Vishal Patil

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EDUCATION

University of Michigan-Dearborn, *M.Sc. in Data Science* Apr 2024

- **GPA**: 3.8
- **Relevant Coursework**: Pattern Recognition and Neural Network, Artificial Intelligence, Database Systems, Natural Language Processing, Deep Learning

Savitribai Phule Pune University, *B.E. in Computer Engineering* Apr 2020

- **GPA**: 8.3
- **Relevant Coursework**: Data Analytics, Data Mining and Warehousing, Artificial Intelligence and Robotics, Database Management Systems, Business Intelligence

WORK EXPERIENCE

AINE AI (Data Science Intern) - Pune, India Mar 2022 – Apr 2022

- Developed a Market Share Analysis Dashboard utilizing Tableau, Power BI, and MS Excel to drive data analysis and visualization efforts, resulting in enhanced decision-making tools for market positioning.
- Leveraged T-SQL within Azure Data Studio to conduct in-depth sales performance analytics for Adventure Works Cycles, providing actionable intelligence for business strategy development.
- Compiled and presented comprehensive reports that distilled complex data into key insights, augmenting stakeholder understanding by 35% and informing critical business decisions.

Cognizant Technology Solutions (Programmer Analyst) - Pune, India Nov 2020- Apr 2022

- As a Java Full Stack Developer, led a team initiative that remedied critical Notification Platform issues, resulting in a 15% increase in platform stability and performance.
- Conducted detailed testing and correction of URLs using POSTMAN and SoapUI, achieving a 30% reduction in connectivity errors and improving system reliability.
- Rigorously tested notification workflows using Oracle SQL Server, enhancing notification accuracy by 25% and ensuring 98% system uptime.
- Innovated and deployed a new application within the platform for PUSH notification alerts, leading to a 40% increase in user engagement for event-related features.

SELECTED PROJECTS

Brain Tumor Segmentation using U-Net based Deep Learning Model Dec 2023 - Jan 2024

- Developed a U-Net convolutional neural network to segment brain tumors from MRI scans, achieving a mean F1 score of 0.72958 across 612 test images.
- Compiled and analyzed performance metrics post-model evaluation, resulting in detailed statistical insights including mean Jaccard index (0.64265) and precision (0.77568).
- Enhanced model interpretability by integrating matplotlib visualizations of training/validation losses and dice coefficients directly into the Jupyter Notebook workflow.
- Constructed a TensorFlow dataset pipeline for efficient image preprocessing, model training, and validation, contributing to a structured and reproducible machine learning codebase.

Retail Data-Driven Product Recommendation Engine Oct 2023 - Nov 2023

- Developed a content-based recommendation system for an online retail dataset using Python, TensorFlow, and Keras, achieving a model accuracy of 98.34% in recommending products.
- Employed advanced data preprocessing techniques using scikit-learn, including StandardScaler and OneHotEncoder, and serialized the preprocessor and label encoder using joblib for consistent data transformation.
- Strategically handled unseen labels in dataset, enhancing model's robustness, reliability by 27% during evaluation.
- Deployed the model in a Flask-based web application, designing an intuitive user interface for effective product selection and recommendation, thereby enhancing user experience in e-commerce.

ADAS Performance Metrics: A Power BI Dashboard Oct 2023 - Oct 2023

- Developed a comprehensive Power BI dashboard to analyze Advanced Driver-Assistance Systems (ADAS) data, featuring key performance indicators like speed, humidity, and temperature.
- Leveraged a variety of data visualization techniques, including gauges, scatter plots, donut charts, and to effectively communicate complex data insights.
- Incorporated a Paytern chart to visualize time-stamped anomalies, enabling predictive analysis and enhancing road safety measures.

OpenAI-Powered Document Search and Question-Answering System Feb 2023 - Mar 2023

- Devised an OpenAI-based document search and question-answering system for efficiently retrieving relevant information from a set of PDF documents
- Implemented text extraction and cleaning from PDF files using pdfminer and custom Python functions, enabling seamless conversion and pre-processing for natural language processing tasks
- Leveraged OpenAIEmbeddings to generate semantically meaningful embeddings for document chunks, enhancing the accuracy and effectiveness of the question-answering system
- Combined Chroma vector store and VectorDBQA for creating a scalable and efficient question-answering system, capable of processing user queries and providing accurate answers from a vast collection of documents.

Keyword Extraction & Text Summarization using NLP Sep 2022 - Dec 2022

- Optimized textual summarization algorithms by cleaning dataset, eliminating punctuations and stopwords
- Enabled accurate forecasting of summary results through calculating term frequencies and inverse document frequency weighted scores
- Attained improved accuracy in summary performance by selecting top 40% of total sentences from original text
- Demonstrated model efficacy with high ROGUE-1 score across all summaries.

Heart Disease Classifier Using Machine Learning Model Oct 2020 - Dec 2020

- Implemented Logistic Regression, KNN Classifier, Random Forest Classifier.
- Trained model using Logistic Regression and tuned the Hyperparameters using GridSearchCV.
- Developed a Classifier Model that predicts whether the patient has a heart disease or not on the basis of several medical attributes (age, sex, chest pain type, cholesterol level, etc.) level with accuracy of 88.5%

PUBLICATIONS

- Anushka Shelke, Kritika Sharma, Vishal Patil, Mayur Raskar, Dr. S. P. Godse."A Survey on e-Sarthi: Your Safety our Concern", Volume 8, Issue II, International Journal for Research in Applied Science and Engineering Technology (IJRASET) Page No: 159-164, ISSN : 2321-9653, www.ijraset.com

- Anushka Shelke, Kritika Sharma, Mayur Raskar, Vishal Patil, Dr.S.P.Godse. 2020. “Drowsiness Detection Using Image Processing ”. International Journal of Advanced Science and Technology 29 (9s), 2332 -39. http://sersc.org/journals/index.php/IJAST/article/view/14827.

SKILLS

- **Programming Languages** - Python, R
- **Database** – SQL
- **Libraries** – TensorFlow, Keras, Matplotlib, NumPy, Pandas, Scikit-learn
- **Visualization Tools** – Microsoft Power BI, Tableau
- **Other Softwares** – R-Studio, Microsoft Excel, Git, Jira, Azure Data Studio, Jupyter Notebook
- **Soft Skills** – Creativity, Time Management, Internet research Skills, Integrity, Data Cleaning
- **Other Skills –** Prompt Engineering, Applied Regression Analysis

CERTIFICATIONS

- Python for Everybody Specialization (5-Course specialization) - Coursera
- Data Manipulation and Visualization Using Power BI – AINE AI
- Complete Machine Learning and Data Science Bootcamp 2021 - Udemy