

SACHIN KARMANI

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SKILLS

Languages	Python R SQL Java
Frameworks	TensorFlow PyTorch Keras Scikit-Learn OpenCV Flask Matplotlib Pandas NLTK
Tools	Git Linux Amazon Web Services (AWS) MySQL HuggingFace Spark Hadoop

EDUCATION

Masters in Electrical and Computer Engineering 2023 - Present

University of Waterloo, CGPA: 3.9

Specialization: Artificial Intelligence, Machine Learning

Bachelors in Computer Systems 2016 - 2019

NED University of Engineering and Technology, CGPA: 3.9

WORK EXPERIENCE

Graduate Research Assistant May 2024 - Present

University of Waterloo | PyTorch, NumPy, Matplotlib

- Developed a Conv-LSTM model with 85% accuracy for IoT-sensor based activity recognition of older adults.
- Experimented with different deep learning architectures (CNN, LSTM and Vision Transformers ViTs), fine-tuning different hyperparameters such as learning rate, batch size and dropout for activity classification in care-facilities.

Data Scientist Aug 2022 – Aug 2023

Securiti.ai | Tensorflow, Openpyxl, PyTorch, NumPy, Git

- Finetuned Transformer model BERT for Name-Entity Recognition and Extraction, achieving a 97% F1-score.
- Developed a Convolutional Sliding-window neural network for segmenting and extracting tabular data in semi-structured spreadsheets.

Data Scientist Oct 2020 – June 2022

Afiniti | Stan, Pandas, Scikit-learn, Matplotlib

- Developed an XGBoost model with an F1-score of 85% to predict customer churn using time-series data.
- Reduced churn rates for Optimum Cable and Caesars Hotels USA by developing Bayesian models with Hamiltonian MCMC, saving \$3.5M per month.

Associate Data Scientist Aug 2019 – Sep 2020

Bank Alfalah | Tensorflow, OpenCV, Flask, Scikit-Learn, Pandas, Numpy, Seaborn

- Trained and deployed a CNN model for ID card verification and data extraction for customer onboarding.
- Determined best geographical spots for opening new branches by clustering businesses and population densities using DBScan and determining the location with highest ROI.

PROJECTS

KPCA-CAM: Visual Explainability of Deep Computer Vision Models using Kernel PCA

Developed an algorithm to visualize CNN model predictions by applying Kernel-PCA on convolutional layers to generate interpretable image heatmaps with 72% IoU accuracy. **Accepted in IEEE MMSP 2024.**

Clickbait Spoiler Generation

Finetuned Large Language Models such as RoBERTa and BART LLM from HuggingFace to extract important information from clickbait articles (Clickbait Challenge at SemEval 2023).

News Segment Classification

Developed a Fuzzy KNN model with NLTK and scikit-learn to categorize text segments using cosine distance between tokenized corpus and unseen data.