

PROFESSIONAL SUMMARY

Senior Data Engineer with 21 years of expertise in geospatial data platforms, big data processing, and distributed systems architecture. Deep specialist in Apache Spark/Sedona for large-scale geospatial analytics, with fluency across ESRI, OSGeo, and SAFE FME technology stacks. Proven track record architecting production systems serving thousands of users, implementing PySpark pipelines processing billions of spatial records, and leading engineering teams. Expert in full-stack geospatial development from PostGIS database optimization to React-based mapping interfaces.

KEY ACHIEVEMENTS AND IMPACT

Geospatial Platform Engineering

- Architected redistricting platform processing Census data for thousands of analysts with real-time PostGIS collaborative editing
- Built boundary estimation system using advanced PostGIS algorithms and incomplete data without machine learning requirements
- Developed geospatial simulation platform integrating multi-agent modeling with web interface

CORE COMPETENCIES

Big Data & Geospatial Processing: *Apache Spark* (PySpark, Spark SQL, Scala Spark, Sedona (geospatial), distributed processing); *Geospatial Databases* (PostGIS (advanced), Oracle Spatial, spatial indexing, query optimization); *ETL/ELT* (dbt, Informatica, CDAP, custom PySpark pipelines, data governance frameworks); *Cloud Platforms* (AWS (EC2, RDS, S3), Snowflake, Hadoop clusters, distributed computing); *Streaming* (Real-time data processing, Kafka integration, event-driven architectures)

GIS Technology Stack: *ESRI* (ArcGIS Server, ArcGIS Pro, enterprise geodatabases, ModelBuilder, ArcPy scripting); *OSGeo* (QGIS, GRASS GIS, GDAL/OGR, GeoServer, spatial analysis workflows); *SAFE FME* (Data transformation, format conversion, spatial ETL, enterprise integration); *Web Mapping* (OpenLayers, Leaflet, MapBox, tile servers, WMS/WFS services); *Spatial Analysis* (Clustering algorithms, boundary estimation, network analysis, geostatistics)

Software Development & Architecture: *Python* (Django/GeoDjango, Flask, Pandas, NumPy, SciKit-Learn, spatial libraries); *JVM* (Scala (Spark), Java (GeoTools, enterprise), Groovy scripting); *Web Technologies* (React, JavaScript, d3.js, RESTful APIs, microservices); *Databases* (PostgreSQL/PostGIS, Oracle, MySQL, MongoDB, spatial optimization); *DevOps* (Docker, Kubernetes, CI/CD (GitLab, GitHub), Airflow, Celery, nginx)

PROFESSIONAL EXPERIENCE

Siege Analytics, Washington, DC | PARTNER January 2014 – Present

Geospatial Data Platform Architecture and Big Data Engineering

- Architected and engineered production geospatial platforms serving thousands of analysts
- Built enterprise-scale ETL pipelines using PySpark and Sedona processing billions of geospatial records with advanced spatial clustering algorithms
- Developed multi-tenant data warehouse integrating Census, electoral, and demographic data using PostGIS and Spark SQL optimization
- Implemented fraud detection systems processing multi-terabyte datasets with real-time spatial analysis capabilities
- Created parametric boundary estimation algorithms using PostGIS and GRASS without machine learning dependencies
- Led integration of ESRI ArcGIS Server, OSGeo tools (QGIS, GRASS), and SAFE FME for enterprise geospatial workflows

Geospatial Systems Architecture and Development

- Mautinoa Technologies, Washington, DC | SOFTWARE ENGINEER 2010 – 2012**

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The Feldman Group, Washington, DC | FIELD DIRECTOR 2000 – 2001

Field Operations Technology and Data Management

- Developed data collection and management systems for political field operations
- Built databases and reporting tools for campaign field work and voter outreach
- Trained field staff on data collection protocols and quality control systems
- Analyzed field data using statistical methods to inform campaign strategy and research findings