RAJAT KESHRI

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ACADEMIC QUALIFICATION

Bachelor of Engineering in Electronics and Communication, Rashtreeya Vidyalaya College of Engineering (RVCE), Bangalore; **CGPA: 9.01 / 10** ***Aug 2016 – July 2020***

WORK EXPERIENCE

Firmware Engineer, Western Digital Corporation, Bangalore ***Aug 2020 – Present***

- Involved in software automation test framework development and integration for SSD modules related to and NVMe read/write error and data recovery flows for firmware on single-level/multi-level NAND storage cells (SLC/TLC/QLC).
- Proficient in C++ firmware algorithms debugging and experience in designing/development of automation python scripts for firmware testing.
- Supervised and led read error firmware modules like XOR protection, data scrubbing and Voltage shift analysis module.
- Involved in developing a multi-threading and multi-processing framework for test scripts to run in parallel on the same firmware-hardware code in grey box and black box testing.

Software Intern, Western Digital Corporation, Bangalore ***Jan 2020 – June 2020***

- Developed and deployed a full-stack automation webtool called "*Project Planning and Tracking Webtool*", for planning and tracking SSD validation projects and automatic employee-task allocation.
- Using mathematical automation logic and machine-learning to prevent over allocation and overburdening of employees with tasks and used Light GBM algorithm in order to predict attrition rate.
- Gained experience and insights in impact of automation algorithms and AI on data analytics, human resource and project management.
- Tool UI was built using HTML, JS and jQuery, whereas the business logic layer was built using python using Django framework. MySQL was used as the database service.

Software Intern Avionics, Boeing India, Bangalore ***Jun 2019 – Jul 2019***

- Developed a python XML parser to convert XML file it into a tree structure, which was used to define backend code for cockpit interface.
- Developed an automation code generator to generate C++ code, with classes and objects initialized using the XML file as input, and avoid manual programming efforts.

Verilog Intern, Calligo Technologies, Bangalore ***Jun 2018 – Jul 2018***

- Conducted research on high performance Arithmetic Logical Unit to find Reciprocal and Inverse Square Root of a 32-bit and 42-bit single precision number.
- Expanded the research to 45-bit floating point single precision number. Coded using Verilog and test benched on C

PROJECTS

- **Autonomous Drone System,** ***Independent Research Project*** ***Feb 2021***
  Description: Built an autonomous drone system (simulation) using ardupilot drone firmware and connected it with python dronekit. Was able to control Arming of drone, Altitude control, waypoint adjustment and autonomous drone flight using latitude and longitude positions.

- **Text to Image Generation using GANs,** ***RVCE*** ***Feb 2020 – Mar 2020***
  Description: Research was conducted on generation of images based on textual descriptions. The CUB bird dataset was used and the captions were encoded using an RNN, while images were encoded using CNN. The RNN-CNN encoded pair were fed into a GAN, which worked on alpha-beta purring min-max logic to maximize the generated image accuracy with respect to input caption. The model was trained with an approximate accuracy of 93%.

- **Customer Profiling using Blockchain Data-Structure and Facial Recognition,** ***RVCE*** ***Sep 2019 – Oct 2019***
  Description: Built a secure data storage solution on a decentralized network using blockchain data structure, which was accessed via facial recognition. The data undergoes profiling and verification before the input to the blockchain

data structure, such as verification of Aadhar card and passport information. The data is stored privately on the user's device making it a decentralized peer to peer network. Further, two factor authentication using OTP was implemented with facial recognition. The facial recognition model was built using a CNN with an accuracy of 96%.

- **Decentralized cloud storage solution using peer to peer network, *RVCE*** ***Feb 2019 – Mar 2019***
  Description: Built a decentralized cloud storage solution using peer to peer communication with socket programming. The files were stored in individual devices connected to the server and central server stored only the location where a particular file was stored in the network. A device would request for a file to the server and server would return the IP address of the other device where the file was stored and the file would be transferred from one peer to another peer directly.

- **Speaker Recognition using Hidden Markov Model, *RVCE*** ***Sep 2018 – Oct 2018***
  Description: Developed a speaker recognition and speech recognition in a team of 2, using Hidden Markov Model (HMM). The unique features of the speech are extracted using Mel Frequency Cepstral Coefficient (MFCC) and the model was used trained using HMM on these features. The model could predict a speaker based on their voice with approximate 90% accuracy.

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.

TECHNICAL SKILLS

- **Programming Languages:** C, C++, Python, HTML, JS, CSS
- **Tools:** Django, Flask, jQuery, React, NodeJS, Express, MongoDB, MySQL, OpenCV, Keras, TensorFlow,
- **Programming Proficiency:** Firmware programming, Embedded Programming, Automation Scripting, Data structures, OOPs, Computer Vision, Machine Learning,

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 Rashtriya Vidyalaya College of Engineering, 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.
- Achieved **1st place** in Phaseshift Machine Learning hackathon, Bangalore, for developing a CNN model to predict the type of galaxies was built on Kaggle, 2018.
- Amongst **top 10 finalist** in Techathlon hackathon, Bangalore, 2018.

CO-CURRICULAR ACTIVITIES AND EXTRACURRICULAR ACTIVITIES

- 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
- Attended two weeks workshop on "*Cloud Fundamentals*", by Microsoft, Bangalore 2017
- Part of organizing committee and Head of Photography Club for 8th mile annual cultural fest, Rashtreeya Vidyalaya College of Engineering, Jan 2020 - Feb 2020.
- Organized and participated in the line follower robot workshop, Astra-Robotics Club of Rashtreeya Vidyalaya College of Engineering, 2018.
- Volunteered in paper drive event conducted by Rotaract Club of Rashtreeya Vidyalaya College of Engineering by collecting papers from homes across Bangalore for recycling, Sep 2019.