

- **Apparel Macro-Category Recognition**

Project description

- Developed a 2D CNN classifier using Keras and TensorFlow for apparel macro-category recognition
- The model achieved an overall accuracy of 89% on 21 macro-categories for five different apparel categories

- **Azure Tabular Cube**

Project description

- Created a capability in the form of a Tabular Cube to better understand the sales activity by weighing the domains which hold the maximum opportunity against domains where the maximum time is invested by salesforce
- Created a Power BI Dashboard on top of the Cube to find tactics with high Marketplace Revenue and compare them with tactics that received the most pitches by the sales team
- The objective is to find tactics that have high Marketplace Revenue and compare them with tactics that have received the most pitches by the sales team

- **Chatbot Response Annotation Process Automation**

Project description

- Developed a Natural Language Processing framework to automate the annotation process for a Customer Support Chatbot
- Employed Topic Modeling - Latent Dirichlet Allocation (LDA) to automate the process of manual tagging of unanswered customer inputs to their intents which are then mapped to relevant FAQ links
- 27% more unanswered texts mapped to their correct intents and manual effort reduced by 40 man-hours per month

- **Credit Card Fraud Detection**

Project description

Developed a semi-supervised autoencoder model in Keras to recognize fraudulent credit card transactions using reconstruction error

- **E-Commerce fraudulent transaction identification**

Project description

- Implemented a Gradient Boosting – LightGBM classifier with PCA on Vesta's real-world high-dimensional e-commerce transactions dataset
- The model can improve the efficacy of fraudulent transaction alerts with an AUC of 94%

- **Emotion classification**

Project description

- Implemented a Multilayer Perceptron (MLP) classifier for text-based Emotion Classification using Word2vec word embedding
- The model was able to identify nine different emotions, like joyful, terrified, jealous, etc. with an accuracy of 77%

- **Excel VBA dashboard for capturing accounts' movement across Remarketing target groups**

Project description

- Developed a VBA dashboard for comparing adoption in Paid Search Remarketing across different timeframes
- The dashboard takes the timeframe as user input generates a report capturing the movement of customers' accounts across different Remarketing Target Groups

- **Framework for Auto-Releasing Safe Transactions Incorrectly Flagged by Sanction Screening System**

Project description

- Developed a Machine Learning Layer on top of a bank transaction Sanction Screening system for automatically releasing the incorrectly flagged safe transactions
- The parallel and distributed real-time system picks Financial Messages (SWIFT) from a Message Queue (IBM MQ) and employs Entity Resolution techniques like Cosine Similarity to determine whether a manual review can be avoided
- 20% reduction in false positives which led to a reduction of 1.8 man-hours of manual effort per day

- **Framework for tracking usage consumption of Excel VBA and Power BI dashboards**

Project description

Created a Power BI dashboard for tracking usage of Excel VBA and Power BI dashboards to identify and purge the dashboards that are not being consumed.

- For Power BI dashboards, extracted usage information from blobs generated through Azure SQL Database Auditing Logs to find the number of connections for each user in a given timeframe
- For Excel dashboards, created a VBA code which accesses the username and timestamp when a dashboard is opened and records it in a database

- **Investment Strategies for Peer-to-Peer Lending**

Project description

- Implemented a predictive model using scikit-learn to guide profitable loan investments using the historical dataset for loans issued on LendingClub
- Built classification models to predict loan default probability and regression models to predict the expected return on each loan

- **Landmark Recognition**

Project description

Built a Landmark Classification model by Transfer Learning using a pre-trained ResNet18 CNN in PyTorch with 85% accuracy over ten classes

- **Named Entity Recognition**

Project description

- Implemented Named Entity Recognition (NER) model using Bidirectional LSTM and ELMo embeddings for a Conversational AI system
- Identified and extracted entities from conversation transcripts with an accuracy of 81% and deployed as a service using Flask

- **Opportunity & Impact Prediction using ARIMA Time Series Forecasting**

Project description

- Created a model to predict opportunity or impact created during predictable events like Smartphone launch and unpredictable events like the closing of multiple retail stores for an advertiser
- Corresponding to each event identified the cluster of online advertisers capable of monetizing the opportunity to be generated due to the event
- The model also predicts the competitors who can monetize the opportunity created in the system due to such events
- Leveraged ARIMA time-series forecasting to predict the baseline Spend dollar value with MAPE less than 9%
- \$80M Marketplace Revenue uplift by priority based advertiser targeting leading to an increase in advertiser spend

- **Physiotherapy Exercise Recognition**

Project description

- Developed a model for Musculoskeletal Disorder physiotherapy exercise recognition using sensor data from accelerometers
- Generated features by windowing with overlap and used Discrete Cosine Transform (DCT) for feature transformation and selection
- Implemented a 1D Time Distributed CNN – LSTM architecture using Keras and Tensorflow & achieved AUC of 97% over seven exercises

- **Pipelines for automating dashboard back-end refresh in Microsoft Azure**

Project description

Created and deployed pipelines for automating the periodic dashboard back-end refresh process.

- Generating SCOPE scripts for the analysis and uploading them on COSMOS using Azure PowerShell
- Submitting the SCOPE jobs on COSMOS cluster using Azure Data Factory and monitoring the output dataset using PowerShell so as to submit subsequent jobs
- Data transfer from COSMOS to Blob and then to Azure SQL using Azure Data Factory

- **R Shiny app for visualizing high-dimensional data**

Project description

Developed R Shiny application to visualize high-dimensional data using Hierarchical Voronoi Tessellations & Sammon Projection

- **Real Time Framework for Predictive Maintenance in Air Conditioners**

Project description

- Developed an intelligent framework for predicting faults in Air Conditioning units using an ensemble of Anomaly Detection techniques – Probability Density Clustering and Polynomial Regression
- Deployed the model on AWS for real-time Anomaly Detection in streaming IoT data. Created an Alerting System to notify AC Contractors of the severity and type of failure and also the probable AC components which are faulty
- \$60M+ cash flow generated for the client through subscription fees by Contractors and another \$30M+ by reduction of truck rolls for Contractors

- **Star Schema Data Model in SQL Server**

Project description

Optimized the performance of a Power BI dashboard by creating a Star Schema Data Model in SQL Server and indexing the required fields. This led to a reduction in refresh time from 10 minutes to 5 seconds.

- **Time Series Anomaly Detection for detecting Bot Traffic**

Project description

- Advertisers complain about spikes in traffic they receive from syndication networks and therefore opt out of syndication
- Devised and implemented a time-series Anomaly Detection framework for detecting Bot traffic and the associated timeframe
- The objective was to identify publishers responsible for spikes in traffic observed by advertisers
- Leveraged Seasonal Hybrid ESD Algorithm to create different models for each advertiser publisher combination performing in the system and determining spikes in traffic observed by them
- Deployed the pipeline on Azure ML for automating model refresh and Power BI report generation

- **Web based Business Intelligence tool for report generation and visualization**

Project description

- Developed a three-tier web-based Decision Board using ASP .Net framework and deployed it on Azure Web Apps
- Incorporated a set of well-defined KPIs to facilitate Insight Managers in leveraging data to find avenues for increased spending by online advertisers
- Incorporated the functionality to create reports and D3 visualizations based on user inputs
- The platform accessed data from Azure SQL backend and Cubes thereby ensuring reduced latency in availability to stakeholders