG & Vector Search Pipelines	Designed and implemented Retrieval-Augmented Generation (RAG) architectures paired with Vector Databases to optimize semantic search and spatial querying performance across large datasets.
Workflow Automation & AI Tooling	Built automated backend data ingestion and notification workflows using n8n, significantly reducing manual data orchestration overhead.
AI-Assisted Development	Leveraged advanced AI coding assistants and agents (Claude Code, LLM tooling) to accelerate software prototyping, refactor complex distributed modules, and optimize core system logic.
Geospatial / GIS	PostGIS, pgRouting, GeoServer, MapBox, Graphhopper, OpenLayers, OpenStreetMap (OSM), Geospatial Analytics, Map Tiling, Routing Engines
Big Data & Streaming	Apache Spark, Spark Streaming, Apache Flink, Apache Kafka, Apache NiFi, Apache Druid, Apache Superset, Elasticsearch, Logstash, Hadoop, MongoDB, Redis, RabbitMQ
Cloud Platforms	Databricks, Delta Lake, Snowflake, Google Cloud Platform (GCP)

Languages & Frameworks	Java (20+ yrs), Python, Scala, C++, Spring, Hibernate, J2EE, Angular, Android SDK / NDK
DevOps & Tooling	Docker, Kubernetes, Git, Bitbucket, Jira / Confluence, Eclipse Kura, Linux
Domain & Leadership	Hajj/Umrah Crowd Management, Smart City Architecture, IoT Platforms, Real-time Analytics, ML / Predictive Modelling, Agile / Scrum, PMP, AVP-level Leadership

PROFESSIONAL EXPERIENCE

GIS Data & AI Architect

First City AI | Remote

March 2023 – Present

- Own end-to-end big-data and GIS architectural design, technology selection, and engineering delivery for mapping, routing, and location intelligence products.
- Selected and implemented Graphhopper + MapBox + GeoServer stack for the public-facing layer; designed Apache NiFi + Spark + MongoDB pipeline for the geospatial data lake.
- Stack: Java, Python, Angular, Apache Spark, MongoDB, Apache NiFi, Graphhopper, MapBox, GeoServer.

Assistant Vice President — Data Analytics

Systems Limited | Lahore, Pakistan

August 2022 – March 2023

- Led big-data architectural design and technology selection across the enterprise analytics practice.
- Architected a predictive insurance-claim platform on Databricks + Delta Lake + Snowflake; designed feature pipelines, Spark Streaming ingestion, and the analyst-facing reporting layer.
- Stack: Java, Python, Scala, Spark Streaming, Databricks, Delta Lake, Snowflake, Redis.

Big Data Architect

Mi-C3 International | Remote / EU

February 2017 – August 2022

- Architected and shipped Mi-Stream — a multi-tenant real-time geospatial streaming platform handling millions of events per day for telecom, fleet, and IoT customers.
- Designed geospatial subsystem on PostGIS + pgRouting + GeoServer with REST-based tile-serving and routing APIs; implemented architectural changes that significantly reduced ingest latency.
- Stack: Java, Spring, Flink, Spark Streaming, Databricks, Snowflake, Druid, Superset, Hadoop, RabbitMQ, Elasticsearch, Apache NiFi, PostGIS, pgRouting, OpenLayers, GeoServer.

Software Architect / Senior Researcher

Wadi Makkah — Umm Al Qura University | Makkah, KSA

November 2013 – January 2017

- Led architectural design and development of Geo-Where, Masar IoT, and Traffixity — three production geospatial platforms for Hajj traffic and crowd-density management at holy sites.
- Designed PostGIS + pgRouting backend ingesting GPS / IoT signals from wearable devices; computed real-time density heatmaps and dynamically rerouted pilgrims away from congestion zones.
- Integrated Eclipse Kura on edge devices for IoT data acquisition; built visualisation layer using GeoServer + OpenLayers adopted by traffic-control teams.
- Authored 3 IEEE / IIT peer-reviewed publications (PerCom 2016, IEEE Big Data 2016, IIT 2016).
- Stack: Java, Spring, Spark Streaming, PostgreSQL, PostGIS, pgRouting, MongoDB, OpenLayers, GeoServer, Eclipse Kura, Android SDK / NDK.

Team Lead — Mobile Applications

TuttiFruitti Labs | Pakistan

January 2011 – June 2013

- Designed and developed interactive children's learning and gamified Android applications.
- Stack: Android SDK, HTML, JavaScript, jQuery; Process: Agile / Scrum.

Senior Software Development Engineer

Siemens | Pakistan

September 2006 – December 2010

- Contributed to R&D and development of the Inflexion Platform UI Designer for Nucleus OS.

- Owned product integration, scripting, and build management; conducted analysis reports for Nucleus OS components.
- Stack: Eclipse PDE, Ant, MSBuild, Java, ANTLR, xtUML.

Software Engineer

Vopium | Denmark / Pakistan

April 2005 – November 2005

- Designed and developed the Vopium call-redirector application on Symbian C++ and J2ME for cost-effective international voice calls.

PUBLICATIONS — IEEE / IIT (HAJJ & SMART TRANSPORT)

Awan, S. A., et al. "A Software Platform for Smart Data-driven Intelligent Transport Applications." IEEE PerCom Workshops, 2016.

Awan, S. A., et al. "Spatial-Crowd: A Big Data Framework for Efficient Data Visualization." IEEE International Conference on Big Data, 2016.

Awan, S. A., et al. "iCrowd — A Framework for Monitoring of (Identifiable) Crowd." 12th International Conference on Innovations in Information Technology (IIT), 2016.

SAUDI VISION 2030 — PROGRAMME ALIGNMENT

- — **Smart-city architectures require real-time geospatial data lakes, routing engines, IoT ingestion, and visualisation — my exact stack.**NEOM / The Line / Oxagon / Trojena
- — **Location-intelligence and crowd / traffic modelling capabilities transfer directly from my Hajj platforms.**Riyadh Metro / Roshn / Diriyah / Qiddiya
- — **3 production platforms shipped and 3 peer-reviewed publications in this exact domain.**Ministry of Hajj & Umrah Modernisation
- — **Upstream and asset geospatial digitisation aligns with the PostGIS + GeoServer + Spark stack I have led for 10+ years.**Aramco / SABIC / Ma'aden

EDUCATION & CERTIFICATIONS

Bachelor of Computer Science (BCS)

Allama Iqbal Open University, Islamabad, Pakistan

Professional Development:

DS102x Machine Learning for Data Science & Analytics (edX) | CS190.1x Scalable Machine Learning (edX) | Big Data & Social Physics (MIT) | MITx 21W.789x Building Mobile Experiences (MIT)

PERSONAL DETAILS

Nationality: Pakistani

Date of Birth: 07 October 1980

Marital Status: Married

Languages: English (Fluent), Urdu (Native), Arabic (Basic)

Visa / Relocation: Open to relocate — Oman Property Investment Visa (in process)

References: Available on request