YASAR MULANI

+91-8329339446 ◇ Pune, India
mulaniyhofficial@gmail.com ◇ linkedin.com/in/yasar-mulani

EDUCATION

Bachelor of Technology in Computer Engineering,
Rajarambapu Institute Of Technology, Rajaramnagar, Sangli (GPA: 7.13/10) 2020 - 2024

RELEVANT COURSEWORK

Artificial Intelligence and Machine Learning, Deep Learning and Neural Networks, Computer Vision, Data Structures and Algorithms, Operating Systems, Discrete Mathematics, Digital Electronics, Computer Organization, Computer Networks, Theory of Computation, Discrete Mathematical Structures, System Software, Software Engineering, Parallel Programming, Cloud Computing, Distributed Systems, Data Mining, Advanced Algorithms and Complexity Theory, Database Systems and Big Data, Statistical Modeling and Inference, and Computer Graphics.

SKILLS

Computational Skills: Statistical Modeling, Algorithm Design, **Machine Learning, Deep Learning, Computer Vision, Data Analysis** Mathematical & Statistical Modeling
Technical Skills: C, **C++, Python, SQL, Java, Docker, Kubernetes, MLOps**, HTML, CSS, React, JavaScript, Version Control (Git), APIs

EXPERIENCE

Undergraduate Research Assistant Jan 2024 - June 2024
Central University of Karnataka *Karnataka, India*

- Collaborated with Dr. Nagraj Dharwadkar on a federated learning project for brain tumor detection, developing a global model using hierarchical aggregation and a modified secure multiparty computation (SMPC) algorithm with outlier detection to ensure data privacy.
- Applied class incremental learning to adapt to new tumor classes, conduct experiments comparing federated learning to traditional methods, and analyze data heterogeneity's impact on model convergence and accuracy.

AI-ML Lead Oct 2023 - June 2024
Google Developer Student Clubs *Sangli, India*

- Lead the AI-ML team at GDSC, collaborating on projects focused on image processing, federated learning, generative AI, and deep learning.
- Mentor team members and facilitate workshops to enhance understanding of AI and ML concepts.

Research Intern Oct 2023 - June 2024
Teesside University, UK *Middlesbrough, UK*

- Implemented deep learning methodologies, focusing on Convolutional Neural Network (CNN) architecture, for the comprehensive analysis of scRNA-seq data, in collaboration with a biologist to identify biomarker genes relevant to ICB therapy for Renal Cell Carcinoma.
- Lead the ensemble of model results using various late fusion techniques, perform SHAP interpretations on individual modalities to assist in identifying crucial biomarker genes for ICB therapy.

Summer Intern June 2023 - July 2023
Teesside University, UK *Middlesbrough, UK*

- Contributed to the 'Brain Tumour Detection and Segmentation' project, utilizing Keras pre-trained models, including VGG19 and ResNet50, for brain tumour detection.
- Implemented U-Net architecture for segmentation to accurately delineate brain tumour regions and integrated the developed models into a user interface to enhance accessibility and usability.

Student Research Assistant June 2022 - May 2023
Department of Mechatronics Engineering, Rajarambapu Institute of Technology *Sangli, India*

- Collaborated with Dr. Shailesh Shirguppikar on multiple automation and design projects, performing machine learning model analysis on datasets from CNC machines and developing algorithms for process optimization.
- Assisted in the machine learning and analysis components of over 5 projects, contributing to the successful implementation and evaluation of advanced automation solutions.

PROJECTS

Consistency Through Structure: A Retrieval-Free LLM Framework 2024 - Present

- Designing and evaluating an efficient retrieval-free LLM framework that embeds structured knowledge, ensuring consistency and hallucination-free outputs across repeated prompts on real-world datasets like question-answering and fact-checking benchmarks.

Gradient-Regularized Class Incremental Federated Learning (GRCI-FL) 2024 - Present

- Investigating a novel federated learning strategy with gradient regularization to support class incremental tasks, delivering theoretical assurances for performance under heterogeneous data.

Deep Learning Analysis of scRNA-seq Data in ICB Response for Renal Cell Carcinoma 2023 - 2024

- Implemented CNN architectures for analyzing scRNA-seq data across all modalities and applied late fusion, followed by SHAP interpretation to identify biomarker genes.

A comparative study of CNN and Transfer Learning techniques to determine the superiority of transfer learning in medical imaging 2023 - 2023

- Demonstrated the superiority of transfer learning over traditional CNNs in medical imaging analysis, particularly in brain tumor detection, through graphical representations of performance metrics.
- Provided comprehensive evaluation insights using confusion matrices and additional metrics such as sensitivity, specificity, and AUC, emphasizing the effectiveness of transfer learning in enhancing model accuracy and efficiency.

Plant leaves disease detection and analysis of ensemble techniques 2023 - 2023

- Built a project that involved a research endeavor utilizing a dataset encompassing 29 distinct disease classes, trained across five pre-trained Keras models.
- Later, various ensemble techniques like bagging, stacking, voting and averaging were applied to conduct a comparative analysis for enhanced insights.

PUBLICATIONS

Mulani, Yasar, et al. **"Enhancing Privacy-Preserving Brain Tumor Detection through Federated Learning with Data Augmentation Using DC-GAN Models."** *Data and Information Management* — **Under Peer Review**.

Mulani, Yasar, et al. **"Comprehensive Survey on Federated Learning, DC-GAN Models, and Secure Aggregation."** *Computer Science Review* — **Under Peer Review**.

TEACHING EXPERIENCE

- Taught 2 out of 6 units as a guest lecturer for the "Fundamentals of AI and ML" course in the Mechatronics department, and organized discussion sessions to enhance students understanding of the subject.

LICENSES & CERTIFICATIONS

Machine Learning Specialization
DeepLearning.AI, Stanford University
Issued Mar 2024

Fundamentals of Accelerated Computing with CUDA C/C++
NVIDIA
Issued Dec 2023