Sarthak Dalal

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PROFESSIONAL SUMMARY

- Highly skilled and determined professional with a Master of Science in Computer Science from Rutgers University.
- Adept at leveraging advanced Machine Learning Frameworks, Web Technologies, and programming languages to develop innovative solutions.
- Familiarity with Agile development methodologies like Unified Process and Scrum.
- Demonstrates exceptional problem-solving skills and a persistent approach to challenges, ensuring code reliability and scalability.
- Proven track record in enhancing backend performance, implementing robust solutions, and leading teams in complex projects.
- Known for not giving up on code, continuously striving to resolve issues and optimize functionality.

EDUCATION

Rutgers University   New Brunswick, NJ
Master of Science in Computer Science (GPA: 3.917/4.0)   Sep 2022 - May 2024
Relevant Coursework: Introduction to AI, Data Structures and Algorithms, Mathematical Foundations of Data Science, Database Systems for Data Science, Machine Learning, Computer Vision, Stats for ML

Dwarkadas J Sanghvi College of Engineering   Mumbai, India
Bachelor of Engineering in Electronics and Telecommunications (CGPA: 8.86/10)   Aug 2018 – May 2022
Minors in Artificial Intelligence and Machine Learning 🔗
Relevant Coursework: Structured Programming Approach, OOP using Java, Database Management System, Machine Vision, Big Data Analytics

Certificates: Algorithmic Toolbox (*UC San Diego, Coursera*) | Bootstrap 4 (*The Hong Kong University of Science and Technology, Coursera*) | Interactivity with JavaScript (*University of Michigan, Coursera*) | Programming for Everybody (*University of Michigan, Coursera*)

SKILLS

Programming Languages: C#,C, C++, R, Java, Python, JavaScript
ML Frameworks and Libraries - TensorFlow, Pytorch, scikit-learn, Keras, XGBoost, Numpy, Pandas, Matplotlib, OpenCV
Web Technologies: HTML, CSS, Bootstrap, Flask, NodeJS, TypeScript, Django, BeautifulSoup, Selenium, jQuery
Cloud: Microsoft Axure, Azure App Service, Azure SQL Database, AWS, Elastic Beanstalk
Databases: MySQL, Microsoft SQL Server, MongoDB, DynamoDB
Development Tools: Git, GitHub, GitLab, VS Code, IntelliJ, Eclipse, Docker, JetBrains Rider, Jupyter, Bash, Heroku, Postman
Other: Azure DevOps. CI/CD, Agile Methodologies, Performance Optimization, Debugging and Testing

WORK EXPERIENCE

PipeIQ   Jun 2023 – Aug 2023
Software Development Intern in Machine Learning
- Engineered a customer-centric chatbot utilizing prompt engineering and LangChain technologies. The chatbot seamlessly integrates into client websites, bolstered by PipeIQ backend, enhancing user interaction.
- Spearheaded the development of a robust FastAPI endpoint to host the PipeIQ backend on AWS Elastic Beanstalk, ensuring optimal performance and scalability for the chatbot, resulting in improved user experiences.
- Implemented strategic analytics integration using Google Tag Manager, incorporating Google Analytics, DealFront, and PeopleDataLabs onto the PipeIQ website, leading to a 35% increase in actionable insights for the marketing team.
- Leveraged PeopleDataLabs Data and reverse IP lookup to identify and personalize user interactions, improving lead conversion rates by 40%.
- Conducted thorough testing and validation procedures to ensure the reliability, scalability, and security of the developed solutions.

Indian Institute of Technology - Delhi   Jun 2021 – Apr 2022
Machine Learning Research Intern
- Investigated the application of Artificial Intelligence and Natural Language Processing in the Indian Judiciary System and how AI may be used to augment the judiciary.
- Implemented several summarization models (LexRank, Latent Semantic Analysis, T5, Bart-large-CNN) using Machine Learning and Deep Learning to summarize lengthy case documents which were 30% the length of the original documents and compared the results.

Rutgers University
Teaching Assistant
- Facilitate weekly recitations for two classes, each comprising 20 students, in CS170: Computer Applications for Business, covering essential topics such as HTML, CSS, JavaScript, Microsoft Excel, and SQL.
- Provide guidance and support to students in understanding programming concepts and troubleshooting code-related issues during office hours lab support hours.
- Collaborate with faculty members to design and implement innovative teaching methods, projects, and assessments to engage students and foster their practical skills in software development.
- Assess and grade weekly assignments, midterm, and final exams, ensuring timely and constructive feedback for student development.

PROJECTS

MovieShop MVC Application 🔗 July 2024
- Developed a comprehensive MovieShop MVC Application utilizing ASP.NET Core with Onion/Clean Architecture to implement a robust and scalable web application.
- Implemented CI/CD pipelines using Azure DevOps, ensuring seamless integration and deployment processes. Automated build and release processes, reducing deployment time by 50%.
- Configured Azure SQL Database for backend storage, leveraging Entity Framework Core for data access and migrations, efficiently managing a dataset of over 10,000 movies.
- Utilized Bootstrap for responsive design, creating a user-friendly interface that works seamlessly across various devices and screen sizes.
- Reduced database query time by 30% through optimization and indexing strategies.

Optimizing Energy Efficiency: A Comprehensive Analysis of Household Electricity Consumption 🔗 Mar 2024 – May 2024
- Developed machine learning models to predict household electricity consumption, using time-series analysis to enable data-driven decisions for energy savings. Implemented various models including Polynomial Regression, XGBoost, Random Forest, and CatBoost, with Random Forest achieving the lowest RMSE.
- Enhanced model insights by integrating findings into a user-friendly interface using the Django framework, facilitating real-time energy consumption predictions to promote efficient energy use and cost savings.

Age, Gender and Ethnicity Prediction 🔗 May 2023
- Developed an image classification system using deep learning techniques to predict age, gender, and ethnicity from uploaded images.
- Implemented a ResNet9 architecture for gender and ethnicity prediction, and a ResNet18 architecture for age prediction.
- Trained the models on a labeled dataset containing images representing various age, gender, and ethnicity groups. (Link to Dataset)
- Developed a Flask web application to provide an interactive user interface for image upload and prediction.
- Integrated the trained models into the Flask app, allowing users to upload an image and receive predictions for age, gender, and ethnicity.

BidBazaar 🔗 Feb 2023 – Apr 2023
- Led a team of 4 in creating an auction website like eBay, with features like user account creation, auctions, browsing and advanced search functionality, and admin and customer representative functions.
- Designed and implemented a robust SQL database schema to manage user data, auction listings, and transactions, optimizing queries for efficient data retrieval and ensuring data integrity in a Java-based web application environment.

Two-Way Real-Time Sign Language Recognition using Convolutional Neural Network 🔗 Feb 2023 – Apr 2023
- Developed a Two-Way Real-Time Sign Language Recognition system using a Convolutional Neural Network (CNN) for American Sign Language (ASL) and Indian Sign Language (ISL).
- Used a dataset with 140 images for each sign for both language systems, used skin detection and hand segmentation techniques to isolate the hand region from the background.
- Implemented CNN for classification of signs and achieved an accuracy of over 90% on the test set.

Battery Management and Data Analytics of Battery and Vehicle Data 🔗 Sep 2021 – Apr 2022
- Led a team of 4 in designing a Data Acquisition System and Battery Management System and integrating it into the brain of the vehicle, (Vehicle Control Unit) to create a robust electronics system for an Electrics Vehicle.
- Prepared Machine Learning models such as Gradient Boosting, Random Forest, LASSO Regression to predict the SOC (State of Charge) of the battery of the vehicle. Gradient Boosting achieved the best R2 score of 0.977.

PUBLICATIONS

LexRank and PEGASUS Transformer for Summarization of Legal Documents 🔗 May 31, 2022
Machine Intelligence and Signal Processing (MISP)
- The research paper presented a novel method of abstractive summarization of legal documents using LexRank algorithm and PEGASUS Transformer.
- The summaries generated by this method outperformed 5 other methods tested on 6 documents by achieving a ROUGE-F1 metric of 0.689.
- Awarded the **Best Paper** in the presented track at MISP, 2022.

A Comparative Study on Sign Language Recognition Methods 🔗 Sep 09, 2022
3rd International Conference on Sustainable Expert Systems (ICSES), IEEE
- The review paper compared different sensor-based and vision-based approaches to Sign Language Recognition using ML.

Arbitrage in Cryptocurrency: A Survey 🔗 Oct 22, 2021
5th International Conference on Information Systems and Computer Networks (ISCON), IEEE
- The paper deals with using arbitrage in cryptocurrencies over three exchanges and analyzing the profit created over a particular time frame.

EXTRACURRICULARS

- Elected as a low voltage systems engineer for team DJS Racing, a formula student team at Dwarkadas J Sanghvi College of Engineering that manufactures Electric formula one type race cars – The team secured **Fourth position** in Engineering Design Category at Formula Bharat 2021 and received the **Best Powertrain package award** at FSEV Concept Challenge 2020. Trained juniors to ensure smooth knowledge transfer.