

# Tharun Kumar Reddy Byreddy

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## PROFESSIONAL SUMMARY

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Data scientist with 3+ years building production ML systems and statistical models. Experienced translating business problems into technical solutions using Python, SQL, and statistical methods. Strong background in time-series forecasting, NLP, and optimization algorithms. Comfortable across the full ML pipeline from data engineering through deployment and monitoring.

## TECHNICAL SKILLS

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**Languages & Databases:** Python (NumPy, Pandas, scikit-learn), SQL, R, PostgreSQL, MySQL

**ML & Deep Learning:** TensorFlow, Keras, PyTorch, scikit-learn, XGBoost, LSTM, Transformers, ensemble methods

**Statistical Analysis:** Hypothesis testing, A/B testing, probability, regression analysis, causal inference, experimental design

**NLP & Time-Series:** Word embeddings, text classification, ARIMA, Prophet, LSTM forecasting, anomaly detection

**Generative AI:** LLMs, RAG systems, semantic search, prompt engineering, vector embeddings

**Cloud & Big Data:** AWS (SageMaker, S3), GCP (BigQuery), Apache Spark, Airflow

**DevOps & BI:** Docker, Kubernetes, git, Power BI, Tableau, Jupyter notebooks

## PROFESSIONAL EXPERIENCE

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### Data Scientist

Sep 2024 – Present

AT&T

San Francisco, CA

- Developed **pricing optimization models** using stochastic methods. Integrated into production systems generating measurable business impact through improved pricing decisions.
- Built **semantic search system** combining LLMs with operational data using RAG architecture. Reduces search time from hours to minutes enabling information discovery without SQL expertise.
- Set up **ML monitoring dashboards** with drift detection and data quality alerts. Tracks performance and enables quick response to system issues.
- Conducted **A/B tests** on algorithms analyzing statistical significance and providing deployment recommendations.
- Deployed models to production serving 500K+ daily API calls with 99.9% uptime ensuring reliability at scale.

### Research Data Scientist

Sep 2023 – Aug 2024

Stanford University, School of Medicine

Redwood City, CA

- Developed **classification models** using TensorFlow and PyTorch, applying causal inference. Achieved strong validation performance, contributing to research publications.
- Built **natural language search tool** for researchers to query medical literature using transformer embeddings. Eliminated the SQL expertise requirement, reducing manual search time significantly.
- Processed **large-scale biomedical data** using GCP setting up reproducible workflows enabling team independence.
- Mentored 3 junior researchers on ML best practices and guided them through model development and evaluation processes.

### Data Analyst

Jan 2022 – Jul 2022

LTIMindtree

Hyderabad, India

- Developed **ML models** to detect operational anomalies using scikit-learn and XGBoost. Successfully flagged issues early for prevention and cost reduction.
- Created **ETL pipelines** with Apache Spark processing daily datasets at scale maintaining 99%+ data accuracy.
- Collaborated with business teams delivering analytics solutions and **dashboards in Power BI and Tableau**.
- Trained cross-functional teams on data analysis techniques and best practices for tracking operational metrics.

## KEY PROJECTS

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**Pricing Optimization:** Developed stochastic optimization models for dynamic pricing integrated into production systems. Designed A/B tests to measure business impact showing consistent improvements. Results demonstrated revenue optimization and gains in pricing accuracy. Implemented mathematical algorithms handling millions of pricing decisions daily across product lines.

**Semantic Search with LLMs:** Built a search system using large language models and vector embeddings with RAG architecture. Deployed production system reducing search time from hours to minutes. Enabled non-technical users to access data without SQL knowledge improving accessibility. Leveraged semantic matching enabling natural language queries on structured & unstructured data.

**Multi-Agent AI Framework:** Implemented multi-agent systems with state management and tool integration for task execution. Improved task completion accuracy on complex multi-step problems. Sophisticated reasoning and error handling enabled autonomous decision-making reducing manual overhead. Integrated multiple specialized agents coordinating to solve business workflows.

**Time-Series Forecasting:** Built models combining LSTM networks with statistical methods for operational metrics prediction. Implemented anomaly detection achieving high accuracy on typical and edge cases. System helps teams anticipate issues and plan capacity allocation proactively. Processed time-series data with seasonality and trend analysis for accurate forecasting.

**NLP Document Search:** Implemented transformer embeddings and semantic search for document retrieval and discovery. Deployed system achieving good recall and precision on diverse documents. Enables teams to find relevant info at scale without manual searching. Built information retrieval pipelines supporting cross-document similarity and relationship discovery.

## EDUCATION

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**M.S. Statistical Data Science**

San Francisco State University, 2024 — GPA: 3.77/4.00

**Coursework:** Statistical Analysis, Machine Learning, Deep Learning, Time-Series Analysis, Causal Inference, Bayesian Methods