Shubh Maheshwari

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EDUCATION

B.Tech(with Honors) in Computer Science   Aug. 2016 – May 2020
International Institute of Information Technology, Hyderabad

- B.Tech CGPA: 8.26/10
- Research Award - 2018

PUBLICATIONS

Transfer4D: A framework for frugal motion capture and deformation transfer   CVPR(under review), 2023
Shubh Maheshwari, Rahul Narain, Ramya Hebbalaguppe

DSAG: A Scalable Deep Framework for Action-Conditioned Multi-Actor Full Body Motion Synthesis   WACV, 2023
Debtanu Gupta, *Shubh Maheshwari*, Sai Shashank Kalakonda, Ravi Kiran Sarvadevabhatla

Action-GPT: Leveraging Large-scale Language Models for Improved and Generalized Zero Shot Action Generation   ArXiv, 2022
Sai Shashank Kalakonda, *Shubh Maheshwari*, Ravi Kiran Sarvadevabhatla

MUGL: Large Scale Multi Person Conditional Action Generation With Locomotion   WACV, 2022
Shubh Maheshwari, Debtanu Gupta, Ravi Kiran Sarvadevabhatla

Quo Vadis, Skeleton Action Recognition?   IJCV, 2021
Pranay Gupta, Anirudh Thatipelli, Aditya Aggarwal, *Shubh Maheshwari*,
Neel Trivedi, Sourav Das, Ravi Kiran Sarvadevabhatla

Modeling and Mitigation of Cross-Origin Request Attacks on Federated Identity Management Using Cross-Origin   ICISS, 2017
Akash Agrawall, *Shubh Maheshwari*, Projit Bandyopadhyay, Venkatesh Choppella

EXPERIENCE

Researcher - TCS Innovation Labs - Deep Learning and AI   Sep 2020 – Present
Prof. Rahul Narain and Mrs. Ramya Hebbalaguppe

- Spearheaded the development of a frugal motion capture framework to democratize 3D content creation. It requires only a single-view video, is unsupervised, and is independent of the object category.
- Designed crucial components of the pipeline like motion tracking(without requiring any template or markers), rigging (skeletonization and motion compression), and shape matching.

Research Assistant - Center for Visual Information Technology(CVIT), IIIT-H   May 2018 – Present
Prof. S Ravi Kiran

- Developed MUGL, a deep learning model to enable large-scale(> 100 activities), diverse, and variable length generation of single and multi-person pose-based action sequences with locomotion.
- Overcame several shortcomings of MUGL by incorporating dedicated representations for finger joints and introducing a spatio-temporal transformation block with multi-head self-attention.
- Investigated the status quo for skeleton-based action recognition. Explored new frontiers by curating datasets for into-the-wild and out-of-context action classes.

Developer - Google Summer of Code   May 2020 – August 2020
Robocomp

- Facilitation of human identification using different modalities like face recognition, gait recognition, and person re-identification.
- Integration of the pipeline into robotics framework - Robocomp.

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

- Document Tampering detection: Finding fake identity cards, receipts, and text using noise pattern of camera and patch matching to detection of the photoshopped region in document
- Development of a humanoid robot which recognizes people and gives a tour of the college. The agent can track, tell jokes, listen and chat with the user. Integrated mobile application, ROS operating system, and YOLO V3

Teaching Assistant - IIIT-H   Aug 2020 – April 2020
Statistical Methods in AI & Optimisation Methods

- In both courses, partnered with the Prof C.V Jawahar and fellow TAs to manage a classroom of over 200 students.
- Created, supervised, and graded homework assignments, exam papers, and classwork.

Software Research Intern - Virtual Labs, SERC, IIIT-H   June 2017 – December 2017
Prof. Venkatesh Choppella

- Demonstrated the mitigation of CORA(Cross-Origin Request Attacks) by incorporating CORP using formal modelling.
- Incorporated SSO (Single Sign On) for VLEAD microservices to utilize Google, Facebook or IIIT-H user authentication.

Relevant Courses Taken

Statistical Methods in AI, Optimisation Methods, Computer Vision, Computer Graphics, Game Design
Distributed Systems, Database Systems, Operating Systems, Linear Algebra, Data Structures & Algorithms

Technical Skills

Languages: Python, C/C++, Matlab, Bash, LaTeX, HTML/CSS, JavaScript
Libraries: Pytorch, Open3D, OpenCV, PyCUDA, Polyscope, Pybind11, Eigen, Git

Other Projects

Motion Deblurring in Depth Images: Using 2D and 3D conv-net priors from RGB videos
Motion Deblurring in Depth Images: Using 2D and 3D conv-net priors from RGB videos
Tunnel Rush: A 3D WebGL Game inspired from Tunnel Rush. Avoid obstacles and enjoy dancing lights and music
Minecraft edition: Legend of Zelda: 3D OpenGL game in C++. Similar to a Legend of Zelda level
Ultimate tic-tac-toe bot: AI to play 4*4*4*4 tic-tac-toe using mini-max and alpha-beta pruning to make decisions.
Optimizing Color Consistency in Photo Collections: Update one image and the change is propagated to a collection of photos depending on the similarity between images.
Transfer font: Use BicycleGAN to generate realistic synthetic words to improve the accuracy of text recognition models.
Skhell:A custom Linux shell program written in C
ShareFile: Distributed file system

Miscellaneous

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.