RAJAT KESHRI

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EDUCATION

Master of Science in Computer Science
Northeastern University, Boston, Massachusetts ***Sep 2022 – Dec 2024***
Relevant Courses: Programming Design Paradigm, Web Development

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

TECHNICAL SKILLS

- **Programming Languages:** C, C++, Python, Java, JavaScript, HTML, CSS, Matlab
- **Tools:** jQuery, React, NodeJS, Express, Django, Flask, MongoDB, MySQL, OpenCV, Keras, TensorFlow
- **Programming Proficiency:** Software Development, Software Engineering, Firmware Algorithms, OOPs, Computer Vision, Machine Learning

EXPERIENCE

Firmware Engineer, Western Digital Corporation, Bangalore ***Aug 2020 – Aug 2022***
- Involved in C++ firmware algorithms and development of modules like error handling and read/write flows for Solid State Drives (NVMe/SATA Nand Storage Devices).
- Managed and mentored a team of three while designing and developing an optimized software automation test framework using python, for white box testing and catching firmware bugs of SSD firmware modules.
- Improved firmware bug reproduction time by 30%, training a machine learning model (used Decision trees and Random Forest) on the failure log firmware events, and improved the automation test framework.
- Gained experience in waterfall and agile software engineering life cycle approaches, including software architecture design, development, unit testing, integration, deployment and code maintenance, and CI/CD pipelines.

Software Intern, Western Digital Corporation, Bangalore ***Jan 2020 – July 2020***
- Built a Python-based management web tool using React and Django to plan, track, and manage projects, which increased business productivity.
- Added a feature for automatic task allocation to employees based on skillset and complexity of the task, while using machine learning to prevent over-allocation of tasks.
- Used Light GBM algorithm to predict attrition rate based on previous projects and tasks using accuracy, precision, recall, and F1 score as metrics.
- Tool improved project planning time by approximately 50% and also reduced the rate of attrition by 5%, based on the automatic task allocation.

Software Intern Avionics, Boeing India, Bangalore ***Jun 2019 – Jul 2019***
- Developed a Python XML parser to convert an XML file (which defined the cockpit interface of flights) it into a tree structure.
- Further, built an automation code generator to generate C++ code, with classes and objects initialized using the parsed XML file as input, reducing manual programming efforts by 90%.

PROJECTS

- **Human Emotion Prediction, Grapple** ***Dec 2020 – Feb 2021***
  Built an ML model using **Keras in Python** to predict emotions in real time. Model classified emotions among 5 given classes and with an accuracy of 89.76%. This project was built for Grapple Online hackathon, and top 10 position was secured for it.

- **Text to Image Generation using GANs, *RVCE*** ***Feb 2020 – Apr 2020***
  Conducted research on generation of images based on textual descriptions, **using Python**. State of art RNN-CNN encoding was used - captions being encoded using an RNN, while images being encoded using CNN. The RNN-CNN encoded pair were fed into a GAN, which worked on alpha-beta purring maximize the generated image accuracy. The model performed with an accuracy of **93%**.

- **Customer Profiling using Blockchain Data-Structure and Facial Recognition, *RVCE*** ***Sep 2019 – Oct 2019***
  A secure data storage solution was built on a decentralized network using blockchain data structure (using **Python**). The data was secured and accessible only via facial recognition. The data underwent profiling and verification before the input to the blockchain data structure, such as verification of passport information. Scaling up, two factor authentication using OTP was implemented along with facial recognition. The facial recognition model was built using a CNN with an accuracy of **96%.**

- **Speaker Recognition using Hidden Markov Model,** ***RVCE*** ***Sep 2018 – Oct 2018***
  Developed a speaker recognition and speech recognition using Hidden Markov Model (HMM) in **Python**. The unique features of the speech were extracted using Mel Frequency Cepstral Coefficient (MFCC). The model was trained using HMM and could predict a speaker based on their voice with approximate **90%** accuracy. HMM proved to be **33%** faster compared to CNNs. Secured 1st with this project in Ingenius hackathon sponsored by Nutanix.

PUBLICATIONS

- Published a paper on '***Text to Image Generation using GANs and RNN-CNN Embeddings***' in Journal of Chengdu University of Technology, ISSN: 1671-9727, Volume 26, Issue 8, August – 2021.
- Published a paper on '***Prediction of Employee Turnover Using Light GBM Algorithm****'* in International Journal of Innovative Science and Research Technology, ISSN: 2456-2165, Volume 5, Issue 4, Apr 2020.
- Published a paper on '***Waste Segregation Using Artificial Intelligence****'* in International Journal of Scientific & Technology Research, ISSN: 2277-8616 903, Volume 8, Issue 12, Dec 2019.

AWARDS AND ACHIEVEMENTS

- Achieved **1st place** in Hackwell hackathon by Honeywell, for building a speaker diarization system using RNN and BIC model, Bangalore, 2019.
- Awarded **2nd place** in National level blockchain hackathon by IBM, Bangalore, where customer profiling system was built on the IBM blockchain, 2019.
- Achieved **1st place** in Business Marathon, held by RVCE, Bangalore, Bangalore, 2019, for building a business plan for a sustainable replacement of cement with fiber glass.
- Achieved **1st place** in Ingenius hackathon sponsored by Nutanix, Bangalore, for building a smart attendance system using speaker recognition using Hidden Markov Models, 2018.

CO-CURRICULAR ACTIVITIES AND EXTRACURRICULAR ACTIVITIES

- Completed the "*Introduction to Software Testing*" by University of Minnesota, on Coursera, June 2022
- Completed the "*Full-Stack Web Development with React Specialization*" course on Coursera, January 2021
- Published a technical article on "*Goal Prediction Using AI*" and *"Music Genre Classification Using LSTM"* in Servo Digital Magazine, June 2020
- Part of organizing committee and Head of Photography Club for 8th mile annual cultural fest, RVCE, Jan 2020 - Feb 2020.