RUTWIK DHIRUBHAI PATEL

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EDUCATION

University of Southern California (Viterbi School of Engineering) **Aug 2023 - May 2025***
Masters of Science in Computer Science (spec. in Data Science) GPA 3.83/4
Course: Analysis of Algorithm, Database Systems, NLP, Web Technologies

University of Mumbai (Dwarkadas J. Sanghvi College of Engineering), India **Aug 2019 - Jun 2023**
Bachelor of Technology Information Technology with *Distinction* GPA 3.8/4
Relevant Courses: Data Structures and Algorithms, Advanced Machine Learning, Soft-computing, Computer Networks and Security, Web Design, Database Management Systems, Image Processing and *Computer Vision*

TECHNICAL SKILLS

- Programming Languages: Python , C, R| Database: NoSQL(MongoDB), SQL, PostgreSQL, Redis, Neo4j, cypher
- Web Technologies: HTML5, CSS3, JavaScript, PHP| Framework: React, Angular, Django, Node.js, Express.js
- Libraries: Numpy, Pandas, Matplotlib, Seaborn, Scikit-learn, PyTorch, TensorFlow, OpenCV, Beautiful Soup, NLTK, Statistical modeling techniques.
- Other: Git, REST API, Linux, AWS, GCP.

EXPERIENCE

Smart Consultant, Mumbai, India **May 2022 – Jul 2022**
Software Development Engineer (SDE) Intern

- Collaborated with a 4-member team to design and develop a full-stack web application, leveraging Python, ReactJS, Django, SQL, and PostgreSQL, ensuring robust backend functionality and seamless frontend integration.
- Developed key features for a Library Management application from the ground up, focusing on advanced database management using SQL, including user registration, book inventory management, lending and return processes.
- Implemented dynamic search functionality within the application, leveraging advanced SQL queries and ensured fast, accurate retrieval of information, enhancing the overall user experience

ACADEMIC PROJECTS

Cataract detection using Explainable AI (XAI)

- Led a team of 3, built a cataract detection project in Python with a CNN model for cataract prediction with 97% accuracy and XAI techniques to determine why CNN model is producing certain results interns increasing the performance of doctors.
- Generated a model incorporating GradCAM for detecting and localising cataracts in eye, presented project findings and progress to stakeholders, bridging gap between technical details and non-technical stakeholders.
- Utilized Python, StreamLit, MongoDB, and various XAI libraries to drive project success.

Second-hand Book Selling Using the CNN model

- Managed a team of 4, developed a MERN website for college students to buy and sell second-hand books to other students by creating database of 100+ second-hand books with 4 pictures per book.
- Generated a CNN model for predicting book conditions, incorporated a collaborative filtering-based book recommendation feature, and integrated Keras-OCR to automatically extract book details improving accessibility and usability for users.
- Employed tech stack including React, Python, Express, MongoDB, Keras-OCR to implement innovative solution.

Federated learning to preserve the privacy of user data

- Authored, presented, and published a paper in IEEE in 9th Somaiya International Conference on Technology and Information Management (SICTIM) 2023 in March-April 2023, ISBN: 979-8-3503-3329-9.
- Devised a project to predicts diagnosis of two urinary system diseases in a federated way maintaining user privacy.
- Constructed a function dividing dataset into three equal parts, trains each part using a logistic regression model, and then transmits these models to a trusted aggregator for computing average.

EXTRACURRICULAR ACTIVITIES

- Took an active role as a backend developer and managed a team during intense 24-hour hackathon, Codeshastra, hosted by the DJ Computer Society of India in 2022.
- Took lead in expanding data science expertise by completing professional course of IBM Data Science (2021–2022),University of Michigan's Python Data Structures course (2021).
- Contributed as a Teaching Assistant for the Data Structures Course, conducting lectures on topics including Stack, Queue, Greedy Algorithm, and Amortized Cost, and resolved queries through doubt solving sessions