dheeraj.chand@gmail.com

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GitHub: github.com/dheerajchand

Dheeraj Chand

[RESEARCH, ANALYSIS, ENGINEERING] → UNDERSTANDING

Austin, TX (30.2672°N, 97.7431°W)

PROFESSIONAL SUMMARY

Data scientist and software engineer with 15+ years building systems that matter. Discovered systematic demographic coding errors affecting all Black and Asian-American voters, developed geospatial ML algorithms improving classification accuracy from 23% to 64%. Saved organizations $4.7M through better algorithms, and built platforms used by thousands of analysts nationwide. Expert in translating complex analytical requirements into scalable technical solutions.

KEY ACHIEVEMENTS AND IMPACT

Breakthrough demographic discovery: Uncovered systematic voter miscoding affecting millions • **178%** accuracy improvement in racial classification algorithms • Algorithmic innovation: Pioneered trigonometric boundary estimation reducing mapping costs **73.5%** • **$4.7M** savings enabled nonprofit access • Platform impact: Built redistricting system serving **12,847** analysts across 89 organizations • Real-time collaboration at national scale • Predictive excellence: Utilized advanced sampling methods to decrease survey margin of error from **±4.2%** to **±2.1%** • Increased voter turnout prediction accuracy from **71%** to **87%** • Executive authority: Briefed Presidents, Congressmen, Senators, Governors on election integrity, voter sentiment and postmortem analysis

CORE COMPETENCIES

Programming and Development • Geospatial Technologies • Machine Learning & AI • Data Infrastructure • Cloud & DevOps

PROFESSIONAL EXPERIENCE

Siege Analytics | Partner - Austin, TX 2005 - Present

Data Science & Political Analytics

• Discovered systematic race coding errors affecting all Black and Asian-American voters, developed geospatial machine learning algorithms improving demographic classification accuracy from **23%** to **64%**

• Built redistricting platform used by thousands of analysts nationwide with real-time collaborative editing and Census integration

• Utilized advanced sampling methods to decrease survey margin of error from **±4.2%** to **±2.1%**, increasing voter turnout prediction accuracy from **71%** to **87%**, and ensuring survey results more closely reflected true population attitudes

• Trigonometric algorithm for boundary estimation reduced mapping costs by **73.5%**, saving campaigns and organizations **$4.7M** and enabling smaller nonprofits to conduct analysis

• Built real-time FEC analysis systems using Python, Pandas and PySpark to detect likely fraud, money laundering and financial crimes across billions of records daily, performing time series analysis on trillions of records in the political spending sub-economy valued over **$2** trillion

• Provided expert testimony and press briefings on electoral data integrity and demographic modeling accuracy

Helm/Murmuration | Data Products Manager - Austin, TX 2021 - 2023

Democratic Electoral Technology

• Led design and implementation of enterprise-scale multi-tenant data warehouse for geo-referenced demographic, econometric, and electoral data

• Managed engineering team of 11 professionals while setting technical direction for data architecture

• Modernized legacy ETL processes by implementing dbt and PySpark workflows, reducing processing time by **57%**

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GSD&M; | Analytics Supervisor - Austin, TX 2018 - 2019
Advertising Analytics

• Restructured the Decision Sciences Department to scale capabilities from small-scale data analysis to comprehensive big data operations

• Implemented spatial analysis and consumer segmentation methodologies that revealed new insights about existing customers

• Advanced Statistical and ML techniques for segmentation and behavioral clustering

Mautinoa Technologies | Software Engineer - Austin, TX 2016 - 2018
Software Development

• Conceived, architected and engineered econometric simulation software for humanitarian crises intervention measurement

• Liaised with data and engineering directors at multinational NGOs (UNICEF, IFRC)

• Geospatial analysis on populations and boundaries for impact assessment

Myers Research | Senior Analyst - Austin, TX 2012 - 2014
Political Research & Analysis

• Designed comprehensive survey instruments for specialized voting segments and niche markets

• Developed sophisticated analytical products and reports that delivered actionable insights to clients

• Co-developed a web application to manage all aspects of survey operations, from instrument design to data collection and analysis

PCCC | Research Director - Washington, DC August 2011 - August 2012
Political Research & Data Analysis (FLEEM System)

• Conceived, architected, and engineered FLEEM web application using Twilio API handling tens of thousands of simultaneous phone calls using emulated predictive dialer for regulated political surveys

• Developed IVR polling system for early quantitative research supporting Senators Martin Heinrich and Elizabeth Warren

• Built comprehensive tabular and graphical reporting system with Python, GeoDjango, PostGIS, and Apache webserver

Salsa Labs | Software Engineer - Washington, DC January 2011 - August 2011
Political Technology & CRM Systems

• Developed geospatial analysis and mapping tools for political CRM platform serving progressive campaigns nationwide

• Built database integration systems connecting voter files with campaign management tools

• Created automated data processing pipelines for voter contact and engagement optimization

The Praxis Project | Interim Technology Manager - Washington, DC April 2009 - October 2009
Public Health Technology

• Managed technology infrastructure for public health advocacy organization

• Developed database systems for tracking policy initiatives and outcomes

• Implemented CRM systems for stakeholder engagement and outreach

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Lake Research Partners | Programmer - Austin, TX 2008
Political Polling & Research

- Designed questionnaires and analyzed data for complex market research studies across diverse industries
- Conducted statistical modeling and analysis to address multifaceted consumer behavior questions
- Pioneered the integration of advanced mapping techniques into standard reports, including choropleths and hexagonal grid maps

The Feldman Group | Field Director - Austin, TX 2011 - 2012
Political Campaign Management

- Managed all aspects of survey fielding for a multi-million dollar research firm, including scheduling, oversight, sampling, and quality control
- Developed and implemented data warehousing solutions for efficient storage and retrieval of research findings
- Created custom reports and data visualizations based on specific client requirements

KEY PROJECTS

National Redistricting Platform

About: Cloud-based GeoDjango platform for redistricting analysis with real-time collaborative editing and Census integration, used by thousands of analysts nationwide during 2021 redistricting cycle

Technologies: GeoDjango, PostGIS, AWS, Docker, React, Python, Redis

Impact: Reduced mapping costs by 73.5%, saving organizations $4.7M in operational expenses. Served 12,847 analysts across 89 organizations.

FLEEM Political Polling System

About: Web application using Twilio API for regulated political surveys, handling tens of thousands of simultaneous calls with predictive dialer functionality

Technologies: Twilio API, Python, Django, PostgreSQL, JavaScript, Apache

Impact: Saved PAC $840,000 annually in polling costs while significantly improving data collection efficiency

Geospatial Demographic Classification System

About: Machine learning platform for demographic analysis that discovered systematic coding errors and improved classification accuracy from 23% to 64%

Technologies: Python, Scikit-learn, PostGIS, GeoPandas, TensorFlow, AWS

Impact: Corrected demographic data affecting all Black and Asian-American voters, improved electoral prediction accuracy by 22%

Civic Graph Multi-Tenant Data Warehouse (2013 - 2016)

About: Multi-tenant data warehouse harmonizing polling data from tens of polling and mail firms with different methodologies and encoding systems

Technologies: Python, PostgreSQL, PostGIS, ETL Pipelines, Data Standardization, Meta-Analysis

Impact: Created $1B+ dataset that became foundation for modern electoral analytics, serving tens of polling and mail firms with different methodologies

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High-Performance Geospatial Tile Server

About: Custom tile server for Web Map Service integration enabling interactive visualization of CRM and Census data

Technologies: GeoTools, OpenLayers, Java, MySQL, TileMill, JavaScript

Impact: Improved contact rates by 53% and segmentation accuracy by 88% through enhanced data visualization

TECHNICAL SKILLS

PROGRAMMING AND DEVELOPMENT *Python* (15+ years: NumPy, Pandas, Scikit-learn, TensorFlow, Django, Flask, GeoPandas, Asyncio); *R* (12+ years: Statistical modeling, ggplot2, dplyr, spatial packages (sf, sp), Shiny); *SQL/PostGIS* (15+ years: PostgreSQL/PostGIS, MySQL, complex spatial queries, optimization, database design); *JavaScript* (10+ years: React, D3.js, OpenLayers, Node.js, real-time applications, WebSockets); *Java* (8+ years: Enterprise applications, Spring framework, geospatial libraries (GeoTools)); *Other Technologies* (Shell scripting, Git, Docker, Kubernetes, infrastructure as code)

GEOSPATIAL TECHNOLOGIES *Databases* (PostGIS, SpatiaLite, MongoDB with geospatial extensions); *Analysis Tools* (GDAL/OGR, QGIS, ArcGIS, spatial indexing, coordinate transformations); *Web Mapping* (OpenLayers, Leaflet, Mapbox GL JS, custom tile servers, WMS/WFS); *Processing* (GeoPandas, Shapely, Fiona, rasterio, spatial ETL pipelines)

MACHINE LEARNING & AI *ML Frameworks* (Scikit-learn, TensorFlow, PyTorch, XGBoost, LightGBM); *Geospatial ML* (Spatial feature engineering, geographically weighted regression, spatial clustering); *Techniques* (Classification, regression, ensemble methods, time series, NLP, computer vision); *Validation* (Cross-validation, A/B testing, statistical significance, model interpretability)

DATA INFRASTRUCTURE *Processing* (Apache Spark, PySpark, Dask, parallel computing, distributed systems); *Pipelines* (Airflow, dbt, ETL design, data quality monitoring, automated testing); *Storage* (Data warehousing, data lakes, columnar storage (Parquet), data modeling); *Streaming* (Kafka, Redis, real-time processing, event-driven architecture)

CLOUD & DEVOPS *AWS* (EC2, RDS, S3, Lambda, CloudFormation, Auto Scaling, Load Balancing); *Containerization* (Docker, Kubernetes, container orchestration, microservices); *Monitoring* (CloudWatch, Prometheus, Grafana, application performance monitoring); *CI/CD* (Jenkins, GitHub Actions, automated testing, deployment pipelines)