

KRUTIKA RAJESH BHALLA

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EDUCATION

Master of Science, Computer Science

University of California, Riverside

Sep 2022 - Dec 2023

GPA: 3.83/4.0

- Relevant Courses: Advanced Operating System, Design and Analysis of Algorithms, Artificial Intelligence, Big Data Management, Information Retrieval, Computer Security, Spatial Computing

Bachelor of Technology, Information Technology

KJ Somaiya Institute of Engineering & Information Technology, Mumbai, India

Jul 2018 - May 2022

GPA: 9.16/10.0

- Relevant Courses: Agile & Scrum Software Development, Software Development Life Cycle, Object Oriented Programming, Network Security, Data Structures and Algorithms, Machine Learning and Pattern Recognition, Natural Language Processing

PROFESSIONAL EXPERIENCE

Software Engineer | TTK Healthcare Ltd | Mumbai, India

Feb 2022 - Aug 2022

- Engineered a Sales Forecasting Model by integrating **Random Forest Regression** (for feature selection) & **LSTM** (for time-series forecasting) achieving a **94%** accuracy. Used **Amazon SageMaker** for efficient model training and deployment
- Collaborated with cross-functional teams to enhance **ETL pipeline** for sales data using **Apache Airflow**. Integrated data from various sources such as internal CRM sales records and inventory level data onto a unified database
- Implemented **MySQL** and **Python Scripting** for cleaning, preprocessing dataset, and eliminating redundant columns. This improved data retrieval speeds by **27%**, minimized data inconsistencies, and bolstered data integrity
- Developed a dashboard by integrating **RESTful APIs** with **Django & React JS** for seamless data exchange and **Plotly** charts for data visualization

Software Engineer | Kennovation Software Services Pvt Ltd | Mumbai, India

Aug 2021 - Jan 2022

- Expanded the capabilities of a cross-platform application using **Python** and **Pillow** library, enabling it to read **6+** previously inaccessible medical report types, including MRI, fMRI, PET, and EEG scans
- Developed a **Python Scripting** Model to convert Medical Reports, Clinical History, and Physiological data into **DICOM** files and processed over **10,000+** reports
- Streamlined **MySQL** commands through **Pandas** and integrated **PyTorch's tensors** for a **32%** boost in query speed and data retrieval efficiency, optimizing overall system performance
- Assisted in maintaining a **CI/CD** pipeline using **Jenkins & Docker** speeding app updates by **40%** on the server

Full Stack Developer | Rudraksha Welfare Foundation | Mumbai, India

Jan 2021 - Aug 2021

- Designed a **CRM** system using **Node & Vue JS**, for **JSON**-based data exchange between app and server
- Integrated a **project management module** with scheduling interfaces, improving tracking efficiency by **30%** and boosting donor contributions by **15%** through enhanced transparency
- Implemented **Jenkins & Docker** to build a **CI/CD** pipeline, speeding up CRM updates by **40%** and cutting downtime by **50%**, thus boosting operational efficiency
- Managed the CRM's deployment on **Amazon Cloud**, leveraging **EC2** for computing and **S3** for storage, resulting in a **35% increased** scalability and improved data handling capacity
- Conducted unit tests using **Jest** to bolster application performance by **20%** and improve reliability

PROJECTS

Multi-Speaker Recognition and User-Specific Answering System

- Designed and perfected a voice authentication framework using **RNN & MFCC**-based **Voice Activity Detection (VAD)**, reliably identifying users by extracting pivotal audio features including **tone**, and **pitch**, even in noise-pervaded environments
- Integrated **HuggingFace Transformers** & **SpaCy-3** for audio-to-text conversion with **95%** accuracy, utilizing **LLMs** to enhance linguistic pattern recognition and improve context-aware response delivery
- **Authored & presented** a research paper at [IEEE Xplore's 3rd International Conference for Emerging Technology \(INCET\)](#) emphasizing system's proficiency in noisy environments and its innovations

COVID Crowd Counting System

- Leveraged **YOLOv3** (chosen for its real-time object detection capabilities) and **GMM** algorithms to accurately count individuals from multiple CCTV feeds, ensuring **no double-counting** from overlapping camera views
- Designed a **real-time Dot Map** visualization tool for highlighting areas of congestion. Achieved a remarkable accuracy of **92%** in detecting crowded sectors
- Led deployment of system across multiple high-traffic zones (grocery/medical stores), resulting in a **44% reduction** in congestion incidents, crucial for maintaining COVID-19 safety protocols

Deepfake Content Detection

- Championed an **LSTM-based** model to evaluate **image & video** frames, pinpointing inconsistencies and achieving a standout **93%** accuracy rate in deepfake identification. Ensured **7% fewer** false positives compared to conventional models
- Managed and revamped Kaggle's **500GiB DFDC** dataset, segmenting videos into **5-second** units, leading to a **20% increase** in processing speed and making vast data manageable for **LSTM** analysis
- Enhanced efficiency and scalability by strategically integrating **Amazon EC2**, boosting model computation speeds. Additionally, adopted **Amazon S3**, for superior storage, preparing system for significant future dataset expansions

WhatsApp Chat Analyzer

- Managed and dissected extensive chat datasets, filtering out links and emojis while retaining vital Hinglish (Hindi + English) words; parsed and analyzed over **1 million** messages, achieving a **97%** accuracy in data categorization and visualization
- Built a **Streamlit** dashboard, integrating advanced visualizations like activity timelines, word clouds resulting in **40% reduction** in data interpretation time and a **50% surge** in user interaction due to clear visual feedback
- Utilized **Pandas** for data manipulation, and efficiently extracted key metrics like top users and message frequencies, leading in a **32%** quicker insight retrieval for end-users.

Patient Appointment Portal

- Engineered an online appointment platform using **Django**, enabling seamless scheduling of virtual and in-person consultations. Ensured smooth user-checkout by integrating **PayPal's** payment gateway
- Utilized **AWS EC2** for dynamic scaling and **RDS** for managing a database of over **10,000** patient records with sub-second query response times. Containerized the application with **Docker**

Baked In Bombay

- Spearheaded end-to-end development of a business-focused web platform, employing **React** for an interactive interface (leading to **25%** hike in user-engagement) and **Node** to bolster server efficiency (reducing load times by **15%**)
- Implemented **PostgreSQL** to efficiently manage and process **100+** orders daily, and integrated **Stripe API**, leading to a **20%** surge in successful online transactions

TECHNICAL SKILLS

Languages: Python, JavaScript, C++, Java, C#, MySQL, PostgreSQL, MongoDB, HTML5/CSS, JQuery, AJAX, JSON

Frameworks: Flask, Django, Node JS, React JS, Vue JS, Docker, Kubernetes, Hadoop, Jenkins, Kafka, Apache Airflow

Tools & Libraries: GIT, UNIX, Plotly, JIRA, AWS, Sagemaker, Tableau, Tensorflow, SKLearn, NLTK, PyTorch, Numpy, Pandas

AWARDS & CERTIFICATIONS

- **2nd Place**, UCR Programming Challenge (competed against **200+** scholars including PhDs and Master's candidates)
- **1st Place**, PICT's Impetus & Concepts - Recognized for "Multi Speaker Recognition and User-Specific Answering System" in the Speech/Audio Processing domain
- **2nd Place**, Mastek Deep Blue Competition - Recognized for "COVID Crowd Counting System"
- **AWS Certification:** Going Cloud Native & Building Serverless Applications
- **Graduate Assistant** CS153 Design of Operating System & CS180 Introduction to Software Engineering. Conducted Problem-Solving Sessions and Office Hours for assisting students. Graded assignments and facilitated lab sessions