Kshitij Ajaykumar Patel

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Education

Master of Science, Computer Science **May 2024**
University of Southern California, Los Angeles, California **GPA : 3.75**
Coursework : Algorithms, Artificial Intelligence, Machine Learning for Data Science, Natural Language Processing

Bachelor of Technology, Computer Engineering **May 2022**
Pandit Deendayal Energy University, Gujarat, India **GPA : 4.00**

Technical Skills

Programming: Python, SQL, C++, C, Java, JavaScript ES6, PHP
Database: MySQL, MongoDB, Postgres, Firebase, AWS(DynamoDb)
Data Science/ML: Statistical Analysis, ETL Processes, TensorFlow, PyTorch, NLTK, PySpark, Pandas, Matplotlib, Seaborn
Platforms/Tools: GIT, Tableau, PowerBI, AWS(SageMaker, S3, Kinesis), GCP, Hadoop, MapReduce, Spark, Flask

Experience

Graduate Research Assistant | University of Southern California | Los Angeles, CA **May 2023—Present**
- Working on semantic segmentation of medical image data under Prof. Rostami. Enhancing knowledge and proficiency in medical image analysis through active research, literature review, and implementation of segmentation techniques on MRI and CT scan images.

Machine Learning Intern | Silver Touch Technologies Ltd | Gujarat, India **January 2022—April 2022**
- Collaborated in team to devise K-Nearest Neighbors algorithm based Book Recommendation System on IBM Watson Knowledge Studio and integrated with Chatbot on IBM Watson Assistant.
- Employed APIs to extract meta-data about YouTube videos and formulated advanced recommendation engines utilizing BERT, FastText, and TF-IDF Vectorizer to build video recommendation system, leading to an Intra-Similarity score of 0.7233.
- Implemented a REST API based on Flask for deployment and maintained database on the server for regular updates of Recommendation Engine.

Undergraduate Research Assistant | Pandit Deendayal Energy University | Gujarat, India **August 2021—December 2021**
- Worked under Prof. Samir Patel on project to identify abnormalities in musculoskeletal radiographs. Leveraged transfer learning and trained deep neural networks on MURA dataset to detect fractures in seven different body parts like Elbow, Fingers, etc.
- Applied Edge Detection and Image Sharpening Techniques to enhance base model accuracy by 5%. Achieved an average Precision value of 84.55% and outperformed Stanford ML Group's performance in case of Fingers by 11%.

Data Science Intern | Silver Touch Technologies Ltd | Gujarat,India **May 2021—September 2021**
- Managed exploratory data analysis part for a client. Preprocessed disorganized data about 20000 schools in the UK by utilizing Pandas for data cleaning, data transformation and data integration.
- Applied statistical analysis and employed Data Visualization libraries to transform data insights into graphical representations. Coordinated with development team for cloud deployment and worked on providing APIs to retrieve and manipulate data.

Projects

Generating SQL Queries from Natural Language — Code **Spring 2023**
Python, PyTorch, Natural Language Processing, Semantic Parsing
- Implemented BiLSTM Seq2Vec models in PyTorch based on ACL publication for tasks including selecting aggregation functions, selecting operators, and selecting columns in SELECT and WHERE clauses.
- Employed attension mechanism between columns and questions to enhance the baseline accuracy by more than 10%.

Time Series Classification for Human Activity Recognition — Code **Spring 2023**
Python, Scikit-Learn, Statsmodels, Statistical Analysis, Time-Series Analysis
- Conducted time-series analysis for seven different human activities, extracting seven time-domain features for each activity.
- Utilized cross-validation and backward selection methods to find statistically significant features and trained classification models to classify activity, achieving an accuracy of 94.73% using Multinomial Naive Bayes algorithm.

Sentiment Analysis of Amazon Customer Review Dataset — Code **Spring 2023**
Python, PyTorch, Scikit-Learn, NLTK, Gensim, NLP, Sentiment Analysis, Machine Learning, RNN, LSTM, GRU
- Preprocessed data, extracted TF-IDF word embeddings and trained models including SVM, RNN, LSTM, and GRU to classify reviews into three categories. Utilized word2vec-google-news-300 for word embeddings to increase base accuracy by 5%.

Game Playing Agent for Go — Code **Fall 2022**
C++, Artificial Intelligence
- Implemented AI Agent for 5x5 Go board game. Designed custom heuristic to find best move for depth of 7 plys using Alpha-Beta Pruning for Minimax algorithm. Defeated Random, Greedy, Aggressive, Alpha Beta and Q-learning agents in over 95% of games.