

# ADITYA GARG

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KEY SKILLS : Machine Learning, Time Series Modeling, Causal Inference, Geospatial Optimization, Applied Generative AI (LLM), Python, SQL, HTML, CSS, Spark, TensorFlow, Langchain, Docker, Airflow, Git

## EDUCATION

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| <b>Columbia University, Fu Foundation School of Engineering and Applied Science</b><br><i>Master of Science in Data Science</i><br>• Algorithms, Statistical Modeling, Machine Learning, Natural Language Processing, Neural Networks and Deep Learning | <b>New York, NY</b><br>Dec 2017   |
| <b>Indian Institute of Technology Roorkee</b><br><i>Bachelor of Technology</i><br>• Courses: Computer Systems and Programming, Data Structure, Linear Algebra, Calculus, Geoinformatics   | <b>Roorkee, India</b><br>May 2014 |

## EXPERIENCE

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| <b>Tesla</b><br><i>Staff Data Scientist, Charging Data and Modeling</i><br>• <b>Tech lead</b> : Led development of all modeling products and services for network planning as technical lead, directing a team of 4 data scientists and interns.<br>• <b>Time series / Machine Learning</b> : Developed a demand forecasting and capacity planning framework for supercharger network - leveraging time-series modeling, supervised regression, and unsupervised clustering models. Directly responsible for allocating an annual budget of ~\$1billion and reducing network congestion to ~1%.<br>• <b>Optimization</b> : Developed a geospatial optimization model for recommending charging infrastructure locations globally leveraging large scale telemetry and open source data used to optimize \$150 million annual budget<br>• <b>Simulation</b> : Built a network and traffic simulation model to study impact of vehicle design and charging infrastructure changes on travel patterns and customer experience.<br>• <b>Causal Analysis / Experimentation</b> : Causal analysis framework using Bayesian structural time series model for measuring the impact of a treatment (new feature / infrastructure / pricing) on network and customer charging behavior.<br>• <b>Evaluation Frameworks / APIs</b> : Developed model evaluation tools and dockerized APIs for downstream planning applications used by several hundred site developers and executives.<br>• <b>Cross Collaboration</b> : Led end to end implementation of data modeling services, collaborating with cross functional teams, from firmware implementation and fleet data ingestion pipelines to data modeling and tool development. | <b>Palo Alto, CA</b><br>Mar 2018 - Present     |
| <b>United Nations DPKO</b><br><i>Data Science Intern</i><br>• <b>Geospatial Analysis / NLP</b> : Integrated, visualized, and analyzed geospatial and unstructured text data to generate actionable insights on conflicts and fatalities for the Department of Peacekeeping Operations.  | <b>New York, NY</b><br>Oct 2017 - Dec 2017     |
| <b>IBM Research</b><br><i>Data Science Intern (IBM Social Good Fellow)</i><br>• <b>NLP / Classification</b> : Used natural language processing and machine learning to extract semantic, lexical and personality features from raw text, perform topic modeling, detect biases, and develop an automated grader and classifier.   | <b>Yorktown, NY</b><br>May 2017- Aug 2017      |
| <b>NASA Goddard Institute for Space Studies</b><br><i>Research Assistant</i><br>• <b>Machine Learning</b> : Developed statistical methods to determine global trends and predictability of forest fire activity based on climatic conditions using satellite and climate data.  | <b>New York, NY</b><br>Sep 2016 - Dec 2016     |
| <b>Flipkart Internet Private Limited</b><br><i>Data Scientist, Demand Modeling and Shaping</i><br>• Identified key pricing factors to develop demand forecasting models and a price indexing mechanism.<br>• Developed product clustering models to evaluate cross-product price elasticity and internal cannibalization.   | <b>Bangalore, India</b><br>Jun 2014 - Jun 2016 |

## PROJECTS

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|--|---------------------------|
| <b>Retrieval Augmented Generation (RAG) with a Large Language Model (LLM)</b><br>• <b>Generative AI / NLP</b> : Developed an interactive contextual answering tool - integrating document parsing and indexing, an embedded vector knowledge database, query expansion for enhanced retrieval, and open source LLMs. | <i>Jan 2024 - Present</i> |
| <b>Intelligent Building Management System, Smart-X Group, CCLS</b><br>• <b>Time Series / Deep Learning</b> : Developed an energy forecast model using a LSTM-based deep recurrent neural network for integrating into the smart building energy optimization system  | <i>Sep 2017- Nov 2017</i> |

## PUBLICATIONS / TALKS

- [Data Science from First Principles](#) : Nordic Data Science and Machine Learning Summit 2023
- [Demystifying Social Entrepreneurship](#) : An NLP based approach to finding a social good fellow, DSSG Chicago