



RAJ MOHAN TUMARADA

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Education

Universität des Saarlandes

Master of Science in Data Science and Artificial Intelligence. Grade: 1.8/1.0

Apr. 2021 – Present

Saarbrücken, Saarland

GITAM University

Bachelor of Technology in Computer Science and Engineering. Grade: 8.28/10.0

July. 2013 – July. 2017

Visakhapatnam, Andhra Pradesh-India

Relevant Coursework

- Machine Learning
- Neural Networks
- Database Systems
- Artificial Intelligence
- Computer Graphics
- High-Level Computer Vision
- Reinforcement Learning
- Statistics with R
- Image Processing and Computer Vision
- Model-Driven Deep Learning Lab for Image Analysis
- Statistical Natural Language Processing

Experience

CISPA – Helmholtz Center for Information Security

Student Research Assistant

May. 2023 – Present

Saarbrücken, Germany

- Working as a HiWi in Threat Detection and Defense research group under Prof. Lea Schönherr on a project related to Continual Learning in Malware Detection.
- Working as a HiWi in Trustworthy ML research group under Prof. Xiao Zhang on a project related on Data poisoning attacks on Neural Networks.

Deutsches Forschungszentrum für Künstliche Intelligenz (DFKI)

Student Research Assistant

Oct. 2021 – July. 2023

Kaiserslautern, Germany

- Working as a HiWi in Intelligent Networks research group. Developing Traffic Generators and analyzing deep neural approaches based on Reinforcement Learning (DQN, Double DQN, CQL) by conducting experiments for different 5G use cases like QCI, edge computing, Network slicing, and Orchestration as part of the Open6GHub project are my tasks.

Samsung Research Institute Bengaluru, India

Engineer

Dec. 2019 – Feb. 2021

Bengaluru, Karnataka

- Was part of Samsung's 4G Macro cell and 5G NR-NSA DU research team, responsible for developing features QCI based throughput differentiation for non-GBR bearers, TDD-FDD DL 2CC CA with 4*4 MIMO, Slot-level Dynamic Spectrum Sharing(DSS) and troubleshooting field issues using C & C++.

TATA Consultancy Services

System Engineer

Dec. 2017 – Dec. 2019

Mumbai, Maharashtra

- Was part of the internal research team responsible for developing 4G/LTE features like In-device Co existence for Uplink CA, Instant Uplink Access for Ericsson's proprietary EMCA Modem hardware.

Indian Institute of Management, Lucknow

Internship

Aug. 2017 – Sep. 2017

remote

- Developed a project aimed at analyzing a company's marketing strategy on social media based on Facebook metrics like post reach, page likes, and the number of engaged users.

Projects

Relevance of Sparse pixel representations to Lossy Video Compression | *Python*

July. 2022

- As part of the High-Level Computer vision course, studied how extendable the GAN-based deep sparse pixel selection technique models employed for image compression are to the task of lossy video compression.
- Performed experiments and concluded that the studied models are not generally applicable across different video distributions, resolutions, or compression rates.

Ray-Tracing Engine | *C++*

Jan. 2022

- This ray-tracing engine was developed as part of computer graphics course.
- Submission for rendering competition can be found [here](#).

Semi-supervised learning for image classification | *Python*

March. 2022

- Implemented pseudo-labeling and virtual adversarial training algorithms as part of Neural Networks course.
- Re-Implemented state-of-the-art SimPLE SSL algorithm and improved upon its performance following a supervised learning approach by minimizing the dissimilarity between the strongly augmented unlabeled data and its corresponding pseudo labels belonging to the same class as part of Neural Networks course.

Text Data Augmentation to reduce Out of Vocabulary Rate | *Python*

July 2021

- As part of statistical NLP course, performed experiments based on different pre-processing techniques for the provided English and Bengali corpora, suitable subwords, and vocabulary sizes were discovered. Trained neural network on the subword models using Rnnlm toolkit.
- Generated more text using the trained models and appended the generated text to the initial corpus to tackle OOV rate.

Technical Skills

Languages: Python, C++, C.

Languages

English: C1
German: A2