Siddharth Khandelwal

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Education

Indian Institute of Technology Bombay, B.Tech in Electrical Engineering 2019 – 2023

- CGPA: 9.23/10
- Minor in Artificial Intelligence & Data Science
- Minor in Computer Science & Engineering

Work Experience

Associate AI Researcher, Fast Code AI - Bangalore Oct 2024 – Present

- Designed and implemented a text-to-motion generation pipeline based on the Flux diffusion model architecture, incorporating Rotary Positional Embeddings for improved temporal coherence across motion frames
- Fine-tuned LoRA adapters on a curated human-clothing dataset using the Flux-Fill diffusion model, enabling realistic garment rendering while preserving fine details across diverse body images and poses
- Developed a conditional diffusion framework for controllable human shape manipulation in 2D images, leveraging SMPL depth maps to achieve fine-grained, identity-preserving body reshaping
- Work on human shape manipulation using diffusion models is currently under submission at WACV 2026

Application Engineer, Texas Instruments - Bangalore Aug 2023 – Oct 2024

- Member of the DLP team, focused on debugging embedded systems for customer issue resolution
- Took ownership of supporting customer companies in verifying and refining their hardware and software designs, ensuring successful projector model launches after comprehensive testing
- Improved legacy embedded C code by optimizing, adding new features, and fixing software bugs

Embedded Software Intern, Texas Instruments Apr – Jun 2022

- Critically analyzed and understood the bootloader code flow for dynamic code coverage misses
- Improved the dynamic code coverage by extensive functional and unit testing using Pytest
- Automated customer configuration settings for firmware verification in the pre-silicon FPGA platform

Publications

IoT-based Sensing System for Thrips Pest and Disease Management in Onion Crop 2024

Susmita Banerjee, Kisan Sarda, ***Siddharth Khandelwal***, Rajbabu Velmurugan et al.

Won Best Paper Award at the 2nd International IEEE Applied Sensing Conference

Lunar Exploration through Chipsats 2020

Yuktee Gupta, ***Siddharth Khandelwal*** et al. 71st International Astronautical Congress IAC Cyberspace Edition

Projects

Few-Shot Plant Disease Classification 2022

Guide Prof. Rajbabu Velmurugan | RnD Project

- Developed a few-shot deep learning model using prototypical networks to classify plant diseases from leaf images, that achieved a classification accuracy of 87% on unseen classes of diseases
- Implemented a Robust Nearest Neighbour Prototype-based testing technique for handling corrupted labels
- Researched different prompt learning techniques through context optimization for the CLIP model and adopted the same for the Plant Village dataset, achieving 82% classification accuracy in few-shot learning

Onion Crop Disease Detection Feb – Apr 2023

Guide Prof. Rajbabu Velmurugan | B.Tech Project

- Evaluated and benchmarked baseline deep learning models for onion crop disease detection, enhancing performance via data sampling and augmentation to achieve 92.4% classification accuracy

- Integrated PyTorch models into an Android mobile application using PyTorch Mobile for on-device inference
- Designed the application with an image capture pipeline enabling real-time, high-accuracy disease classification

IIT Bombay Student Satellite Program 2020
Instrumentation Subsystem | GLEE - Great Lunar Expedition for Everyone System

A 70-member student team dedicated to making IIT Bombay a center of excellence in Space Technology. GLEE is a global collaborative mission that will conduct research on the lunar surface with Chipsats.

- Implemented I2C communication protocol between a gyroscope sensor and an Arduino UNO
- Simulated lunar seismic models in Python using Devito to implement a finite difference method to solve wave propagation equations to visualize the stress patterns in localized areas

Cancer Detection using CNNs Nov 2021
Guide Prof. Suyash Awate | CS 736 (Medical Image Computing) Course Project

- Developed deep learning models for metastatic tissue detection in histopathologic lymph node scans
- Implemented VGG and custom CNN architectures using Keras and TensorFlow for robust feature extraction and classification, achieving 94% accuracy and 0.97 AUC-ROC on the validation set
- Built image denoising, segmentation, and statistical shape analysis pipelines, enhancing interpretability

RL Agent for Atari Breakout May 2021
Guide Prof. Abir De | CS 419 (Introduction to ML) Course Project

- Trained an agent in the OpenAI Gym environment to play the Cartpole and Atari Breakout game
- Implemented the Deep Q-Learning and Double Deep Q-Learning algorithms in Reinforcement Learning

Image Regularization using PDEs Oct 2021
Guide Prof. Ajit Rajwade | CS 663 (Digital Image Processing) Course Project

- Researched a vector-valued image regularization framework based on partial differential equations (PDEs)
- Implemented image inpainting, reconstruction, denoising, magnification, and flow visualization in MATLAB using the PDE-based regularization technique

3D Object Reconstruction Dec 2021
Guide Prof. Rajbabu Velmurugan

- Developed an image pre-processing pipeline using OpenCV to remove background from object images
- Executed the forward path of the Pix2Vox model to reconstruct 3D objects from a single image

Technical Skills

Programming Languages: Python, C/C++, Java, Julia, MATLAB, Embedded C

Frameworks & Libraries: PyTorch, TensorFlow, Hugging Face, Diffusers, Transformers, Scikit-learn, OpenCV

Tools & Software: Git, Docker, Arduino IDE, Android Studio, Unity, AutoCAD, GNU Radio, Flutter, EAGLE

Scholastic Achievements

- Secured All India Rank 206 in JEE Advanced out of 180 thousand candidates 2019
- Achieved All India Rank 463 in JEE Mains out of 1 million students 2019
- Recipient of the Kishore Vaigyanik Prostahan Yojona (KVPY) Fellowship from IISc 2018

References

Prof. Arjun Jain
Founder & Chief Scientist FastCode AI
Adjunct Faculty, IISc Bangalore
Email: arjunjain@gmail.com

Prof. Rajbabu Velmurugan
Professor, Department of Electrical Engineering
IIT Bombay
Email: rajbabu@iitb.ac.in