Rahul Chand

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EDUCATION

Birla Institute of Technology, Pilani | 2015-19

Bachelor of Engineering (Honors) in Computer Science and Engineering,

GPA - **9.62/10**, ***Class Rank*** - **6/180+**

Selected Coursework: Machine Learning, Pattern Recognition, Logic in Computer Science, Neural Networks and Fuzzy Logic, Data Mining, Information Retrieval, Graphs and Networks, Computer Architecture, Operating System

INDUSTRY AND RESEARCH EXPERIENCE

Microsoft Research, Bangalore, India | Research Fellow **July 2021-July 2023**

- Worked with Microsoft Turing Team on Transformer compression using sparse factorization.
- Worked in the XC team under Manik Verma on Extreme Multi Label Learning (XML). My work primarily involved studying & improving tail performance of extreme classifiers via regularization (Paper under review). Additionally, I also worked on the problem of compressing extreme classifiers.

Arcesium, Hyderabad, India | Software Engineer & Intern **Aug 2019-May 2021**

- Worked in the Performance and Accounting team as a full stack developer.
- Worked as part of the team responsible for developing microservices & frontend using Java, Kotlin, Python, ReactJS & T-SQL for handling large volumes (>100k) of trades daily.

Indian Institute of Science (IISC), India | Undergraduate Thesis student **Jan 2019-July 2019**

- Worked under Prof. Venkatesh Babu at Video Analytics Lab(VAL) for my undergrad thesis on the problem of optical flow estimation using matrix capsule networks.
- **Paper**: https://arxiv.org/abs/2304.00306

Indian Institute of Remote Sensing (IIRS), Dehradun, India | Research Intern **May 2017-July 2017**

- Worked with the Geo-informatics Department on their road-asset management project.
- My work involved developing a deep learning solution on Keras using Faster-RCNN & FCN for road-asset mapping of Indian roads. The model was trained on VOC2012 & images of Dehradun roads obtained from IIRS.
- **Report:** github.com/RahulSChand/IIRS-Vehicle-Detection

TEACHING EXPERIENCE

Teaching Assistant for below courses. Graded assignments, prepared course projects & supervised lab sessions.

- **Fall 2018:** Data Mining, Principles of Programming Languages, Computer Programming
- **Spring 2018:** Data Structures and Algorithms, Database Systems
- **Fall 2017:** Logic in Computer Science

PROJECTS

Open source libraries & contributions

- **vRAM for LLMs** (Github)
  - Tool to check GPU vRAM requirements for training & inference of any LLM. Supports frameworks like HuggingFace, vLLM, exLlama, llama.cpp and quantization (bitsandbytes, GGML).
- **llama2.c for dummies** (Github)
  - Step by step walkthrough of the inference code of llama2.c written as a starter reference for LLM inference.
- **Fast & tiny datasets for optical flow (**Github**)**
  - Library to generate tiny optical flow datasets on the fly for sanity testing optical flow estimation models. Written as part of undergraduate thesis at IISC & used in the paper link

- **Efficient Batched Torch KSVD** (Github)
    - Library to run sparse dictionary completion algorithm KSVD on batched matrices on GPU. Written using pytorch as part of transformer compression work at Microsoft Research.
- **Language model compression with weighted low-rank factorization (**Github**)**
    - Pytorch implementation of the ICLR 2022 paper “Language model compression with weighted low-rank factorization**”**. Code written as part of work at MSR India.
- **Attention network for reading comprehension and question answering** (Github)
    - Tensorflow implementation of the paper “Multi-Granularity Hierarchical Attention Fusion Networks for Reading Comprehension and Question Answering paper”.

ACHIEVEMENTS

- One of 30 students selected from Maharashtra to attend training camp for INMO (Indian National Maths Olympiad) 2015.
- Merit-cum-Need scholarship at BITS Pilani for all 8 semesters.

SKILLS

Programming Language: Python, C++, Java, JavaScript, Kotlin

Libraries and Frameworks: PyTorch, Numpy, TensorFlow, Keras, HuggingFace, ReactJS, NextJS