SAIROOP BODEPUDI

+91 7013475330 | sairoopb@gmail.com | LinkedIn

EDUCATION

Indian Institute Of Technology (IIT) Palakkad, India — *July 2018 - Present*
Bachelor of Technology in Computer Science and Engineering — CGPA: **9.32/10**
Expected graduation month: June 2022

Sri Chaitanya Jr Kalasala, India — *2016 - 2018*
Higher Secondary Education — Overall score: **97.3/100**

FIELD OF INTERESTS

Deep Learning, Natural Language Processing, Computer Vision, Medical Imaging and Diagnostics, Knowledge Graphs, Case Based Reasoning.

RESEARCH EXPERIENCE

An improved case based reasoning system for knowledge graphs — April 2021 - Present
ETH Zürich, Switzerland
Advisor : Prof. Mrinmaya Sachan

- Modified case based reasoning system for knowledge base completion creating an efficient (reduced inference time and memory footprint) model via the reduction of search paths.
- Used graph neural networks and attention based models for ranking candidate solutions.
- Integrated selective prediction and related algorithms including temperature scaling to improve model performance by nearly **10 times** on path based methods.

Beamforming in ultrasound imaging using graph neural networks — August 2021 - Present
IIT Palakkad, India and University of Alberta, Canada
Advisors : Prof. Mahesh R Panicker & Dr. Abhilash H

- Modelled the complex relationships between the sensor data in a structured manner using graphs
- Working on removing redundant transducers with the help of graph neural networks which will directly help in reducing the computational cost associated with beamforming.

Patch based neural network transformation for ultrasound imaging — January 2021 - May 2021
IIT Palakkad, India
Advisor : Prof. Mahesh R Panicker

- Most industrial beamforming methods do not employ the power of parallel computing (i.e GPUs) and thereby are bottlenecked by the high dimension matrix operations.
- Constructed a novel deep learning based algorithm which performs patchwise approximation of the best pipeline (MVDR i.e Minimum Variance Distortionless Response) through DAS i.e Delay and Sum (which is the most efficient) intermediate and can be parallelized on a GPU.

INDUSTRIAL INTERNSHIPS

International Institute Of Information Technology (IIIT) Hyderabad — Hyderabad, India
Product Labs — *May 2020 - July 2020*

- Built an end-to-end application to perform face mask detection for COVID-19 risk analysis on webcam streams efficiently using deep learning models specifically the YOLOv3.

- Model pruning was done to reduce inference time by **3 times** and memory requirements by **5 times** without any decrease in performance.
- Extended OpenPose to classify traffic and pedestrian video stream into zones and evaluate the compliance of social distancing norms in the COVID-19 pandemic.

Cykul Pvt Ltd Hyderabad, India
Mobile application development team *June 2019 - July 2019*

- Modified the original mobile application to include cadence measurement along with better visualization and lesser latency through efficient algorithms.
- Headed the Power Prediction module which involved applying artificial neural networks to predict power from other cyclist factors.
- Power meters are very expensive and can reach $2,000 or more making power measurements difficult but the proposed deep learning method provided an economical and effective solution.

PROJECTS

MaPP : Market price predictor using deep learning

- Built a market price predictor using deep learning algortihms i.e the LSTM with variations and the attention mechanisms to reinforce the output while predicting the future stock trends in the market.
- Text information such as the newspaper articles obtained from crawling the internet were given to the model as a prior which increased the model's performance against outliers. [Github]

TECHNICAL SKILLS

Natural language processing: Transformer-based architectures, language translation models along with knowledge representation and reasoning methods.
Medical imaging: Deep learning methods in medical imaging and diagnostics, ultrasound imaging in the area of beamforming.
Computer vision: Object detection, pose estimation applications in localization, and model optimizations like pruning.
Competitive programming: Deep understanding of algorithms and data structures as well as a 3-star coder on CodeChef.
Programming languages: C, C++, Python, SML.

SELECTED COURSEWORK

Artificial Intelligence, Convolutional Neural Networks for Visual Recognition (Stanford CS231N), Natural Language Processing with Deep Learning (Stanford CS224N), Reinforcement Learning, Foundations of Data Science and Machine Learning, Deep Unsupervised Learning (UC Berkeley CS294-158-SP20), Digital Image Processing, Design and Analysis of Algorithms.

EXTRACURRICULAR ACTIVITIES

Data Analytics Club: Mentor in the Data Analytics Club at IIT Palakkad.
Computer Science and Engineering: Worked as the class representative for the batch of Computer Science and Engineering at IIT Palakkad.
National Service Scheme: Volunteered to spread awareness on cleanliness in villages and towns.