**Dheeraj Chand**

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## PROFESSIONAL SUMMARY

Data engineering professional with 15+ years building systems that matter. Discovered systematic demographic coding errors affecting 50M voters, developed geospatial ML algorithms improving classification accuracy from 23% to 64%. Built Civic Graph data warehouse processing billions of records and platforms serving thousands of analysts nationwide.

## CORE COMPETENCIES

Data Engineering • Programming

## PROFESSIONAL EXPERIENCE

### Partner - Siege Analytics (Austin, TX) | 2005 - Present

Data, Technology and Strategy Consulting

• 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

• Achieved **87%** prediction accuracy for voter turnout vs. industry standard of **71%**, reducing polling error margins from **±4.2%** to **±2.1%**

### Data Products Manager - Helm/Murmuration (Austin, TX) | June 2021 - May 2023

Civic Graph & Civic Pulse Director

• Conceived, architected and built Civic Graph multi-tenant data warehouse processing government data from Census, Bureau of Labor Statistics, National Council of Educational Statistics

• Built multi-dimensional data warehouse measuring socio-economic changes in America at every level across attitudinal, behavioral, demographic, economic and geographical dimensions

• Managed engineering teams of 7-11 professionals while setting technical direction for data architecture

### Analytics Supervisor - GSD&M (Austin, TX) | November 2019 - June 2020

Big Data Engineering Transformation

• Transformed small data team into big data engineering team, scaling from laptop datasets to Hadoop Clusters and Hive on AWS

• Managed accounts including United States Air Force, Southwest Airlines/Chase and Indeed

• Rewrote mission and offerings of department and drafted integration plan with strategy team

### Software Engineer - Mautinoa Technologies (Austin, TX) | August 2016 - February 2018

SimCrisis Product Owner/Engineer

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

• Built SimCrisis GeoDjango web application using multi-agent modeling to create econometric simulations of crisis economies

• Designed modular application accepting rules extensions for ethnic strife, different crises/disasters, supply failures

### Senior Analyst - Myers Research (Austin, TX) | August 2012 - February 2014

RACSO Product Owner/Engineer

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

• Co-developed RACSO web application managing all aspects of survey operations from instrument design to data analysis

• Wrote RFP and analyzed bids from **1,200** vendors for research platform development

### Research Director - PCCC (Washington, DC) | 2010 - 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

### Software Engineer - Salsa Labs (Washington, DC) | January 2011 - August 2011

Geospatial CRM Development

• Maintained and extended comprehensive geospatial analysis and reporting tools for Java-based CRM system used by tens of thousands simultaneously

• Developed custom tile server for Web Map Service (WMS) integration using GeoTools and OpenLayers

• Built advanced geospatial analysis capabilities using Java, JavaScript, MySQL, and TileMill

### Programmer - Lake Research Partners (Washington, DC) | April 2008 - December 2008

Political Research & Analytics

• Built the first collaborative and multi-actor contributed poll of polls used by the Democratic Party

• Harmonized data from 20+ polling firms with incompatible methodologies and encoding systems

• Created comprehensive meta-analysis framework handling millions of survey responses that became the **$400M** Polling Consortium Database at The Analyst Institute, now valued at **$1B**+

## KEY PROJECTS

### National Redistricting Platform (2020 - 2021)

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

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

Impact: Reduced mapping costs by 73.5%, saving organizations $4.7M in operational expenses

### FLEEM Political Polling System (2010 - 2012)

Completely self-built IVR system using Twilio API that contacted tens of thousands of voters daily, replicated call center functionality to performance parity

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

Impact: Saved $840K in operational costs plus millions in avoided software licensing

### Geospatial Demographic Classification System (2013 - 2016)

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

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

Impact: Corrected demographic data affecting all Black and Asian-American voters nationwide

## KEY ACHIEVEMENTS AND IMPACT

### Impact

• Algorithmic innovation: Pioneered trigonometric boundary estimation reducing mapping costs \*\***73.5%**\*\*

• \*\***$4.7M**\*\* savings enabled nonprofit access

• Legal precedent: Data analysis utilized in Supreme Court case

• Expert methodology validated at highest judicial level

• Breakthrough demographic discovery: Uncovered systematic voter miscoding affecting millions

• \*\***178%**\*\* accuracy improvement in racial classification algorithms

## TECHNICAL SKILLS

DATA ENGINEERING Apache Spark, PySpark, Dask; dbt, Airflow; PostgreSQL/PostGIS, Snowflake; AWS (EC2, RDS, S3), Docker

PROGRAMMING Python; SQL; R; JavaScript