SAKSHAM CHECKER

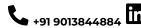**+91 9013844884** in **sakshamchecker** ✉ **sakshamchecker** **sakshamchecker** **sakshamchecker**
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SUMMARY

I am a 4th year Bachelor of Technology student at Delhi Technological University, New Delhi, India. I possess Machine Learning and Artificial Intelligence skills and their implementation in the field of research. I completed courses in Machine Learning, Deep Learning, and Computer Vision during my Bachelor's Degree. I am currently studying Data Structures, Object-oriented programming, and Neural Networks as a part of my curriculum. I have previously worked on various Machine Learning projects and publications. I have significant experience as an intern in two different research labs in India. I also worked as a Departmental Visiting Student at the Department of Computer Science and Technology, University of Cambridge.

EDUCATION

Bachelor of Technology Major - Engineering Physics Minor - Machine Learning	2020-2024	Delhi Technological University, New Delhi, IN	8.72 (CGPA)
Senior Secondary Education	2020	Vishal Bharti Public School	91.8 %

TECHNICAL SKILLS

C, C++, Python, SQL	Machine Learning, Deep Learning, Federated Learning, Continual Learning	Git, Tensorflow, PyTorch, Keras, Linux, Unity, BASH

EXPERIENCE

Research Intern, Indian Institute of Technology, Delhi   January 2024–Present
- Preserving Privacy of Graph Neural Networks under the supervision of **Professor Sandeep Kumar**.

Visiting Student, University of Cambridge   March 2023- February 2024
- Worked on **Federated Continual Learning** on Socially Aware Robots under the guidance of **Professor Hatice Gunes and Dr. Nikhil Churamani** at the Department of Computer Science and Technology, University of Cambridge.
- The study revolves around the MannersDB dataset to identify possible tasks for a robot using images.
- Proposed an End-to-End solution for Federated Learning (FedRoot) and Federated Continual Learning (FedLGR) to overcome the problem of forgetting among different robots while reducing the computation power.

Researcher, Big Data and Web Analytics Lab, Delhi Technological University   December 2020- Present
- We developed a novel architecture for identifying the type of malware using executable binary files using Machine Learning under the guidance of **Professor Dr. Rahul Katarya.**
- Developed **a fake news detection system** using the feature selection algorithm. The study was published in the **Institute of Electrical and Electronics Engineers(IEEE) access journal.**
- I completed a review study on intrusion detection using artificial intelligence algorithms, which was accepted and presented at the IEEE International Conference on **Electrical Electronics Communication and Computers.**
- Currently working on a research study to develop a novel model to detect the personalities of individuals from bilingual handwritten texts using Machine Learning techniques and Building an end-to-end novel fish species classification system using computer vision and machine learning.

Research Intern, Indian Institute of Technology, Dharwad   May 2022- July 2022
- I trained a federated machine learning setup under the guidance of Dr. Bharath B N to optimize edge caching in 5G mobile networks using machine learning algorithms.
- Gained knowledge about **flower architecture and federated learning** in detail.

ML/AI Intern, HearUS (https://hearus.me/)   January 2022- March 2022
- Developed machine learning-based algorithms from scratch to identify different patients' emotions from their chats, which were further integrated with their chatbot.

PUBLICATIONS

Federated Learning of Socially Appropriate Agent Behaviours in Simulated Home Environments
Preprint - arXiv:2403.07586   March 2024
- Federated Learning and Federated Continual Learning benchmark for multi-label regression objectives, where each client learns to predict the social appropriateness of different robot actions while sharing their learning with others.

Federated Feature Aggregation with Latent Generative Replay for Continually Learning Socially Appropriate Robot Behaviours   March 2024
- Proposed a novel framework for Federated Continual Learning (FedRoot LGR) to overcome the problem of forgetting among different robots while reducing the computation power.

Fake News Detection System Using Featured-Based Optimized MSVM Classification - *Institute of Electrical and Electronics Engineers (IEEE) Access)* |Digital Object Identifier - 10.1109/ACCESS.2022.3216892   October 2022
- Developed a fake news detection system using feature selection algorithms on ten famous datasets, including Politifact,

GossipCop, etc. The study proposes a better-automated method to prevent the spread of fake news over social media.
- **SCI Indexed; Impact Factor - 3.9**

Solar Panels Crack Detection using Overhead Images - *International Journal for Research in Applied Science and Engineering Technology (IJRASET)* | Digital Object Identifier - 10.22214/ijraset.2021.38532   October 2021
- Developed a Machine Learning model to **detect cracks on solar panels using overhead images with 95.34% accuracy.** This can help automate detecting faults in specific panels and replace them in time.
- The project was submitted as a mandatory project for the subject of Engineering Mechanics.

Convolutional Network-based Face Mask Detection - *World Journal of Advanced Research and Reviews (WJARR)* | Digital Object Identifier - 10.30574/wjarr.2022.13.2.0142   April 2022
- To monitor public places during COVID-19, this paper proposes an ensemble-based convolutional neural network with an accuracy of **99.5%**, which can be used to detect from their images whether a person is wearing a face mask or not.

MANUSCRIPTS SUBMITTED

DIMC: DenseNet and InceptionV3 based Malware Classification - *International Journal of Information Security (Springer Nature)*| UNDERGOING REVIEW   February 2024
- The manuscript of the novel architecture for identifying **25 different malware** categories is currently being reviewed in **Springer Nature.** The study aims to provide a better and faster model for classifying malware using executable binary images.
- The research concludes a novel pipeline with 98.20% accuracy in the classification of Malware using the MaleVis dataset and 99.14% in the MalImg dataset.
- **SCI Indexed; Impact Factor - 3.2.**

A Comparative Study on Data Augmentation-based Crystal Structure Classification of Perovskite Oxides using Machine Learning - *Discover Materials (Springer Nature)*| UNDERGOING REVIEW   March 2024
- Study on crystal structure classification for **ABO3 type perovskites**. It proposes a Data Augmentation pipeline and machine learning techniques to classify the structures. The best accuracy achieved during the study was **94% accuracy.**
- The article is part of a bachelor's major project under the supervision of Dr. Deshraj Meena.

CONFERENCES AND WORKSHOPS ATTENDED

Lifelong Learning and Personalization in Long-Term Human-Robot Interaction (HRI 2024), *11 March 2024 | Colorado, USA*| Preprint - arXiv:2403.07586
- Presented the Federated Continual Learning for Socially Appropriate Robots article, highlighting the Federated Learning and Federated Continual Learning benchmark on the MANNERS-DB dataset.

IEEE International Conference On Electrical Electronics Communication and Computers, *26 - 27 August 2023 | Roorkee, India* | Certificate | Digital Object Identifier - 10.1109/ELEXCOM58812.2023.10370067
- The review paper on detecting intrusion using Machine Learning and Deep learning techniques was accepted at the International Conference.

ACADEMIC PROJECTS

Brain Tumor Segmentation — *Machine Learning* | Github Link | Medium Link
- This project presents the implementation of two Deep Learning models (UNet and LinkNet) for segmenting brain tumors using the images available in a dataset on Kaggle. These accurate automatic algorithms for segmenting brain tumors can improve disease diagnosis and treatment planning and enable large-scale pathology studies.
- Technologies Used - Computer Vision, Machine Learning, Supervised Learning

E-Commerce Product Recommendation System — *Machine Learning* | Github Link | Medium Link
- Using the titles of various fashion products, this project implements Natural Language Processing algorithms to recommend products to customers. This system can be used in e-commerce platforms to give customers the best recommendations on what they might be willing to buy.
- Technologies Used - Natural Language Processing, Deep Learning, Unsupervised Learning

NATIONAL LEVEL ACHIEVEMENTS AND PARTICIPATION
- Finalist (Top 10) in Toycathon 2021, organized by the All India Council of Technical Education(AICTE) and the Ministry of Education. | Certificate
- Won the internal round and finalist at Smart India Hackathon-22 organized by All India Council of Technical Education | Certificate

POSITION OF RESPONSIBILITIES

President and Machine Learning Mentor, Round Table, Delhi Technological University   July 2022- July 2023
- **Lead a technical society of over 300 members** during the academic year of 2022-23.
- Under my leadership, the society completed various projects and organized national-level events with a total of more than 800 participants throughout the year.
- As a senior mentor, I guided around 100 students in machine learning and artificial intelligence.