

Harsh Anand

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Data Scientist and Researcher with 8+ years leading and delivering advanced analytical solutions for global clients.

EDUCATION

University of Virginia, USA PhD in Systems Engineering (<i>Data Science and Operations Research concentration</i>)	May 2021 - May 2024 GPA: 4.0/ 4.0
Pennsylvania State University, USA MS in Data Science and Analytics; <i>Graduated Valedictorian with Outstanding Student Award</i>	Aug 2019 - May 2021 GPA: 4.0/ 4.0
Manipal University, India BS in Information Technology (<i>Computer Science concentration</i>)	Jun 2011 - May 2015 GPA: 3.67/ 4.0

PROFESSIONAL EXPERIENCE

Doctoral Researcher and Project Leader - University of Virginia, Virginia, USA	May 2021 - Present
<ul style="list-style-type: none">Led design and implementation of spatio-temporal predictive models (GCN, LSTM, CNN) for <u>optimal data transmission and storage</u> in large-scale wireless sensor networks under uncertainties, resulting in over 75% reduction with 99% accuracy.Developed an innovative <u>multi-fidelity deep Q-learning algorithm</u> with an adaptive fidelity selection, achieving a 60% reduction in high-fidelity simulation needs and enhancing decision accuracy in complex environments.Utilized ML and causal inference methods to estimate <u>evacuation order effectiveness</u> using large-scale mobility patterns across multiple hurricanes. Collaborated with emergency management stakeholders to <u>enhance disaster response strategies</u>.Devised scalable, <u>high-resolution energy consumption forecasts</u> via online DL and graph neural networks approach.	
Graduate Researcher and Team Leader - Pennsylvania State University, Pennsylvania, USA	Nov 2019 - May 2021
<ul style="list-style-type: none">Directed 2-students to develop an optimization model for <u>multimodal freight transportation (critical infrastructure) resilience</u> under natural disaster disruptions, now deployed by Penn DOT for economic impact assessments.Developed a systematic framework to <u>model and analyze energy infrastructure resilience</u> considering economic impact.	
Data Science Intern - Swiss Re, New York, USA	Jun 2020 - Aug 2020
<ul style="list-style-type: none">Instituted <u>company-wide standard claims data dictionary</u>, subsequently coordinating with multiple stakeholders, resulting in a 25% reduction in data discrepancies and a 15% improvement in data processing efficiency.Designed and automated <u>reinsurance use-case frameworks</u> to explore and assess statistics, trends, and projections, over 2.2B transactions using machine learning, PySpark, and Foundry, yielding 30% faster analysis and 20% more accurate predictions.	
Senior Data Scientist - A.T. Kearney, Mumbai, India	Jan 2017 - Aug 2019
<ul style="list-style-type: none">Automated level 5 categorization of transaction line items for <u>spend analytics</u> using machine learning and a rules-based categorization approach, building on over 3M transactions across 12 countries and \$2B spend, achieving 98% accuracy.Engineered a hybrid decision tree and support vector machine algorithm for K12 <u>school evaluation and market research</u>.Devised and executed a <u>customer retention and migration strategy</u> for three years by building a track & trace model using linear and non-linear optimization over 200K customers and 70 products, improving retention rate by 30% over 3 years.Implemented an automated leased lines <u>inventory with a 12-month rolling forecast</u> and reported current value leakage, including quantification and <u>root cause analysis</u>, resulting in estimated savings of 10% of overall costs per annum.Designed enterprise data lake for <u>inventory management</u> on Hadoop by analyzing and evaluating multiple data sources and business data workflows, and presented commercial effective tableau dashboards to stakeholders, boosting efficiency by 20%.	
Machine Learning Engineer - TATA AI Research Lab, Kochi, India	Aug 2015 - Nov 2016
<ul style="list-style-type: none">Instituted <u>time-series forecasting models</u> for analyzing viewing patterns and anomaly detection in total viewership duration.Released <u>strategic intelligence dashboard</u> for PE clients to explore potential reach, impressions, and conversation size, mining critical real-time trending tweets using distributed platforms and <u>topic modeling</u>, enhancing engagement metrics by 15%.Improved <u>product matching</u> accuracy to 94% by devising a <u>graph-based solution</u> leveraging graph traversal algorithms.	

SKILLS

Data Science:	Machine/Deep Learning, Time Series Analysis, Sensitivity Analysis, Multi-Fidelity Modeling, Physics-Informed Modeling, Multivariate Regression and Classification, Decision Trees, SVM, Gaussian Process, NLP, Clustering, PCA, CNN, RNN, Generative Adversarial Networks, Graph Neural Networks, Reinforcement Learning, Transformers, Multi-Criteria Decision Making, Numerical Optimization, Linear Programming, Probabilistic Modeling, Risk and Resilience Assessment, Discrete Event Simulation, Agent-based Modeling, Large Language Models
Programming:	Python, R, SQL, Java
Development:	Spark (PySpark, Spark SQL), Hadoop, Snowflake, Redshift, Neo4j, CI/CD Jenkins
Project Management:	Strategy, Project Planning, Agile Development, Leadership, Problem Solving
Visualization/Cloud:	Power BI, Tableau, Excel, ArcGIS, Azure, Minitab, AWS, IBM Bluemix, Palantir Foundry

ADDITIONAL INFORMATION

Leadership: President – Graduate Engineering Student Council, VP of Projects – Graduate Consulting Club
Case Competitions: Winner (2020, 2021, 2022) - *INFORMS Operations Research Case*, Finalist - *Duke-UNC-TMC 2022*