Kanak Raj

Roll No.:IMH/10032/19
Mathematics & Computing
Minor in Computer Science and Engineering
Birla Institute of Technology, Mesra

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Education

Degree/Certificate	Institute/Board	CGPA/Percentage	Year
IMSc.	Birla Institute of Technology, Mesra	8.78	2019-Present
Senior Secondary	LBS Senior Sec. School	92.6%	2019
Secondary	Jawahar Navodaya Vidyalaya, Bokaro	10CGPA	2017

Experience

- **EdgeNeural.ai** *June 2022 - Current*
  AI Intern Remote
  – Working on model optimization and improving inference speed through various quantizations and hardware-specific CPU and GPU customization. Build Training and Optimization pipelines for state of art Deep Learning models.
  – Technologies: Optical Character Recognition (OCR), Object Detection(YOLO, SSD), TensorRT, GPU Optimization, OpenVINO, Docker, AWS, PyTorch, Computer Vision, TensorFlow

- **Video Analytics Lab** *May 2022 - August 2022*
  Research Intern Department of Computational and Data Science, IISc. Bangalore, Remote
  – Implemented Generative Adversarial Networks for Image and Video Generation. Employing StyleGAN based architectures for disentangled video interpretation in multiple domains.
  – Technologies: Generative Adversarial Networks (GANs), CNNs, Recurrent Neural Networks, PyTorch, TensorFlow, Machine Learning, Python

- **Visual Learning and Intelligence Lab** *Nov. 2021 - April 2022*
  Research Intern IIT Hyderabad, Remote
  – Working on Medical Image Processing under R. Sai Chandra Teja Professor Dr. C. Krishna Mohan.
  – Developed a Novel Architecture for better Image Classification of low-quality images and unbalanced datasets. Worked on Building a U-Net based architecture for Semantic Segmentation on Dental X-Ray (Paper under review)
  – Technologies: Medical Imaging, Healthcare, PyTorch, Data Science, Deep Learning, TensorFlow, Machine Learning, NLP, Python

- **AI MAGE (WETHEKOO)** *March 2022 - April 2022*
  Computer Vision Engineer Remote
  – Explore and analyze unstructured data like images through image processing. Building a Fashion Tagging Engine using Deep Learning (Siamese Network, Instance Segmentation).Deploying developed computer vision models on edge devices after optimization to meet customer requirements and maintain them to later improve to address additional customer requirements in the future.
  – Technologies: TensorFlow, Computer Vision, Siamese Neural Networks, Tagging Engine, Segmentation

- **The Linux Foundation** *Aug. 2021 - Oct. 2021*
  Open-Source Contributor India, Remote
  – Worked on developing a Machine Learning Algorithm Selector under Anuket Project.
  – Developed a command-line tool for selecting Machine Learning Algorithm based on use-case and availability of datatype under Anuket Project. Used NLP for better extraction and understanding of responses from the user.
  – Technologies: Python, Command Line, NLP, Transformers, Git/GitHub

- **Rhizicube Technologies** *June 2021 - Sept. 2021*
  Software Engineer Intern India, Remote
  – Oversaw Server & REST API development and Database for Consumer Data Platform Using Golang(Gin).
  – Build a real-time streaming data pipeline using Apache Kafka.
  – Wrote LinkedIn Scrapper and Generalized Organization Website Crawler to scrap data using Selenium & Beautiful Soup.
  – Technologies: Back-End Web Development, Relational Databases, Kafka, MySQL, Data Scraping, Go (Programming Language), Database Design, Selenium, Python

Projects

- **Heart Rate Estimator**
  IEEE Mega Project Github
  – Remotely detect an individual's heart rate per minute from a still video of his/her face.
  – Implemented Eulerian Video Magnification Algorithm initially developed by MIT CSAIL
  – Used Python, OpenCV, Tensorflow/Keras, SciPy, Numpy
- **Paddy Crop Disease Prediction**
  GitHub
  – Differentiating healthy plants from diseased ones by classifying their leaves stem.
  – Achieved 85% Accuracy on predicting the diseased classes.
  – Used Python, OpenCV, Pytorch/Fast.ai, Jupyter Notebook, Numpy
- **House Price Prediction**
  Github
  – The data is collected from the FRED website. The aim is to predict the monthly change in House Price Index, US.
  – Implemented Decision Tree, XGBoost, Linear Regression models.
  – Used Pandas, Matplotlib/Seaborn, Scikit-learn, Jupyter Notebook, XgBoost
- **URL Shortener**
  IET, BIT Mesra
  – Created URL Shortener product for colleges' purposes.
  – Links will expire after a standard default timespan after a given lifespan.
  – Used Go-Beego, Rest-API, Scikit-learn, PostgreSQL

Technical Skills

- **General**: C/C++, Python, JavaScript, Linux, Git/Github, SQL, Algorithm and Data Structures, Docker
- **Web Technologies**: HTML5/CSS, NodeJS, ExpressJS, ReactJS, Django, Flask, Apache Kafka, Beego/Gin(Golang), PostgreSQL, AWS Web Services
- **Data Science and Machine Learning**: Python (matplotlib, pandas, numpy, scipy), Tensorflow/Keras, PyTorch, Deep Learning, Computer Vision, SQL, Scikit-Learn, Matlab, OpenCV, AWS (Sagemaker, ECR, EC2, S3, DynamoDB), Hadoop, PySpark, PowerBI, Model-Optimization(ONNX, TensorRT)

Relevant Courses & Certifications

– **Mathematics**: Linear Algebra, Calculus, Differential Equations, Discrete Maths, Probability & Random Processes, Real & Complex Analysis, Operation Research, Matrix Theory
– **Computer Science**: Data Structure & Algorithm, Design & Analysis of Algorithm, OOPs using Java, Operating System, Database Management System, Graph Theory

– Introduction to Tensorflow for Artificial Intelligence, Machine Learning & Deep Learning

– Neural Networks & Deep Learning

– Improving Deep Neural Networks: Hyperparameter Tuning, Regularization, Optimization

– Data Science & Business Analytics, Spark Foundation

Leadership & Extracurricular Activities

–Joint President, previously Joint General Secretary, Society for Data Science, BIT Mesra which is a largest Data Science community in eastern India and organised Data Science Summit 2021 & 2022.

–Hosted sessions from industry and research experts in Data Summit 2021.

–Instructor in Python and Introduction to Data Science Workshop.

–Tutored undergrad students on Git/GitHub and Introduction to OpenSource

Honors & Awards

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Cyclone Intensity Detection
Smart India Hackathon, AICTE, MHRD, India

∗ Our team get selected for India Finals in Smart India Hackathon, organised by AICTE & Ministry of Education, India. Building a Cyclone Intensity Detection Application using Deep Learning (Image Processing) under Indian Space Research Organisation(ISRO) using INSAT-3DR satellite by ISRO. We are looking to provide error-free real-time updates to avert damage and loss.

–Participated in National Taekwondo Championship under Navodaya Vidyalaya Samiti and won Silver Medal.