

# Abhijit Deshpande

BUSINESS ANALYST

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## Experience

### Charter Communication

St. Louis, MO

BUSINESS ANALYST (CONTRACT)

Apr 2024 - Present

- Developed a predictive **churn model** to identify high-risk and high-value mobile customers, enabling targeted retention strategies and reducing churn through personalized offers and priority service.
- Conducted feature selection using RFE, Lasso, and Random Forest to identify the most influential variables, complemented by significance testing **Two-sample t-tests** and **Chi-Squared tests**, achieving **63% recall and 65% ROC AUC**.
- Effectively communicated the model's results to stakeholders, highlighting churn drivers and enabling data-driven decisions to reduce attrition.

### Technology Credit Union

San Jose, CA

BUSINESS ANALYST (CONTRACT)

Mar 2023 - Apr 2024

- Developed a predictive model to assess borrower risk, enhancing loan default prediction and enabling more informed credit decisions.
- Leveraged **Days Past Due (DPD)** across EMLs to label data and engineered features like roll rate and window roll analysis, optimizing model performance through hyperparameter tuning.
- Achieved an **AUC of 0.85**, developed a threshold optimization framework to limit **NPA's to 2%**, and enhanced portfolio quality by identifying creditworthy borrowers through risk-based score segmentation.

### University of Texas Arlington

Arlington, TX

RESEARCH ASSISTANT

Jan 2021 - Mar 2023

- Engineered an **attention-based LSTM transformer encoder** architecture for **financial market** signal forecasting.
- Developed a novel **data sampling strategy** that leverages dollar volume and event-based triggers to optimize data selection for financial market prediction models.
- Implemented a robust **risk management** framework using the Triple Barrier methodology to dynamically label signals, optimizing **trading positions** and significantly enhancing both **risk-adjusted returns** and overall profitability.
- Led the development and deployment of a neural network architecture in **PyTorch**, leveraging **Optuna for hyper-parameter** optimization. This resulted in a 60% reduction in training time and a **9%** increase in overall prediction accuracy.

## Skills

**Languages** Python, SQL, SAS, Git.

**Technology** Statistics, Neural Networks, Django, Linear Regression, XGBoost, Time Series Analysis, A/B Testing.

**Certifications** AWS Solution Architect, AWS Cloud Practitioner, Tableau Desktop Specialist, ML & Deep Learning Specialization.

## Projects

### Dynamic Price Optimization Using Elasticity of Demand

- Developed a price optimization model using **price elasticity of demand (EPD)** and **OLS regression** to identify optimal pricing strategies, leveraging sales data to provide real-time pricing recommendations that maximize revenue and improve customer retention.

### Pairwise Reviews Ranking and Classification for Ecommerce Application [NLP]

- Consumer purchasing decisions are significantly influenced by reviews. Quick, actionable insights are provided through the **pairwise ranking** of reviews by relevance, simplifying the decision-making process.

### Opioid Risk Prediction Model

- Partnered with **UT Southwestern Medical Center** to design and implement a machine learning model that identified **90% of high-risk individuals for opioid misuse**, enabling early intervention and targeted preventive care for those most likely to benefit.

### RFID Tag Performance Evaluation Across Various Mediums [SAS]

- Conducted **experimental design study** to assess RFID tag performance across three mediums (Air, Metal, Cardboard) and tag types (Universal, Mini, Hard). Applied factorial design and statistical analysis (**ANOVA, pairwise comparisons**) to identify key performance drivers.
- Transformed data to meet model assumptions for valid results. Found metal medium outperforms others, optimizing RFID tag efficiency.

## Education

### University of Texas at Arlington

Arlington, TX

MASTER OF SCIENCE IN INDUSTRIAL ENGINEERING, GPA: 3.9/4.0

May 2022

### Shivaji University

Kolhapur, MH, India

BACHELOR OF ENGINEERING IN MECHANICAL ENGINEERING, GPA: 3.3/4.0

May 2018

## Competitions

### A Novel Elastic Periodic Activation for Deep Neural Networks

- Contributed to the development of the PASS (**Parameterized Snake Swish**) activation function, boosting neural network performance for **time series forecasting** by capturing periodic and non-periodic components, enabling better extrapolation and pattern recognition.