Nikhil Singh

Lead Data Scientist

Klarna Bank AB, Stockholm, Sweden

nikhilsingh2009@gmail.com | singh-nikhil | https://nikhilsingh.io/

Experience

Lead Data Scientist | Klarna Bank AB *April 2023 - Present*

- Presently building a one stop data solution in the form a **graph database** for all company stakeholders.
- Initiated the Observation Data Leap, creating **Klarna's first customer-transaction knowledge graph** for comprehensive customer, transaction, and product insights using **NER & fine-tuned T5 LLM**.
- Implemented **deep learning recommender systems** (DSSM & IntTower) over **500 million SKUs.** Resulted in Click-Through-Rate (CTR) increase of 260% in the US, 450% in the UK and 440% in Sweden.
- Enhanced the **personalisation engine** leading to 18% increase in Daily active users (DAU).
- Integrated customers' favourite merchants calculation into business index, contributing to a **36 million SEK increase** in **affiliate revenue** in December 2023.
- Implemented the 'Buy Again' feature in personalised emails for a fashion merchant, resulting in a **27% increase in purchase rate** and a **5% overall increase in purchase volume** through the Klarna app.
- Led a team of **5 data scientists**, driving innovation and project success.

Senior Data Scientist | Klarna Bank AB *August 2020 - March 2023*

- Developed **Klarna's first recommender system** for product-group suggestions using collaborative filtering techniques.
- Enhanced product normalisation across **98 merchants**, establishing Klarna's first product recommendation engine based on user similarities.
- Implemented **Klarna's initial OpenAI CLIP-based embeddings** model for identifying similar items in the product catalog and determining customer preference categories.
- Led several hackathons and sessions for new graduates to help them learn and get better at machine learning.

Senior Data Scientist | o9 Solutions *April 2020 - July 2020*

- Transformed a prospective client into a confirmed partner by developing a comprehensive AI-driven supply chain solution.

Data Scientist | Ascena GIC *January 2018 - March 2020*

- Developed a TensorFlow-based model to forecast store traffic, achieving less than **8% MAPE daily** for each store; deployed on GCP using Apache Beam and Airflow. Analysed promotional offer impacts on e-commerce and store traffic using SHAP, guiding strategic marketing decisions.
- Developed key models including a Price Elasticity of Demand model to inform pricing strategies, a predictive system for customer transaction dates with a MAE of 4 weeks using Random Survival Trees, and significantly improved customer lifetime value predictions with MBG/CNBD-k models over NBD, achieving a **70%+ response rate in marketing campaign uplifts**.

Data Scientist | Diet Code *December 2016 - December 2017*

- Engineered and deployed advanced recommendation engines for the NewsCase app, incorporating content-based filtering with entity recognition and *Jaccard coefficient*, and *matrix factorisation* using *libmf* for collaborative filtering. Achieved a **15% increase in user engagement** through personalised article recommendations, implemented in a production environment using Docker.
- Developed a Convolutional Neural Network (CNN) for image recognition and classification, and benchmarked machine learning libraries (*mlpack, libmf, spark*) for matrix factorization efficiency, utilizing Docker to ensure consistent testing environments.

Data Scientist | Cognizant Technology Solutions *May 2016 - December 2016*

- Enhanced a text mining search engine for job descriptions at the firm, using stemming and POS tagging to refine search queries, boosting job-description match accuracy from 32% to 47%.
- Developed a credit scoring model to predict customer delinquency, employing SMOTE for imputation and combining logistic regression with decision trees for improved prediction accuracy.
- Awarded the Q-3 Spotlight for outstanding performance in the Data Science division, leading a time-series modelling project and managing a team of 5.

Software Engineer | Nucleus Software Exports Ltd. *July 2012 - June 2014*

- Project on delinquent customers module handling Big Data & completed Change Service Requests

Education

PGDM / MBA - IIM Tiruchirappalli *2016*

B.Tech (CSE) - UPTU *2012*

Skills & abilities

Machine Learning:

- Experienced with advanced techniques: XGBoost, SHAP for interpretability, PCA, and text mining including Named Entity Recognition.

Deep Learning:

- Skilled in Neural Networks, CNN, RNN, Auto-encoders, and Graph Neural Networks, with expertise in hyper-parameter tuning and optimisation.

Reinforcement Learning:

- Knowledgeable in Temporal-Difference Learning, Q-learning, Monte-Carlo Methods, and Markov Decision Processes.

Recommendation Systems:

- Expert in two tower methods, collaborative filtering, matrix factorisation, Content-Based, and advanced non-linear recommendation techniques.

Cloud & DevOps:

- Experienced in cloud technologies with a focus on AWS and GCP, including deploying and managing SageMaker pipelines.

Tools & Technologies:

- PyTorch, Tensorflow, Python (xgboost, scikit-learn, pandas, numpy, Keras), R (mlr, dplyr, caret), Spark (PySpark), AWS Glue

Database management:

- Neo4j, Pinecone, Amazon Athena, Amazon Redshift, Solr, MongoDB, MySQL

Projects & academic papers

- Co-author of R package: pkggraph
- “Minimization of Error for Better Prediction of Secondary Structure of Proteins using Neural Network”, research paper presented at the International Conference on Electrical Engineering & Computer Science (ICEECS)