Shubh Vivek Patel

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Education

Saint Louis University St. Louis, U.S.A

Masters of Science(M.S.) in Artificial Intelligence; ***GPA: 3.8/4*** *August 2023- May 2025 (Expected)*

Grad. Teaching Assistant *for Machine Learning*| Relevant Coursework: Predictive Modeling, Deep Learning.

Gujarat University Gujarat, India

Bachelor of Technology in Artificial Intelligence; ***GPA: 9.72/10*** *August 2019 – May 2023*

Relevant Coursework: Artificial Intelligence, DBMS (Database), Natural Language Processing, Statistics, Data Visualization.

Skills

Languages: Python, C++, C, Javascript, Java, PHP, Go, R, Ruby, HTML, CSS, C#, Typescript, MATLAB, Scala.
Technologies/Frameworks: Flask, Django, Express.js, Node.js, React.js, Angular, Next.js, Fast APIs, CI/CD, MongoDB, MySQL, NoSQL, PostgreSQL, Apache Spark, Apache Hadoop, Databricks, TensorFlow, PyTorch, scikit-learn, Pandas, NumPy, DAX, Plotly.
Cloud/Tools: Microsoft Azure, Amazon Web Services, EC2, Snowflake, Google Cloud Platform, Google Analytics, Docker, Linux, SPSS, Looker Studio, GitHub, Kubernetes, Kafka, Gensim, Tableau, PowerBI, SAS, Excel, SSMS (SQL Server Management Studio), GCP.
Competencies: AI Models, Machine Learning Techniques , Data Analysis, Algorithm Design, AI Research, Exploratory Data Analysis .

Experience

Research Assistant January 2025 – Present

Washington University in St. Louis | Python, R, Deep Learning, Tensorflow, PyTorch, Scikit-learn *St. Louis, MO, USA*

- Accomplished **AI-driven** sensitivity analysis models, integrating **Principal Component Analysis (PCA), feature selection, and statistical modeling** to rank critical input parameters affecting radiation dose, minimizing uncertainty to **5%–10%.**
- Engineered **predictive models** to enhance patient radiation safety, computed insights from a dataset of **100,000+** simulated radiation events, and improved dose estimation **accuracy by 25%** through **algorithmic refinements and machine learning techniques.**

Research Assistant September 2023 – Present

Saint Louis University | Docker, Python, Databricks, SQL, Pandas, NumPy, Dagster, AWS *St. Louis, MO, USA*

- Assembled and deployed a **machine learning algorithm** to forecast temporal points, expedited analysis time by **30%**, and expanded predictive accuracy by **25%** through optimized data pipelines using **Google Cloud Platform, Docker, Databricks, and Tableau**.
- Adapted **feature selection and preprocessing workflows**, examined real-time business data to enhance model **precision**, and optimized efficiency by **20%**.
- Coordinated **machine learning** integration with **Apache Airflow**, derived insights from temporal inflection points, structured analytical workflows, and boosted predictive accuracy by **25%**, streamlining decision-making by **40%**.

Data Scientist January 2022 – August 2023

Tatvic Analytics | GridSearchCV, Randomized SearchCV, ggplot2, XGBoost, LightGBM, ETL *Ahmedabad, Gujarat*

- Conducted **exploratory data analysis (EDA) on Google Analytics (GA4)** data using **SAS, SPSS, Python, R, pandas, and NumPy**, identified **15** actionable insights that strengthened client strategies and elevated conversion rates by **12%**.
- Devised and fine-tuned **machine learning model** with **96%** accuracy for user engagement prediction, applied **ensemble methods such as Random Forest, Stacking, Boosting , AdaBoost, and Gradient Boosting**, leading to 20% more user interactions.
- Engineered web scraping pipelines using **Selenium, NLTK, SpaCy, MongoDB** to aggregate and analyze user behavior, identifying key patterns and optimizing engagement strategies to increase user interaction by **25%** and enhanced gross margin on client websites.
- Collaborated cross-functionally using **Looker Studio, Power BI, BigQuery, Python, and RStudio** to synthesize data visualization workflows, accelerated decision-making by **30%**, and refined report generation for actionable insights.

Junior AI Engineer February 2021 – January 2022

Indian Space Research Center | PPython, Deep Learning, Tensorflow, Pytorch, Docker, Flask, PostgreSQL *Ahmedabad, Gujarat*

- Developed a novel **Deep Learning pix2pix model and GAN's** which performed **image to image translation** and was designed for Atmospheric Correction of Sentinel-2 data without having to explicitly estimate atmospheric parameters.
- Used **Tensorflow** and **Pytorch** for data pipelining and training. Evaluation results showed that the Pix2Pix model has good performance, with average **SSIM, PSNR, RMSE and MAE of 0.96, 42.14, 0.0097 and 0.0071** respectively.
- Created a real-time atmospheric correction monitoring dashboard using **Python, Flask backend, and PostgreSQL**, seamlessly integrating Deep Learning predictions to generate visualizations and real-time alerts for atmospheric conditions.
- Analyzed satellite images with Optical Data Processing Group, refining environmental data and extracted crucial features from it.
- Gained experience in **Redhat Linux, Docker and Parallel Computing** environment to enhance computational efficiency.

Projects

Warfarin Dosing Analysis| *Flask, Keras, Streamlit, Machine Learning, Matplotlib, Seaborn* |

- Led development of a dosing prediction model, enhancing accuracy by **88%**, aligning state-of-art models to improve patient safety through datadriven dosing recommendations.
- Implemented diverse algorithms, including **linear regression, Decision Trees, logistic regression, and neural networks**, achieving **88%** prediction accuracy, comparable to leading models in precision dosing research.

3D Object Reconstruction using NeRF and R2CNN| *CUDA, Trimesh, OpenCV, Matplotlib, PyTorch, Trimesh* |

- Developed a 3D object reconstruction pipeline using **NeRF and R2CNN architectures** to predict 3D voxel grids from five 2D images, achieving high-quality reconstructions comparable to state-of-art methods.
- Executed **voxel normalization techniques, image normalization, data augmentation, batch processing, and background removal strategies** to enhance model performance, improving reconstruction accuracy by **20%** and reducing noise in 3D predictions.

Factory Pulse: Machine Health Monitoring System | *AWS (EC2, RDS, S3), Docker, Kubernetes, REST APIs, Kafka* |

- Integrated and visualized sensor data using **React.js (frontend) and Spring Boot (backend)**, reducing data retrieval time by **50%** and refining realtime machine health monitoring, Deployed the website on **AWS cloud infrastructure** to ensure scalability.
- Designed an intuitive UI using **Python, PostgreSQL, SQL, HTML, CSS, and Bootstrap**, refining user engagement by **40%**.

Certifications

- AWS AI Practitioner (Foundational) — Issued: Jan 2025
- AWS Solution Architect (Associate) — Issued: Nov 2024