Shubh Maheshwari

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Education

Masters in Computer Science — September 2023 – December 2025
University of California San Diego

Bachelor of Technology (with Honors) in Computer Science — August 2016 – May 2020
International Institute of Information Technology, Hyderabad — GPA: 3.74/4

Skills

CS Courses: Data Structures, Algorithms, Distributed Systems, Computer Graphics, OS, Networks, Compilers

ML Courses: Principals of AI, Signal Processing, 3D Vision, Optimisation Methods, Linear Algebra, Differential Geometry, Image processing, Computer Vision, Causal inference, Database Management, ML for Natural Sciences

Languages: Python, Bash, C/C++, Matlab, LaTeX, HTML, CSS, JavaScript, NodeJS, SQL, Java

Packages: PyTorch, Open3D, OpenCV, PyCUDA, Pybind11, Eigen, Jupyter, CMake, Git, React, NumPy, spacy, Transformers, NLTK, Scikit-learn, Tensorflow, JAX, Keras, Numba, Blender, OpenGL, WebGL, Metal

Workflows: Data Analytics, Pose estimation, Animation, 3D Registration, Human Identification, System design

Experience

Systems Engineer - TCS Innovation Labs - Deep Learning and AI — September 2020 – September 2023
Prof. Rahul Narain and Mrs. Ramya Hebbalaguppe

- [CVPR 2023] Proposed Transfer4D, a frugal, unsupervised, and category-independent approach to democratize content creation by transferring motion from a single-view depth video to similar meshes.
- [Patent] Designed critical components including non-rigid registration, rigging, motion compression, and shape correspondence; resulting in a 50% reduction in pose misalignment for motion capture.

Research Assistant - Center for Visual Information Technology(CVIT) — May 2018 – September 2023
Prof. S Ravi Kiran

- [WACV 2022] Developed MUGL, a deep learning generative model to enable large-scale (> 100 activities), diverse, and variable length generation of single and multi-person pose-based action sequences with locomotion.
- [WACV 2023] Overcame shortcomings of MUGL by incorporating dedicated representations for finger joints, extending to varying data sets ($13 - 50$ frame rate, $10 - 100$ actions) and introducing a spatial-temporal transformation block with multi-head self-attention.
- [ICME 2023] Introduced a plug-and-play framework, Action-GPT, to incorporate LLMs for animation.
- [IJCV 2021] Investigated the status quo for skeleton-based action recognition. Explored frontiers by curating 3 new data sets for into-the-wild and out-of-context action classes.

Developer - Google Summer of Code — May 2020 – August 2020
Prof. Diego Resende Faria, Robocomp

- Developed a robust human identification pipeline within Robocomp's robotics to track users from a database.
- Facilitated human identification using 3 modalities, face recognition, gait recognition, and person re-identification.

Undergraduate Research Assistant - CVIT, IIIT-H — June 2017 – April 2020
Prof. C.V. Jawahar

- Led a comprehensive analysis project to survey and evaluate 4 camera noise and patch-matching algorithms for detecting photo-shopped images.
- Collaborated with an 8-member team to integrate a React-Native based mobile application, ROS, and YOLO object detection to showcase an interactive robot that gives a tour of the college.

Achievements

JEE Mains: All India Rank 503. Top 0.038% among 1.3 million students.
JEE Advanced: All India Rank 1400. Top 7% among 0.2 million students.
Research Award: Granted Dean's Undergraduate Research Award for excellent academic contributions.
Technical Excellence Award: In appreciation of scientific contributions at TCS Innovation Labs.