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Manoj Kumar Lenka

EDUCATION

Indian Institute of Technology, Madras

MS (Computer Science and Engineering)

August 2022 - Present (Currently pursuing)

CGPA: 8.4 (Till end of 3rd semester)

Kalinga Institute of Industrial Technology, Bhubaneswar

B.Tech (Computer Science and Engineering)

JULY 2016 - May 2020

CGPA: 9.38

SKILLS

Computer Systems

Hardware - ESP32, Zedboard, Arduino, RaspberryPi, Power Profiler Kit II

Languages - C, C++

Tools - ESP-IDF, Arduino IDE

Machine Learning

Frameworks - Scikit, Keras, Tensorflow, Tensorflow Lite and Micro

Languages - Python

Tools - LaTeX, Jupyter Notebook

Full Stack Development

Frameworks - React, Spring Boot, Ruby on Rails, Laravel

Languages - Java, JavaScript, Ruby, HTML, CSS, PHP

Tools - Git, Kubernetes, Jenkins, AWS

Databases - PostgreSQL, MongoDB, Redis

WORK EXPERIENCE

Teaching Assistant

Indian Institute of Technology, Madras

Duration: 18 months (currently pursuing)

Software Development

OYO, Hyderabad

Duration: 24 months

Indian Academy of Sciences Summer Research Fellowship Program

Indian Institute of Technology, Madras

Duration: 3 months

PROJECTS

WISDOM: A Framework for Scaling On-Device WiFi Sensing Solution

Recent innovations in Wi-Fi sensing capitalizes on a host of powerful deep neural network architectures that make inferences based on minute spatio-temporal dynamics in the wireless channel. Many of such inferencing techniques being resource intensive, conventional wisdom recommends offloading them to the network edge for further processing. In this paper, we argue that edge based sensing is often not a viable option for many applications (cost, bandwidth, latency etc). Rather, we explore the paradigm of on-device Wi-Fi sensing where inferencing is carried out locally on resource constrained IoT platforms. We present extensive benchmark results characterizing the resource consumption (memory, energy) and the performance (accuracy, inferencing rate) of some typical sensing tasks. We propose Wisdom, a framework that, depending on capabilities of the hardware platform and application's requirements, can compress the inferencing model. Such context aware compression aims to improve the overall utility of the system - maximal inferencing performance at minimal resource costs. We demonstrate that models obtained using the Wisdom framework achieve higher utility compared to baseline models in more than 85% of cases. This work was selected for the WiSense Workshop held in conjunction with IEEE PerCom 2024 to be held in March 2024.

GitHub: <https://github.com/senselab-iitm/wisdom>

OYO HMS (Hotel Management System)

OYO HMS is used to create bookings, manage hotel staff and assign them tasks, view reports of your hotel's performance and occupancy, manage rooms, subscribe to services provided by OYO, look into branding, get payments and charges, etc. Basically it is used by property owners and managers to manage the property and staff. It consists of a mobile application and a website as mentioned below.

Worked on both frontend and backend using technologies like, Spring Boot, Postgres, Redis, Kuberneates, Kafka, React, MongoDB, etc.

Website: <https://www.oyoos.com/>

Application: <https://play.google.com/store/apps/details?id=com.oyo.partnerapp>

Blind Deblurring using GANs

Different GAN models were used for the task of deblurring and their performance was improved using various techniques. Residual connections (specially global residual) and attention modules, have shown an improvement in performance to the existing model. Use of classical losses and spectral normalization were also helpful for stable GAN training. Use of larger models gave better performance (like in case of RiR and RiR(Large)). Use of edge information and feedback modules seems not to improve the performance of the model. This project was done as a part of the Summer Research Fellowship Program by the Indian Academy of Science.

Project Link: <https://github.com/lenka98/Bind-Deblurring-using-GANs>

Report Link: <https://arxiv.org/pdf/1907.11880.pdf>

Simplyfy

This project aims at a better understanding of the different features and phases of a compiler by designing an interpreter for a simple language. Through this we were able to understand the various design choices we need to explore and the tradeoff between syntax simplicity and complexity of the compiler design.

The language includes a conditional statement, an iterative statement, arithmetic, relational, and logical operations. It is a non-block structured language. The implementation consists of three important parts, the scanner, the parser, and an interpreter. We used lex and yacc for the implementation.

Link: <https://github.com/lenka98/simplyfy>

RELEVANT COURSES

Indian Institute of Technology, Madras

EE5121 - Convex Optimization, **CS6650** - Smart Sensing for Internet of Things, **CS6120** - Wireless Communication and Networks, **CS6015** - Linear Algebra and Random Processes, **CS5800** - Advance Data Structure and Algorithms, **ID6020** - Introduction to Research

Kalinga Institute of Industrial Technology, Bhubaneswar

CS1001 - Programming in C, **EC1001** - Basic Electronics, **IT1002** - Object Oriented Programming, **CS2001** - Data Structure and Algorithm, **EC2011** - Digital Electronics, **IT2003** - Web Technology, **CS2004** - Database Management System, **CS2006** - Computer Organization and Architecture, **CS2008** - Design and Analysis of Algorithms, **EC2004** - Principles of Digital Communication, **CS3007** - High Performance Computer Architecture, **CS3009** - Operating System, **CS3003** - Formal Language and Automata Theory, **IT3001** - Computer Networks, **IT3003** - Software Engineering, **CS3002** - Compiler Design, **CS3004** - Computer Graphics, **CS3032** - Big Data, **IT3004** - Object Oriented System Design

MOOCs

Deep Learning Specialization on Coursera by Andrew Ng.

Link:

<https://www.coursera.org/account/accomplishments/specialization/LU8ABEU8ABL>

CERTIFICATIONS

GATE 2022 in CS/IT

Score: 727, Rank: 444, Percentile: 99.4