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Profile

Expert in data analysis and machine learning practices. Enthusiastic about finding patterns in observations, which lead to their outcome. Hardworking, self-driven, time- & detail-oriented.

Tools

Linux/Windows, MATLAB, Excel, SQLite Studio/MySQL Workbench & Server, PyCharm IDE, Tableau Desktop, Docker, Kubernetes, GitHub (Actions), GitLab, Talend, RStudio, SAS Studio, Jupyter Notebook, Hadoop Ecosystem, Apache Spark/PySpark, BigQuery, MS Power BI, Google Data Studio, LLM (GPT, BERT, Claude, Gemini), JAX, SymPy, Mojo, Apache Airflow, Xilinx IDE, NetBeans IDE, Adobe Creative Suite, MS Office, Quartus, CodeWarrior IDE, Cadence Design Systems, Visual Studio, CodeBlocks, Multisim Designer, Altium Designer, Eclipse, Android Studio, uVision IDE, Selenium IDE, Wireshark, Oscilloscope, Waveform Generators

Relevant Experience

Chat with Data Streamlit App Using Google Gemini Pro (LLM)

- Allowed data sources of webpages, PDFs, CSVs and MySQL Databases
- Employed ability to download and load previously saved chat history
- Deployed on various platforms (cloud and docker)
- Provided extensive utilization instructions and demo videos on corresponding repository

Artificial Intelligence Capstone (Finance – Credit Card Fraud)

- Performed Exploratory Data Analysis (EDA) on entire dataset
- Utilized resampling techniques to remedy imbalanced dataset during model training
- Assessed Naïve Bayes, Logistic Regression and SVM models using various evaluation metrics
- Tuned in-built parameters of tree-based models to help with the imbalanced dataset
- Conducted hyper-parameter tuning on an ANN model to attain the highest performance
- Implemented anomaly detection systems to differentiate fraud transactions from valid ones
- Transformed anomaly scores to engineered features to re-assess models for difference in performance

Lending Club Loan Data Analysis

- Utilized TensorFlow and Keras to implement ANN to classify if a customer meets loan criteria
- Conducted EDA on all variables to analyze their distribution and assess if outliers were present
- Performed Feature Transformation and Extraction on dataset to allow faster computation of the neural net
- Optimized hyperparameters using GridSearchCV to achieve an acceptable classification accuracy

Mercedes-Benz Greener Manufacturing

- Utilized Python resources to explore Mercedes-Benz dataset to reduce the time cars spend on the test bench
- Reduced training features by removing zero-variance columns and applied label encoders to categories
- Conducted dimensionality reduction on training features using PCA to reduce training time for the model
- Developed highly efficient and accurate model to predict the time it takes a car to pass the testing

Determine Source of Complaints by Customers (SAS)

- Created trend chart to track number of complaints by day and month
- Categorized complaint types and determined which occurred the most frequent
- Visualized percentage of resolved/unresolved complaints by State
- Investigated if company utilized resources equally to resolve complaints by frequency plot

Ecommerce Analytics Pipeline with GCP Dataprep

- Connected BigQuery datasets to Cloud Dataprep
- Explored dataset quality with Cloud Dataprep
- Created a data transformation pipeline with Cloud Dataprep
- Scheduled transformation jobs outputs to BigQuery

Education

B.Eng. (Computer Engineering)
Ryerson University (2014-2018)

Dual Masters in Data Science & AI Engineering
Simplilearn Online Provider (2019-2020)

Languages

Python (numpy, pandas, sci-kit learn, XGBoost), SQL/MySQL/PostgreSQL, Hadoop, R, SAS, TensorFlow/Keras/PyTorch, Probabilistic Programming (PyMC3), OpenCV, Assembly, Java/Scala, HTML, CSS, VHDL/Verilog, Shell Scripting/TCL, JavaScript/jQuery/AJAX, C/C++, Perl, PHP/ASP, Node.JS/ReactJS/Redux/Angular, C#/Q#.NET, RTOS/Cortex Programming

Predict Baby Weight with TensorFlow on AI Platform (GCP)

- Launch a Vertex AI Workbench
- Carry out local and distributed training
- Deploy ML model as web service
- Make predictions with model

Data Science Capstone (Health – Diagnosing Diabetes in Patients)

- Pre-processed data by imputing missing data with variable mean
- Performed descriptive analysis by visualizing utilizing histograms, scatter plots, bubble charts and pie charts
- Conducted correlation analysis using a heatmap to determine factors that affect diabetes diagnosis
- Devised strategies to build a prediction model to classify whether a patient had diabetes
- Decided on cross-validation as an appropriate validation framework
- Tested various models using recall, AUC(ROC) curve, accuracy score etc. to choose the most accurate model

K-Means Clustering for Telecommunication Domain

- Utilized Apache Spark to implement K-Means cluster algorithm on telecommunication complaint dataset
- Incorporated Scala language in order to interact with Apache Spark through spark-shell
- Evaluated clusters based on training data and tweaked input parameters to improve model accuracy

Sales Performance Analysis

- Utilized Tableau Desktop capabilities to visualize data in comprehensive manner to display to clients
- Blended separate data sources together to incorporate separate measures into a single visualization
- Created Bullet Chart using 2 measures from different data sources
- Implemented calculated field on color to determine if the monthly sales had exceeded the sales target
- Incorporated filter to show visualizations by the selected year

Building User-Based Recommendation Model for Amazon (Python)

- Utilized Python libraries to explore movie rating's dataset with missing values
- Extracted basic statistics of dataset to gain deeper insight into its composition
- Decided on logical method to fill missing values in dataset to allow the training of the model
- Imported Surprise library to predict user ratings for movies using SVD algorithm
- Tested the recommendation model and achieved a high prediction accuracy

Predicting College Admission (R)

- Analyzed historical data for college admission and determined driving factors using R
- Conducted descriptive analysis on variables in dataset to demonstrate correlation with admission
- Performed predictive analysis using Logistic Regression, SVM and Decision Trees models on admission
- Determined significant variables to the target variable as well as choose a champion prediction model

Monitoring GCP Vertex AI Pipelines

- Deployed a pre-trained model
- Configured model monitoring
- Generated some artificial traffic
- Interpreted the data reported by the model monitoring feature

Churn Classifier for Online Predictions

- Explored and preprocess a Google Analytics 4 data sample in BigQuery for machine learning
- Trained a BigQuery ML XGBoost classifier to predict user churn on a mobile gaming application
- Tuned a BigQuery ML XGBoost classifier using BigQuery ML hyperparameter tuning features
- Evaluated the performance of a BigQuery ML XGBoost classifier
- Explained your XGBoost model with BigQuery ML Explainable AI global feature attributions
- Generated batch predictions with your BigQuery ML XGBoost model
- Exported a BigQuery ML XGBoost model to a Google Cloud Storage bucket
- Uploaded and deploy a BigQuery ML XGBoost model to a Vertex AI Prediction Endpoint for online predictions

Train and Deploy TensorFlow Model in Vertex AI

- Trained a TensorFlow model locally in a hosted Vertex AI Workbench
- Created a managed Tabular dataset artifact for experiment tracking
- Containerized your training code with Cloud Build and push it to Google Cloud Artifact Registry
- Ran a Vertex AI custom training job with your custom model container
- Used Vertex TensorBoard to visualize model performance
- Deployed your trained model to a Vertex Online Prediction Endpoint for serving predictions
- Requested an online prediction and explanation and see the response

Text Classifier using AutoML

- Imported a text dataset to AutoML
- **Trained the ML model for text classification**
- **Evaluated the model performance**
- **Deployed the model to an endpoint to get predictions**

Structured Data Prediction using Vertex AI

- Launched Vertex AI notebook instance
- Created a BigQuery Dataset and GCS Bucket
- Exported from BigQuery to CSVs in GCS
- Trained and deployed model on Cloud AI Platform

Engineering Capstone (Android App)

- Engineered ad-hoc text messaging android app to facilitate multi-device communication
- Improved coding solutions to be most optimal per client's requirements
- Tracked and reported progress via constant reports Organized and led frequent team meetings to discuss direction of project and requirements to be fulfilled

Anonymous Message Broadcaster

- Established anonymous communication between multiple client and server using multi-threading principles
- Implemented socket programming using Java Networking and Encryption to simulate network sessions

Routing Control System for Inter-Domain Routing

- Designed controller to compute shortest path to other networks via link costs
- Generated packet routes through various networks
- Integrated knowledge of BGP and inter-domain routing

Cache Controller

- Programmed cache controller to interface SRAM units with other devices using Xilinx Spartan-3E FPGA
- Incorporated VHDL coding techniques in Xilinx ISE CAD to implement controller
- Executed program on FPGA and monitored using built-in performance tools

Semi-RISC CPU

- Designed and implemented 1-bit semi-RISC CPU on DE2 board
- Enhanced practical experience using VHDL as an HDL
- Administered appropriate control signals to data-path elements to achieve desired operation

Function Generator

- Designed and implemented function generator using Operational Amplifiers
- Generated desired square/triangle waveform per requirements
- Incorporated Voltage-controlled frequency, Frequency Range Select and Amplitude Control

Identify Damaged Car Parts Using Vertex AI AutoML Vision

- Uploaded a labeled dataset to Cloud Storage using a CSV file and connect it to Vertex AI as a Managed Dataset
- Inspected uploaded images to ensure there are no errors in your dataset
- Kicked off an AutoML Vision model training job
- Requested predictions from a hosted model trained on the same dataset

Detect Various Entities in Images using Cloud Vision API

- Wrote and deployed several Background Cloud Functions
- Uploaded images to Cloud Storage
- Extracted, translated and saved text contained in uploaded images

GCP Feature Store Streaming Ingestion SDK

- Downloaded and prepare data from BigQuery
- Created a new Feature Store
- Created a new Entity Type
- Created and write features to the Feature Store
- Read features back from the Feature Store

TFX on Cloud AI Platform Pipelines

- Used the TFX CLI to build a TFX pipeline
- Deployed a TFX pipeline version without tuning to a hosted AI Platform Pipelines instance
- Created and monitor a TFX pipeline run using the TFX CLI
- Deployed a new TFX pipeline version with tuning enabled to a hosted AI Platform Pipelines instance
- Created and monitor another TFX pipeline run directly in the KFP UI

Contextual Bandits for Recommendations with TensorFlow and TF-Agents (GCP)

- Installed and import required libraries
- Initialized and configure the MovieLens Environment
- Initialized the Agent
- Defined and link the evaluation metrics
- Initialized and configure the Replay Buffer
- Set up and trained the model
- Observed the results of trained model and Vertex AI Tensorboard evaluation

Ticketing System Software

- Collaborated with team members to create interactive console for ticketing service
- Executed multiple black and white box testing through vigorous regression testing
- Integrated Test-Driven Development using different levels of testing (unit cases, integration, system etc.)
- Incorporated Sprint planning within Agile environment
- Utilized SDLC layout and documented along each stage with improvements

Network File Transfer Application

- Created client that was able to upload and download file from server using Java Networking library
- Client request to change directories or list files in directory from server
- Utilized knowledge in TCP protocols and socket programming

Embedded Systems Media Center

- Produced an audio player, photo gallery and game on NXP LPC17xx board
- Enhanced knowledge in programming embedded systems and C using uVision IDE

1-bit Full Adder (IC Design)

- Designed full-adder circuit using logical effort method to receive a specific load capacitance
- Developed schematic of circuit and executed parametric and DC analysis to ensure correct functionality
- Created PCB layout of schematic using Virtuoso Layout Editor Turbo
- Generated testbench to compare schematic and extracted view from layouts

Ecommerce System

- Created interactive GUI using Java and JFrame library
- **Designed program flow using UML User and Class Diagrams**
- **Implemented design and developed unit test cases for desired functionality**
- **Improved object-oriented coding techniques**

BJT Amplifier

- Designed and implemented inverting 50V Amplifier with 20kHz bandwidth using 2 stages
- Generated functional simulations using NI Multisim
- Analyzed physical circuit using oscilloscope and multimeter

Coffee Maker Hackathon

- Redesigned household coffee maker for smart pouring addition
- Strengthened collaboration and communication skills
- Improved documentation skills through constant progress reports