Nishan Shetty MS, MBA

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SUMMARY

Data and AI professional with hands-on, end-to-end experience building machine learning and LLM-based solutions, partnering with stakeholders to turn business problems into scalable systems that drive measurable impact.

EDUCATION

Master of Business Administration, Population Health Management — *Ottawa University (May 2024)*

Master of Science, Industrial Engineering — *Arizona State University (May 2019)*

CERTIFICATIONS

AZ-900, Microsoft Azure Fundamentals

NVIDIA-Certified Associate, Generative AI LLMs

AWS, Certified Machine Learning – Specialty

Databricks, Machine Learning Engineer – Associate

SKILLS

Programming Languages: Python | SQL | R

Analytics & Modeling: Experimentation Design | Financial Modeling | Regression | Classification | Clustering | Risk Scoring | Anomaly Detection | Bayesian Inference | Predictive Modeling | A/B Testing | Optimization | Scenario Planning | Causal Inference | Time Series Forecasting | LTV Modeling

Data Science & AI: Geospatial Analytics | Deep Learning | Retrieval-Augmented Generation | Generative AI | LLMs | Random Forest | Graph Models | Deep Neural Networks | Transformers | NLP | Recommender Systems | Agent-Based Simulation | Model Context Protocol (MCP)

Tools & Platforms: FastAPI | Databricks | Tableau | Power BI | Spark | LangChain | Git | CI/CD | OpenCV | PyTorch | TensorFlow | MLFlow | Airflow | Keras | Bedrock | Elastic | FAISS

Communication & Leadership: Jira | Confluence | Stakeholder alignment | Agile & cross-functional collaboration | Omnichannel Analytics

WORK EXPERIENCE

Data Science Manager — *December 2018 – Present*

Southwest Medical Imaging, Arizona

Advanced Analytics & Decision Support

- Built predictive, risk-scoring, and causal inference models across outpatient imaging, claims, scheduling, referral, revenue-cycle, and clinical documentation data to improve care delivery, operational efficiency, and financial outcomes.
- Conducted A/B testing and causal analysis to evaluate workflow changes, targeted outreach, scheduling policies, and operational interventions.

Predictive Modeling, Validation & AI

- Developed production time-series forecasting models (ARIMA, LSTM, hybrid ensembles) on AWS SageMaker to predict claim volumes, cash flow, and denial risk across 25+ sites, improving forecast accuracy by 18% and enabling proactive revenue planning
- Built GenAI and RAG solutions for summarizing clinical documentation, extracting structured insights from radiology reports, and integrating LangChain, OpenAI APIs, and AWS Bedrock into secure cloud workflows
- Validated predictive models using holdout testing, calibration checks, feature importance, error analysis, and subgroup performance review to support interpretability, fairness monitoring, and stakeholder trust in healthcare workflows.

Data Engineering, Automation & BI

- Engineered scalable data and ML pipelines using Python, SQL, Databricks, Spark, Snowflake, Airflow, and AWS/Azure services for ingestion, transformation, model deployment, and recurring analytics delivery
- Developed CI/CD-driven MLOps workflows with Docker, MLflow, Git, SageMaker, Lambda, and Airflow, enabling monitoring, drift detection, retraining, and reproducible model lifecycle management.
- Partnered with BI developers and operational stakeholders to convert model outputs into Power BI/Tableau prototypes, dashboards, and decision-support workflows for technical and non-technical users.

Principal Data Scientist — *September 2018-September 2019*

eTrack Tech, Remote

- Built predictive maintenance and lifecycle simulation models across 10,000+ IoT-enabled assets, reducing fault-driven downtime by 22%.
- Used NLP to extract actionable insights from technician logs, automating root cause classification and integrating outputs into IoT workflows.

Graduate Research Assistant — *January 2018 - August 2018*

Mayo Clinic-Arizona State University Alliance, Arizona

- Performed exploratory analyses, collaborated with clinical researchers and IRB-aligned research protocols to ensure data use compliance and on predictive model evaluation, contributed to data visualization efforts for health services studies.
- Championed internal knowledge sharing through documentation, AI literacy sessions, and partnerships with academic collaborators.

PROJECTS

Tech Scheduling Optimization

- **Problem**: Staffing across 25+ imaging sites was inefficient due to varying technologist preferences, scanner coverage needs, and shift constraints.
- **Approach**: Designed a simulation and optimization framework (CP-SAT, genetic algorithms, SimPy) orchestrated on AWS Batch with workflow automation through AWS Step Functions. Built an interactive FastAPI interface for leadership to run what-if scheduling scenarios and policy experiments.
- **Impact**: Improved staffing efficiency by 35%, reduced scheduling conflicts, and enabled dynamic decision support for planners across all sites. Built scenario simulation frameworks enabling leadership to evaluate operational and financial impact of staffing, policy, and demand fluctuations

Accounts Receivable & Claim Denial Forecasting

- **Problem**: High claim-denial rates and unpredictable A/R aging caused revenue leakage.
- **Approach**: Developed forecasting (ARIMA, LSTM) and financial risk models on AWS SageMaker, using Lambda triggers for nightly retraining and S3-based feature storage. Integrated predictions into Snowflake dashboards used by revenue-cycle and finance teams.
- **Impact**: Reduced reprocessing costs by 77%, lowered claim denials by 25%, reduced forecast error by 18%, improved financial planning accuracy, and enabled scenario-based revenue forecasting

Incidental Findings Follow-up Agent (LLM + RAG)

- **Problem**: Manual tracking of incidental findings in radiology reports led to missed follow-ups and compliance risk.
- **Approach**: Built a LangChain-based RAG agent deployed through AWS SageMaker endpoints, leveraging Bedrock for LLM inference and DynamoDB for retrieval indexing. Integrated with follow-up scheduling and compliance systems via secure APIs.
- **Impact**: Increased follow-up compliance by 30%, reduced manual review effort by 45%, and improved client safety outcomes.

Client & Provider Segmentation Platform

- **Problem**: Outreach and marketing campaigns across 25+ imaging sites were generic and underperforming, with limited insight into which interventions actually improved client engagement or provider scheduling behavior.
- **Approach**: Built a unified segmentation and experimentation framework using A/B testing, uplift modeling, and causal inference to measure the true impact of operational and marketing changes.
    - Developed client and provider segmentation models (K-Means, hierarchical clustering, PCA feature extraction) using historical visit patterns, referral data, and engagement behavior.
    - Implemented recommender systems to personalize outreach messaging, appointment reminders, and follow-up timing.
    - Automated experiment tracking with AWS SageMaker + Lambda, logging results to S3 + QuickSight dashboards for real-time analysis.
- **Impact**: Improved campaign ROI by 25%, increased client retention rates, and provided leadership with statistically valid evidence for operational policy adjustments across all sites.

Case Identification for Post-Conviction Innocence

- **Problem**: Attorneys and analysts faced massive manual effort identifying potential wrongful-conviction cases.
- **Approach**: Developed a secure NLP-driven retrieval and classification system on Azure Machine Learning and Azure AI Search, using entity extraction, semantic similarity, and topic modeling to rank cases by exoneration likelihood. Data and embeddings were stored in Azure Blob Storage.
- **Impact**: Reduced manual review time by 60%, surfaced high-potential exoneration candidates, and supported data-driven justice reform initiatives.