Tanuj Jain

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Professional Experience

School of Computing and Augmented Intelligence - ASU | *Research Assistant* | Tempe, Arizona **May '23 – Ongoing**

- Actively involved in the building of "Unilog: A framework for unified system-level logging". This project aims to streamline system-level logging processes and enhance provenance analysis for improved efficiency and accuracy.
- Investigated and conducted comprehensive research on existing system logging techniques and provenance analysis methods.
- Currently working on integrating various system logging and provenance analysis approaches into a cohesive and unified framework.

GlaxoSmithKline (GSK) | *Software Engineer Intern* | Mumbai, India **Jan '22 – May '22**

- Developed an end-to-end anti-counterfeit and supply chain management system using robust and scalable AWS infrastructure, enabling real-time querying through GraphQL API and a responsive and scalable frontend using React.JS.
- Established CI/CD pipelines for automated testing and streamlined delivery processes.
- Worked on a 'Billing App' which extracted data from soft copies of bills using technologies like image processing and OCR and saved it in an Excel sheet. This software could process around 1000 files in 2-3 seconds.

Newbee Works Pvt. Ltd. | *Full Stack Web Developer Intern* | Kerala, India **Jan '21 – Jun '21**

- Pioneered the development of a job portal catering specifically to industry newcomers, empowering companies to post job openings and enabling job seekers to apply and directly contact employers.
- Leveraged AWS services, including user authentication, data storage using S3 bucket, and database utilization with AWS DynamoDB, resulting in a robust system, ensuring data integrity and seamless scalability.
- Engineered a responsive and scalable frontend using React.JS and seamlessly integrated it with the AWS backend through Rest API, facilitating smooth communication between the frontend and backend components of the application.

Projects

riscv-xv6 | *MSCS Advanced OS Course Project* | **Tech Stack:** C++, Assembly, GDB, QEMU

- Gained knowledge about physical memory protection, process memory management, memory virtualization, locks, semaphores, scheduling, context switching, device drivers, and DMA.
- Created a custom bootloader for the riscv-xv6 kernel and introduced additional features to the OS like on-demand paging for a process using page faults, over-subscription of heap pages by implementing page swapping technique, and multi-thread scheduling.

Vulnerability - Centric Code Summarization | *MSCS NLP Course Project* | **NLP Models:** GPT-3, BERT, T5

- Leveraged the Stack Exchange Data Dump to conduct vulnerability-centric code summarization, fine-tuning pre-trained BERT and T5 models, resulting in a notable 57% accuracy in summarization performance.
- Explored prompt engineering techniques for the NLI (Natural Language Inference) task, employing GPT-3 and conducting a comprehensive comparative analysis against the results achieved by BERT and T5 models.

Multilingual Speech Translation for Indian Dialects | *Senior Year Project* | **Tech Stack:** PyAudio, TensorFlow, Flask, React.JS

- Implemented an Automatic Speech Recognition (ASR) model leveraging LSTM-CNN Architecture, achieving 90% validation accuracy.
- Trained two Text-to-Text Machine Translation (MT) models – one with LSTM and another with Bidirectional LSTM and Attention Layer – yielding validation accuracies of 75% and 95%, respectively.

Secura Drive | *An Encrypted Cloud Storage* | **Tech Stack:** Django, Cryptography, MongoDB, Zlib

- Engineered a secure encrypted file storage system on the cloud, leveraging Django Rest Framework and MongoDB.
- Implemented AES-128 encryption and file compression techniques, ensuring files are protected and efficiently stored in the cloud.
- Designed seamless file retrieval processes, enabling decompression and decryption of files on-the-fly.

Education

Arizona State University, Tempe, AZ | *Master of Science in Computer Science* | ***CGPA: 3.56/4*** **Aug '22 – May '24**
Relevant Courses: Software Security, Advanced Operating Systems, Database Management System Implementation.

K. J. Somaiya College of Engineering, Mumbai, India | *B. Tech in Computer Engineering* | ***CGPA: 8.55/10*** **Aug '18 – May '22**
Relevant Courses: Computer Organization and Architecture, Advanced Analysis of Algorithms, Data Structures, Computer Networks.

Technical Skills & Abilities

Programming Languages: C/C++, Python, Java, JavaScript, SQL, Assembly, HTML, CSS
Databases: MongoDB, Firebase, MySQL, PostgreSQL
Frameworks and Tools: Django, Flask, React.JS, GraphQL, Angr, GIT, Docker, Postman, GDB, QEMU, Linux, Angr
Cloud Computing: AWS (EC2, S3, DynamoDB, Route 53)

Publications & Certificates

Secured File Storage in Cloud Computing Application: Secura - Drive | *IEEE 12th ICCCNT 2021, IIT Kharagpur*
Emotion-Based Music Recommendation System Using LSTM – CNN Architecture | *IEEE 12th ICCCNT 2021, IIT Kharagpur*