Hitansh Dharmendra Shah

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Education

Master of Science, Computer Science **May 2024**
Arizona State University, Tempe, AZ *GPA: 4.0/4.0*
Coursework: Statistical Machine Learning, Distributed Database Systems, Data Mining, Data Visualization, Semantic Web Mining

Bachelor of Technology, Information Technology **Oct 2020**
University of Mumbai, India *CGPA: 8.40/10.0*

Professional Experience

Oracle Financial Services Software, India **Oct 2020 – Jun 2022**
Software Engineer

- Redesigned an end-to-end account management system for international currency donations, ensuring compliance with the new regulations, using **Spring Boot** and **JavaScript**, generating revenue of $120k.
- Developed thread-based asynchronous **Java** Pollers using **J2EE-EJB** functionalities with the help of EAR applications to trigger about 50,000 corporate alerts daily through middleware technologies to HDFC API gateway.
- Engineered **REST APIs** using Spring Boot for online banking transaction memo creation and deletion, eliminating the 1 day waiting period of manual memo generation; deployed the APIs in Kubernetes container environment.
- Programmed **SQL procedures** to auto-generate account related reports instantly at the time of account creation, reducing the overall load on reporting database and reports generation time from 8 hours to 6 hours.
- Collaborated with cross-functional teams to perform RCA, track and resolve production issues utilizing **Scrum** framework, ensuring system stability with less than 2 hours downtime.

AurionPro Solutions, India **Jun 2018 – Aug 2018**
Web Development Intern

- Designed 3 responsive **ReactJS** single page applications for consumer services using **HTML** and **BootStrap**; visualized current and past usage, costs and trends through graphs using **Chart.js**.
- Built and automated **SQL connectors** to fetch over 14,000 records of user data from disparate sources and create JSON files as a data source for the above-mentioned applications according to billing cycles.

Projects

Mars Crater Detection **Jan 2023 – Oct 2023**

- Performed **binary and multi-class semantic segmentation** on THEMIS dataset with U2-Net and UNetFormer architectures using **TensorFlow** and **Keras** to predict crater masks and classes; **UNetFormer** achieved highest Dice score of 0.81.
- Implemented **template matching** algorithm for crater counting, obtaining 10% increase in recall and f1-score over traditional U-Net prediction masks. Conducted out-of-domain evaluation on CTX and DoMars16 datasets to prove generalizability.
- Published "Automated Multi-class Crater Segmentation in Mars Orbital Images" in Proceedings of the 6th ACM SIGSPATIAL International Workshop on AI for Geographic Knowledge Discovery, Germany; **https://doi.org/10.1145/3615886.3627748** .

Named Entity Recognition **Jan 2023 – May 2023**

- Trained **FLAIR**, **ACE** (Automated Concatenation of Encodings), **BERT+CRF** and **BiLSTM+CRF** models on CoNLL2003 dataset for comparative analysis through confusion matrix; ACE performed best with an f1-score of 0.942.
- Collaborated with a team of 6 to develop **Flask APIs** for the 4 models and create an application using **ReactJS**, allowing the user to enter text and select a model for named entity recognition.

Echo Chamber Detection **Jan 2023 – May 2023**

- Detected echo chambers between 10000+ **Twitter** accounts by using retweet network from **OSoMe** network tool and finding similarity between users' timelines by analyzing tweets using **Sentence-BERT (SBERT)**.
- Determined political polarization and spread of misinformation w.r.t USA Presidential elections through the echo chambers considering "#MakeAmericaGreatAgain" as the basis of the study and visualized the same using **Gephi**.

XAI: Explainable Artificial Intelligence **Aug 2019 – May 2020**

- Devised an approach using **LIME** and **PyTorch** hooks to explain the susceptibility of **ResNet34** model outputs to the input features by visualizing neuron activations and super-pixel shading for malaria detection.
- Published "XAI - An Approach for Understanding Decisions Made by Neural Network" in Algorithms for Intelligent Systems, Springer Singapore (2020); **https://doi.org/10.1007/978-981-16-0167-5_17** .

Technical Skills

Programming Languages: Java, SQL, Python, C, C++, R, JavaScript, HTML, CSS
Machine Learning: NumPy, Pandas, Matplotlib, Scikit-Learn, PyTorch, Keras, TensorFlow, HuggingFace, OpenCV
Technologies: Flask, ReactJS, Bootstrap, Spring, ElasticSearch, Kibana, Grafana, Agile Methodologies, Scrum, Hadoop, Kafka
Databases/Cloud: Oracle, MySQL, MsSQL, MongoDB, PostgreSQL, Cassandra, AWS (S3, EC2, Lambda), GCP
Tools/OS: Git, GitHub, Bitbucket, Jira, Confluence, Docker, Kubernetes, Maven, Postman, CI/CD, JUnit, Linux, Unix