Skills & What I've Been Learning

Stuti

Overview

- Over the past year, I've immersed myself in continuous learning across data science, machine learning, analytics, and technology.
- This journey has been about more than just upskilling - it's been about understanding how data and AI shape real-world impact.
- I've enjoyed turning curiosity into structure through articles, notes, and applied projects - and I'm now ready to bring that learning into practice.

Machine Learning & Artificial Intelligence

- **Interpretability in ML Models** - explored why models must be explainable and how to achieve this through SHAP and LIME.
- **Bias Prevention in AI** - studied fairness, bias detection, and ethical model design.
- **Maintaining ML Models in Production** - focused on deployment, monitoring, and long-term reliability.
- **Framing Questions & Choosing Models** - understood how well-defined questions guide the entire modelling process.

Data Science & Industry Applications

- **Risk Modelling** - data-driven techniques for assessing and predicting financial and operational risk.
- **Mathematical Modelling for Marketing** - applying quantitative methods to optimise campaigns and customer insights.
- **Innovations in HealthTech** - explored the impact of AI, wearables, and data analytics in healthcare.
- **FinTech vs. AdTech** - compared data practices and emerging opportunities in both industries.
- **Cross-Industry Understanding** - examined how data science is applied differently in finance, e-commerce, and health sectors.

Forecasting & Analytics

- **Time Series Forecasting** - from ARIMA and GARCH models to deep learning approaches.
- **Experimental Design & Data Collection** - ensuring data quality and robust experimentation.
- **Advancements in Analytics** - AI-driven decision-making, automation, and optimisation trends.
- **Data Interpretation** - communicating findings clearly and supporting evidence-based strategy.

Tech Trends & Development

- **Future of Big Data** - explored trends in real-time processing, AI-powered data management, and Data Mesh.
- **DevOps & MLOps Evolution** - studied integration of AI in modern DevOps pipelines.
- **Python App Development** - hands-on exploration of Flask, Django, Streamlit, and FastAPI.
- **Python Ecosystem** - discovered powerful built-in libraries and their practical use in automation and analysis.

Core Technical Skills - R

- **Data Manipulation:** dplyr, tidyr
- **Data Visualisation:** ggplot2, plotly
- **Statistical Modelling:** lm, glm, lme4
- **Time-Series Analysis:** forecast, tsibble
- **Machine Learning:** caret, randomForest, xgboost
- **Text Mining & Web Scraping:** tm, quanteda, rvest
- **Interactive Apps:** shiny

Core Technical Skills - Python

- **Data Analysis:** pandas, NumPy
- **Visualisation:** Matplotlib, Seaborn, Plotly
- **Machine Learning:** scikit-learn, XGBoost, LightGBM
- **Deep Learning:** TensorFlow, Keras, PyTorch
- **Model Interpretability:** SHAP, LIME
- **Automation & Web Scraping:** Selenium, BeautifulSoup, Scrapy
- **NLP & Optimisation:** spaCy, NLTK, SciPy, PuLP

Core Technical Skills - SQL & Beyond

- Strong foundation in **SQL** - joins, subqueries, window functions, views, indexing, and optimisation.
- Experienced in working with relational databases and data warehouses.
- Knowledge of **advanced SQL techniques** - recursive queries, triggers, stored procedures, and data normalisation.
- **Statistical Modelling, Data Mining, & Marketing Analytics** - applied understanding of key methodologies across regression, forecasting, and customer analytics.

Ethics, Growth & The Future of AI

- Reflected on the history and evolution of NLP and optimisation algorithms.
- Explored AI's ethical challenges - transparency, fairness, and the human role in an increasingly automated world.
- Balanced technical growth with personal authenticity and lifelong learning.

Summary

- This journey has helped me strengthen my analytical, technical, and reflective skills.
- I've built a strong foundation across Python, R, SQL, and modern data technologies.
- I'm excited to now bring this blend of curiosity, rigour, and adaptability into meaningful, data-driven work.

Learn More

You can explore my full collection of articles here:

https://stuti222.github.io/articles/