RAJAT KESHRI
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EDUCATION

Master of Science in Computer Science — **Boston, MA, United States**
Northeastern University – Khoury College of Computer Sciences — ***Sep 2022 – May 2024***
Courses: Programming Design Paradigm, Foundations of AI.

Bachelor of Engineering in Electronics and Communication — **Bangalore, India**
R V College of Engineering — ***Aug 2016 – Aug 2020***
Courses: Data structures, OOPs, Database Systems, Computer Networks, Web Development. — ***GPA: 9.01 / 10***

TECHNICAL SKILLS

- **Languages:** C, C++, Python, Java, JavaScript, HTML, CSS, MATLAB.
- **Frameworks:** NumPy, TensorFlow, PyTorch, jQuery, React-Redux, NodeJS, Django, Flask, MongoDB, MySQL, OpenCV.
- **Tools:** Bitbucket, Git, Jenkins, Docker, Jira, CI-CD Pipeline.

EXPERIENCE

Khoury College of Computer Sciences — **Boston, MA, United States**
Graduate Teaching Assistant – CS4500 Software Development — ***Sep 2022 – Dec 2024***

- Conducting code reviews on object-oriented design on projects (in Java and Python) and mentoring a group of 10 to 15 students, while working under Dr. Matthias Felleisen and Dr. Benjamin Lerner.

Western Digital Corporation — **Bangalore, India**
Firmware Engineer — ***Aug 2020 – Aug 2022***

- Developed new, and enhanced existing C/C++ firmware algorithms in linux environment for error handling and read/write flows for Solid State Drives (SSD), while collaborating with hardware architecture team.
- Designed an automation test framework and system monitoring software (Python backend) for white/grey box SSD firmware testing, while leading a team of three. Integrated cloud-based Kubernetes automated CI pipeline for regression testing, reduced debugging time by 50%.
- Enhanced bug reproduction efficiency by 30% over existing framework by integrating machine learning (decision trees and random forests) over firmware failure logs.
- Applied principles of waterfall and agile SDLC approaches, including software architecture design, development, integration, deployment and code maintenance, with CI/CD pipelines.

Western Digital Corporation — **Bangalore, India**
Software Development Intern — ***Jan 2020 – July 2020***

- Deployed a full-stack project management and data analytics web tool for planning, tracking, and managing projects. Tool helped to improve project planning time by 30% (REST, React, Django, and MySQL).
- Designed service-oriented architecture with APIs and interactive graphical dashboards to view project updates in real time and deployed a database docker server on a linux based internal cloud, to merge 10+ databases on MySQL.
- Adapted regression models and statistical models (Bayesian Models) for forecasting deadline risks up to +50% of a sprint cycle and created docker containers for the machine learning models.
- Devised a feature for automatic task allocation to employees based on skillset and complexity (Light GBM algorithm), by processing large dataset of previous project's employee data. Model proved an F1 score of 0.93.

PROJECTS

Sound Map Generation Using Image Context Analysis, *Harvard University* — ***Oct 2022 – Oct 2022***

- Trained, and deployed three machine learning models on Google Cloud using docker containers – Image to caption model (RNN LSTM), Sound synthesizer model (GANs), and image depth analyzer model (CNN, OpenCV, with accuracies of **93.2%, 85.4% and 98% respectively**.
- Applied statistical logic to identify and correlate image description generated to the audio files, based on caption tokenization.
- Calculated distances of object from reference point of view in the image and amplified sound intensities of the objects closer to the POV. (Tech Stack: Google Cloud, Docker, Python, Tensorflow, Pytorch, OpenCV, Fast API).

Text to Image Generation using GANs, *RVCE* — ***Feb 2020 – Apr 2020***

- Conducted research on improving current implementation on generation of images based on textual descriptions, with CUB dataset with 1000+ images.
- Modeled Cycle-GAN with state of art RNN-CNN encoding - captions being encoded through an RNN, while images being encoded with CNN – producing an accuracy of **93%**. (Tech stack: Python, CV, Keras).

Data Profiling with Blockchain and Facial Model, *RVCE* — ***Sep 2019 – Oct 2019***

- Built a secure data storage backend solution on blockchain data-structured decentralized network with support for 10 customers. Data underwent profiling and via credible govt. websites before storing people's data on the network.
- Scaled up server by adding an additional 15+ virtual host nodes and a two-factor authentication –applied the concept of OTP along with facial recognition for accessing data.
- Trained CNN facial recognition model proved fruitful with an accuracy of **96%**. (Tech Stack: Python, Sockets, Keras, OpenCV, Flask).

PUBLICATIONS AND EXTRA-CURRICULARS

- '***Text to Image Generation using GANs and RNN-CNN Embeddings***' in Journal of Chengdu University of Technology, August 2021.
- '***Employee Turnover Using Light GBM Algorithm****'* in International Journal of Innovative Science and Research Technology, April 2020.
- Achieved 2nd place in HackHarvard by Harvard University. Built a sound map and animated video generation, using depth mapping and context creation over input image, Cambridge, MA, 2022.
- Achieved 1st place in Honeywell hackathon. Productised a speaker change system with RNN and BIC model, in April 2019.
- Achieved 1st place in Nutanix hackathon. Implemented a smart attendance system powered by speaker recognition with HMM, in November 2018.