Bilwa Khaparde

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EDUCATION

Master of Science in Business Analytics, Santa Clara University (*GPA: 3.84*) **Sept 2024 – Dec 2025**
Bachelor of Engineering in Mechanical Engineering, Cummins College of Engineering **May 2018**

TECHNICAL SKILLS

Machine Learning & AI: Regression, Classification, Clustering, Time Series, Causal Inference, A/B Testing, Feature Engineering
Natural Language Processing (NLP): Sentiment Analysis, Topic Modeling, Named Entity Recognition (NER), Text Classification, NLTK, VADER, LangChain
Deep Learning: Neural Networks, CNNs, RNNs, LSTMs, Transformers, TensorFlow, PyTorch, Keras
Data Visualization & BI: Tableau, Power BI, Looker, Google Analytics, Matplotlib, Seaborn, ggplot2
Programming: Python, R, SQL

EXPERIENCE

Business Analyst, Lexie **Oct 2021 – Jan 2022**
- Leveraged **Google Analytics** and social media insights to optimize campaigns, **increasing engagement by 40%.**
- Created data-driven marketing strategies using **A/B testing** and performance metrics tracking.

Data Analyst Intern, Fireblaze Technology Pvt. Ltd. **Nov 2021 – Jan 2022**
- Developed ML model for rental price prediction using **linear regression** and **gradient booster** in **Python**
- Conducted model training, validation and fine tuning to achieve an **85% accuracy** rate for rental price prediction
- Created a machine learning model for early detection of Parkinson's disease, utilizing **SVM** and **feature scaling**, achieving an **87% accuracy** rate.
- Conducted data cleaning, **feature engineering**, and statistical analysis using **pandas, NumPy, and scikit-learn**.

Brand and Marketing Analyst, Mayu **Jul 2019 – Dec 2019**
- Implemented market research analytics for strategic positioning, leading to brand visibility in Vogue India and Elle India.
- Managed campaigns, digital content strategy, and business expansion.

ACADEMIC PROJECTS

AI-Powered Retail Forecasting Practicum | Pluto 7 (Nike Use Case)
- Built a multi-agent AI system using **LangChain, LLMs (GPT-4/Gemini), and Random Forest models** using **Python** to forecast product demand and optimize inventory for Nike Air Force 1
- Designed and deployed a **multi-agent NLP pipeline (VADER, NLTK, LLMs)** to extract insights from 10K+ customer reviews, integrating macroeconomic data for predictive modeling.
- Trained and deployed predictive models (AUC: 0.74, Balanced Accuracy: 0.71) to estimate purchase likelihood and drive autonomous agent actions
- Automated end-to-end decision flow using **Google Sheets API triggers**, enabling real-time demand sensing and stock planning in a cloud-ready architecture

Ride-Hailing Optimization Project (Gurobi, Tableau, Python, Google Maps API)
- Developed an intelligent taxi dispatch system using **Gurobi** optimization and real NYC Yellow/Green Taxi data; modelled assignment of cabs to passengers to **maximize net profit and minimize wait time**, accounting for legal zone restrictions and capacity constraints
- Engineered a **multi-objective linear programming model** using **Python** with real-time constraints (e.g., green cab zones, cab capacity) and enriched the dataset with **Google Maps ETA and route-based cost estimates**
- Visualized optimized cab-to-rider assignments with **Folium maps and Tableau dashboards**, providing actionable insights into ride profitability, service efficiency, and zoning compliance
- Demonstrated real-world application of **operations research, API integration, and geospatial analytics** to urban mobility and platform-based service optimization

Nike Sales Dashboard

- Built an interactive **Tableau dashboard** to analyze Nike's product sales, segment performance, and regional trends, enabling data-driven insights for growth and merchandising strategies
- Integrated KPIs such as revenue, profit margin, product category performance, and geographic heat maps to support executive decision-making and targeted marketing initiatives
- Enhanced user interactivity with dynamic filters and visual drill-downs, improving stakeholder engagement and strategic reporting

SmartFood – Machine Learning Powered Food Recommendation Engine

- Developed a multi-model classifier (**Random Forest, XGBoost, LightGBM**) using **Python** to predict food processing levels with up to **96.9% accuracy**.
- Designed a **cosine similarity**-based recommender system balancing nutritional similarity, healthiness, and cost efficiency**.**
- Delivered impactful outcomes: **99.6% cost-effective** and **17.5% healthier** recommendations.

Sentiment Analysis of Apple Watch Reviews

- Pre-processed customer reviews using **R (tidyverse, dplyr, janitor)** with text-cleaning techniques.
- Applied **sentiment analysis (Bing, Afinn lexicons)** and **topic modelling** to extract key customer insights.
- Suggested enhancements like **stronger fitness features** and **value-driven pricing strategies** for better customer satisfaction.

Amazon India Product Analysis

- Leveraged **R (tidyverse, dplyr, tm, topicmodels, wordcloud)** for **data analysis and visualization** of product ratings and sales trends.
- Conducted **clustering & sentiment analysis** to identify pain points in low-rated products.
- Recommended **enhanced post-purchase services** and **same-day/15-min delivery** to improve customer satisfaction and market dominance.

Customer Segmentation for Perfumes and Cosmetics

- Used RStudio libraries such **as tidyverse, janitor, ggplot2, and lubridate** for effective analysis and visualization.
- Applied data transformations, including log scaling and zero-value adjustments, for robust clustering.
- Performed RFM analysis, hierarchical clustering and k-means segmentation using R. Enhanced customer targeting via actionable segments.

ACHIVEMENTS

Analytics Showdown Challenge (Casa Grata)

- **2nd Place Winner** Identified payment delinquency drivers, predicted disconnection risk, and benchmarked agent performance using real-world energy data from rural Colombia.

Fruit Sorting Machine (Patent No.109617)

- Designed Arduino-based lime sorting system. This project demonstrated a unique blend of engineering innovation and practical application, resulting in a **patented solution recognized for its ingenuity by the Government of India.**