UNMESH ACHAR

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EDUCATION

NEW YORK UNIVERSITY 09/2024 – 05/2026
MASTER'S IN COMPUTER ENGINEERING
Cumulative GPA : 3.833/4
Relevant Coursework: Machine Learning , Computer System Architecture, Big Data, Java, System Engineering, Data Visualization

KALINGA INSTITUTE OF INDUSTRIAL TECHNOLOGY 08/2020 – 06/2024
BACHELOR'S IN COMPUTER SCIENCE AND ENGINEERING
Cumulative CGPA: 8.24/10
Relevant Coursework: Engineering Mathematics, DBMS, AI , Software Engineering , Operating System

SKILLS

PROGRAMMING LANGUAGES: Python, C++, SQL, JAVA,Spark
DATABASE TOOLS: MySQL, MongoDB
TECHNOLOGY/FRAMEWORK: Microsoft Azure, Hive, Hadoop, Computer Vision, MediaPipe, Fluidsynth, CNN, Transfer Learning.

WORK EXPERIENCE

National Institute of Technical Teachers' Training and Research, Kolkata 05 - 07/2023
Role: Research Intern
Project Title: "Deep Transfer Learning for Computer-Assisted Diagnosis of Skin Psoriasis Infection"
Key Contributions:

- Built a clinically validated psoriasis detection system using deep transfer learning (MobileNet, VGG16, VGG19, ResNet-50) on 893 curated image patches from 325 raw clinical images.
- Engineered patch-based preprocessing and image normalization (224×224) workflows, optimizing model performance and cross-skin-type generalization.
- Led cross-functional collaboration with dermatologists and AI researchers, contributing to a published Scientific Reports paper (AUC: 0.994, Acc: 99.43%).

Nestlé India Ltd. (Indian Headquarters)
Role: Nesternship Intern — AI-ML in Data Quality and Governance 05 - 07/2025
Key Contribution:

- Developed a secure, branch-level order response system using Power Apps and SharePoint Lists, enforcing region-specific access and real-time validation for 4 operational zones.
- Automated ingestion of multi-sheet Excel files with Power Automate, ensuring duplicate-free updates to SharePoint via daily ID-based syncs.
- Designed email automation logic for dynamic links and attachments, improving response turnaround and reducing manual overhead by 60%.

PROJECTS

1) NYC Risk & Route Prediction Application 08 - 12/ 2024

- Developed a city-wide route analysis system using Random Forests (92% accuracy) and 500K+ NYC crime records to classify neighborhood-level risks.
- Deployed an interactive Streamlit app with integrated GoMaps & Geopy APIs for real-time visual navigation and incident heatmaps across 200+ geozones.

2) Detection of Acne Disease Prediction 01 - 05/2024

- Achieved 95.64% accuracy using fine-tuned MobileNet for facial acne classification, trained on curated, high-resolution dermatology images.
- Built a Gradio-based interface for real-time inference and deployed a lightweight ML pipeline with 90%+ validation precision on clinical skin conditions.

3) Mind Controlled Smart Home System(System Engineering Report) - BCI + IoT 01 - 05/2025

- Proposed a non-invasive BCI-powered smart home concept leveraging EEG signal acquisition and CNN-RNN modeling to detect intent and trigger IoT-based appliance control.
- Delivered a system-level architecture report addressing signal filtering, edge-AI deployment (Jetson Xavier), real-time latency, blockchain-enhanced security, and GDPR-compliant data governance.

4) Air-Piano: Touchless MIDI Instrument 06 - 07/2025

- Implemented a real-time, touchless MIDI instrument using cvzone/MediaPipe hand tracking to detect finger gestures and trigger chord playback via Fluidsynth, with multi-threaded sustain logic for smooth audio output.
- Architected flexible gesture-to-MIDI mapping across five fingers on both hands, including octave range support and synchronization, delivering a seamless and interactive performance experience.

PUBLICATIONS

1) CAD-PsorNet: deep transfer learning for computer-assisted diagnosis of skin Psoriasis—Nature Scientific Reports
(https://www.nature.com/articles/s41598-024-76852-6)

- Achieved 99.43% accuracy and AUC of 0.994 with fine-tuned MobileNet on psoriasis vs. healthy skin patch classification. 11/2024

2) **Artificial Intelligence in Dermatology: A Systematized Review — Indian J. of Dermatology & Venereology** 03/2025
(https://journals.lww.com/ijdv/abstract/9900/artificial_intelligence_in_dermatology__a.152.aspx)

- Analyzed 27 studies; highlighted AI's accuracy (up to 99.5%) and challenges across skin types, including bias in Fitzpatrick Type 6.