

ANSHUMAN A. KUMAR

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📍 Cambridge, Massachusetts

Data Science professional with 10 years of experience in machine learning, big data technologies, mathematical modeling, and business analytics to drive product innovation, revenue growth, and cost reduction

Work Experience

Akamai Technologies

Principal Data Scientist

2024-Present

- Owning ML and AI initiatives for product recommendations, customer behavior modeling, and marketing data science, to drive Akamai's Go-To-Market strategy, with a focus on cross-functional alignment
- Overseeing development of ML solutions end-to-end, from data ingestion to production deployment, while overseeing on-prem infrastructure, ML tooling, CI/CD workflows, and release management
- Leading a globally distributed team of 4 data scientists, providing technical guidance, managing team's project delivery & stakeholder alignment, and supporting the team's technical mentorship & career development

Key Project: Agentic workflows for Customer Journey Optimization & Insights Narration

- Conceptualizing and prototyping a multi-agent AI system, integrating generative models, reinforcement learning, and traditional ML to automate lead generation, contact enrichment, and personalized marketing creative generation
- Developing an AI-powered Insights Narrator, that translates complex SQL, BI reports, and business KPIs into real-time natural language insights for stakeholders, in an effort to reduce time-to-insight and minimize manual analytics
- Building topic-level intent segments by summarizing content engagement across customer interactions with LLMs and generating embeddings for clustering and sentiment analysis, for refining product messaging

Key Project: ML and Behavioral Modeling to drive Product-Led Growth for Akamai's Cloud Business

- Mentored a data scientist in building a predictive lead scoring system using LightGBM based on 7-day usage behavior; with model achieving 78% recall in flagging high-MRR accounts (\$500+) for Sales routing
- Led development of an unsupervised segmentation model, incorporating product usage, firmographics, and RFM features; identified 9 actionable customer segments for targeted marketing and in-app notifications
- Clustered top-performing segments by usage sequence patterns and applied Heuristic Miner process mining algorithm to uncover adoption flows; insights are shaping gamification strategies for product engagement
- Mentored a junior data scientist in designing a causal inference framework (case-control analysis) using observational data to assess campaign effectiveness and deliver post-hoc ROI insights in the absence of A/B testing
- Led development of a Nested Multinomial Logit Discrete Choice Model in collaboration with two data scientists, using panel data to support product bundling strategy decisions

Lead Data Scientist

2022-2024

Key Project: New Customer Fit Modeling and B2B Product Recommendation Models

- Enhanced Akamai's new customer acquisition strategy and prospecting efforts by building propensity-to-buy models using a stacked ensemble of random forest and gradient boosted machines in H2O.ai
- Led development of a white space analysis incorporating propensity-to-buy, intent-to-buy, and purchase wallet size to improve cross-sell and upsell initiatives by Marketers & Account Executives

Key Project: Journey-based Marketing Mix Modeling (MMM) for Channel optimization

- Implemented a novel MMM framework using Double Machine Learning (DML) to estimate causal-effects of different marketing channels (concurrent multi-valued treatments), within B2B journey stages
- Applied Principal Component Analysis (PCA) to handle cross-channel correlations, to generate uncorrelated shared marketing factors for causal estimation using DML

- Utilized DML's partial linear model, a multi-output random forest regression model, and an inverse PCA transform to estimate the causal effects of marketing channels with cross-channel interactions
- Implemented modular, production-grade ETL pipelines using Hamilton to orchestrate feature transformations for MMM, enabling clear dependency tracking, reproducibility, and scalable DAG-based execution
- Spearheaded cross-team data acquisition across Organic/Paid/Offline media channels for MMM modeling
- Standardized marketing taxonomy and spend reconciliation with Finance teams for MMM modeling
- Collaborated with BI team to build a journey-based analytics dashboard, leveraging MMM datasets, to provide marketers insights about touchpoint effectiveness across the lead-to-deal funnel
- Guided a junior data scientist in applying sequence clustering and process mining techniques to discover common marketing journey patterns, helping Marketing design recipes for personalization

Senior Data Scientist

2017-2022

- Built a novel anomaly detection algorithm using isolation forest and ESD test to pro-actively monitor KPIs for detecting high-level customer incidents caused by software rollouts
- Diagnosed factors that affect video delivery over the internet (OTT) by observing patterns between Akamai's network metrics using inferential statistics
- Assembled large volumes of unstructured data in Spark to prototype an anomaly detection framework
- Collaborated with a team of data scientists to construct a correlation engine based on graph theory to identify root-causes of performance degradation within a network of servers

Data Scientist

2015-2017

- Applied a Bayesian model to dynamically update sales-quota targets as a part of Akamai's operating plan
- Constructed a hierarchical mixed-effects Bayesian model to measure customer loyalty and NPS score
- Automated reports derived from disparate datasets that measure adoption rates for internal website portal
- Designed a graph database application to optimize storage mechanism of hierarchical firmographic data
- Performed data forensics and detected gaps in invoicing systems, product configurations, and contractual structures that led to the recovery of unaccounted revenue close to \$500K

Education

University at Buffalo, The State University of New York

2015

Master of Science, Industrial Engineering (with specialization in Operations Research)

Alpha Pi Mu, Industrial Engineering Honor Society, Omega Rho Honors Society

GPA: 3.95/4.00

Publications

- A. Kumar et al. "Inferring origin-destination pairs and utility-based travel preferences of shared mobility system users in a multi-modal environment," Transportation Research Part B, 2016, 91(C):270-291
- A. Kumar et al. "Life Cycle Cost Analysis of Ready Mix Concrete Plant," Journal of The Institution of Engineers Series A, 2014, 94(2):229-233

Skills

- **Languages:** Python, R, SQL, JavaScript, TypeScript
- **Tools:** Docker, Kubernetes, Git, Jenkins
- **Databases:** MySQL, PostgreSQL, MongoDB
- **Cloud Platforms:** AWS, Azure