Nikhil Vidhani

Lead Data Scientist, Target Corporation

Executive Summary

I am lead Data Scientist at Target Corporation, driving digital supply chain simulations for last-mile operations with a focus on order allocation and available-to-promise models. I excel at transforming complex business challenges into well-defined data models, leading a team through brainstorming, experimentation, and algorithm design to develop impactful solutions. Before Target, I led a data science team at WNS Global Services, delivering advanced machine learning and analytics solutions for finance and auditing functions. With deep expertise in Python, PySpark, R, SQL, machine learning, software engineering, and data pipeline design, I have a proven track record of optimizing workflows and enhancing operational efficiency. I hold a Ph.D. in Finance and Accounting, along with a master's in Engineering, and have presented my research at several international conferences.

Industry and Research Experience

2022– **Lead Data Scientist**, *Target Corporation, Bangalore*, Building end to end simulations for last mile operations: order allocation, available to promise, big-data pipelines; Understanding and decodifying ambiguous business problems into well-defined data relations and algorithms, highlighting gaps in understanding, and discovering potential impact; Leading product enhancements, releases, fixes, and code-reviews; Engage cross-functional teams in designing experiments and presenting our capabilities in deep-dives and floor-walks; Mentoring senior data scientists, and managing user queries and feedback.

2022–2022 **Sr. Group Manager (Data Science)**, *WNS Global Services, Bangalore*, Building F&A analytics/ML apps for payments, collections, reporting, prediction, and auditing functions; Maintaining codebase (github), APIs, automating deployment; Mentor junior team members and conduct knowledge-sharing sessions.

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2016–2021 **Research Scholar**, *Indian Institute of Management, Bangalore*, Extensively researched asset pricing anomalies, examined impact of disagreement on trading volume, analyst forecasts, and 10K document characteristics; Undertook comprehensive data collection, cleaning, modelling, and statistical analysis; Presented in several conferences. https://github.com/nik141088/phd-thesis-rmarkdown.

2018–2021 **Primary Instructor**, *Programming and Data Analysis*, Took multiple short/long courses on R programming, data analysis, and LaTeX; Instructor Rating: 4.7/5. https://github.com/nik141088/applied-R.

2012–2016 **Software Engineer**, *Cisco Systems, Bangalore*, Design, implement, test, review, and documentation of 4G-LTE and WiFi systems; High Availability/Redundancy architecture; Network security.

Major Projects

Target **Simulations Capability**, Led a team of three to design, implement, release, and maintain a simulation tool utilized by 40+ users across network planning, digital placements, store operations, and demand forecasting teams. Facilitated user interactions for designing experiments, customizing inputs, and configurations to analyze various supply chain scenarios and assessing their impacts. Created a framework for accuracy measurement. Optimized flow and data interactions to improve run-time by 30%.

Target **Promise Simulator**, Developed an Available-to-Promise (ATP) simulator from scratch, involving deep product/engineering discussions, algorithm design, interface design, data pipeline construction, automated deployment, and documentation. Conducted thorough testing and validation against actuals. Discovered early use cases impacting 3% of digital orders. Use cases span engineering, fulfillment optimization, and network planning teams.

Target **Logging Infra**, Engineered a post-mortem analysis tool to massively parallelize sequential tasks for quick output evaluation. Implemented detailed logging for granular scrutiny of allocation decisions. Used for multiple RCAs within team.

WNS **QA Analytics**, Highly configurable workflow tool designed to catch human errors in invoice indexing. Provides a one-stop solution for outlier and anomalous transaction detection. Single tool deployed for five different audit teams within WNS.

WNS **Excel-API**, ML solution built with h2o framework and deployed as a standalone zip through portable-R and plumber API. Helps controllers predict errors right from the comfort of excel. Increased audit error incidence by 20x.

Personal **Invoice Processing**, Deep Learning based tool to compare similar looking invoices. Multi-layer comparison based on image embeddings and OCR text. Can be used to boost data processor's efficiency and productivity. https://github.com/nik141088/invoice-processing.

IIMB **Factiva Download**, Developed robust web-scraping system for Dow Jones Factiva, handling failures and deduplication. Extracted and processed 25M+ articles for sentiment analysis using GPT2/DistilBERT, demonstrating advanced NLP and data handling skills. https://github.com/nik141088/factiva-download.

Tools and Skills

Advanced **Programming**, *Python, pyspark, hive, R, Shiny, C/C++, Kotlin/Java (basics).*

Advanced **Machine Learning**, *Regression, Classification, NLP, MLOps (basics), h2o, Deep Learning, Tensorflow, keras.*

Advanced **Design Principles**, *Data Structures, computational/space complexity, vectorization, functional programming, test-driven development, modular development, network security.*

Advanced **Solutioning**, *Problem solving, product development, charting solutions, impact discovery, strategic thinking.*

Advanced **Engineering**, *API, debugging, web-scrapping, Linux, code review, github, git, Databases, AWS, CI/CD.*

Advanced **Visualization and Documentation**, *ggplot, plotly, R Markdown, Latex, MS Office.*

Expert **Domain Knowledge**, *Last Mile Operations Research: available to promise and order allocation, Finance, Accounting, Statistics, Regression Analysis.*

Progressive **Leadership/Interpersonal**, *Mentoring, project scoping/planning/managing, stakeholder management, product leadership, team building, hiring/interviewing.*

Education

2016–2021 **Doctor of Philosophy**, *Finance and Accounting*, Indian Institute of Management, Bangalore.
- CGPA: 3.64 / 4.00

2010–2012 **Master of Engineering**, *Electrical Communication Engineering*, Indian Institute of Science, Bangalore.
- CGPA: 6.4 / 8.0; Project Grade: A

2006–2010 **Bachelor of Technology**, *Electronics and Communication Engg.*, Bundelkhand Institute of Engg. and Tech., Jhansi (U.P.).
- 73.6 %

2004–2006 **Schooling (12th Standard)**, *Science*, C.B.S.E..
- 88.2 %

Awards and Honors

2022 **Tech Genius, Transforming the Organization, Victory Fleet**, *WNS Global Services.*

2020 **Mirae Asset Scholarship (PhD Year 5)**, *Indian Institute of Management.*

2017–2018 **Director's Merit List (PhD Year 1 and 2)**, *Indian Institute of Management.*

2016 **96.5 percentile**, *Common Aptitute Test (CAT).*

2010 **All India Rank 20 out of 105,000 participants**, *Graduate Aptitude Test in Engineering (GATE).*

2006–2007 **Merit Scholarships**, *Intermediate Examination and Engineering.*

Publications and Conference Presentations

Sunny, A., Panchal, S., **Vidhani, N.**, Krishnasamy, S., Anand, S., Hegde, M., Kuri, J., & Kumar, A. (2017). ***A generic controller for managing TCP transfers in IEEE 802.11 infrastructure WLANs***. Journal of Network and Computer Applications, Vol 93, pp 13–26. DOI: `https://doi.org/10.1016/j.jnca.2017.05.006`.

Vidhani, N., (2022). ***Trading Volume and Dispersion of Signals***. SSRN: `https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3682088`.
Conferences: *International Conference on Derivatives and Capital Markets (2020), International Risk Management Conference (2020), Southern Finance Association (2020), Conference on Asia-Pacific Financial Markets (2020) Doctoral Consortium, World Finance and Banking Symposium (2020), Theories and Practices of Securities and Financial Markets (2020), 12th Emerging Market Finance Conference (2020), Southwestern Finance Association (2021), International Conference of the French Finance Association (2021), Hawaii Accounting Research Conference (2024), IIM Bangalore*

Krishnan, M., Rangan, S., & **Vidhani, N.**, (2021). ***Pricing of Earnings in the Pres-***

ence of Informed Trades: A Simple GMM Approach. SSRN: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3560147.
Conferences: *2015 NSE-NYU Conference, CAFRAL at RBI, IIM-Calcutta Finance Research Workshop, 3rd JAAF-India Conference, IIM Bangalore, IIT-Madras, IIT-Kharagpur, University of Washington*

Vidhani, N., (2022). ***Return Predictability using Price-to-Earnings Ratio***. SSRN: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3910641.
Conferences: *International Conference on Derivatives and Capital Markets (2021), World Finance and Banking Symposium (2021), India Finance Conference (2021), 15th NYCU International Finance Conference (2021), Asian Management Research and Case Conference (2022)*