

CHANDRADEEP POKHARIYA

M.S (Research), IIIT Hyderabad

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SUMMARY

I am a second year M.S. (research) student at CVIT lab (IIIT Hyderabad) working on various research fronts with [Dr. Avinash Sharma](#) and [Dr. Srinath Sridhar](#) at Brown Visual Computing lab.

My research interests mainly lies in the intersection of 3D computer vision, computational geometry and physics based simulations.

EDUCATION

MS by Research in Computer Science and Engineering (CGPA 9.4/10.0) January 2022 - Present
International Institute of Information Technology, Hyderabad, India.
(Courses Taken: - Topics in Applied Optimization - Topics in Deep Learning - Statistical Methods in AI - Advanced Graphics & AR/VR - Computer Vision)

RESEARCH PUBLICATIONS

C Pokhariya*, I Shah*, A Xing, K Chen, A Sharma, S Sridhar *RealGrasper: Learning Human Hand Grasping from Multi-View Images*", Under Submission

C Pokhariya*, S Naik*, A Srivastava, A Sharma *Discretization-Agnostic Deep Self-Supervised 3D Surface Parameterization*", accepted at SIGGRAPH-Asia'22, Technical Communications

A Srivastava, **C Pokhariya**, SS Jinka, A Sharma *xCloth: Extracting Template-free Textured 3D Clothes from a Monocular Image*", accepted at ACM Multimedia'22

SS Jinka, A Srivastava, **C Pokhariya**, A Sharma, PJ Narayanan "SHARP: Shape Aware Reconstruction of People in Loose Clothing.", accepted at IJCV (International Journal of Computer Vision), November 2021.

* refers to equal contribution.

WORK EXPERIENCE

Research Intern at Brown Visual Computing group January 2022 - Present

- Working with [Dr Srinath Sridhar](#) on self-supervised learning of grasping fields for generative grasp synthesis of hands.
- Explored the non-rigid SFM methods to get the accurate camera poses for non-rigid scenes.

Research Assistant at CVIT lab (IIIT Hyderabad). May 2021 - December 2021

- Working on inverse simulation of garments from monocular videos using PBNS (Physics Based Neural Simulation).
- [Neural UV parameterization](#) which attempts to generalize the parameterization over category specific classes.
- Co-Authoring the ACM MM'22 work [xCloth](#) on textured garment digitization from monocular images.
- Worked on the problem of 3D reconstruction of people in loose clothing, which resulted in the [SHARP](#).

Computer Vision Engineer at Uplara, Cupertino, California April 2020 - April 2021

- Developed an end-to-end pipeline for clothes try-on, which included pruning and deploy-able models in the browser.
- Implemented a super-resolution model using Tensorflow to increase the resolution of the output image.
- Generated synthetic data for temporal sequences of random leg movements for shoe try-on task.

Deep Learning Intern at Flux Auto, Bangalore December 2019 - April 2020

- Worked with Semantic segmentation and object detection of the real-world scenarios in real-time.
- Developed a proximity alert system for a safe distance gap from the front vehicles using Inverse Perspective Mapping.

PROJECTS

Research Paper Implementations

- Implemented the "Laplacian Surface Editing algorithm" from scratch to deform the mesh based on anchor points.
- Implemented "Learning Mesh-Based Simulation with Graph Networks" as a part of course project.
- Implemented "Harmonic Parameterization" from scratch.

HPG 2022 Student Competition

- HPG provided an implementation of a raytracer on shadertoy. The goal was to achieve the highest possible quality compared to a brute-force reference (100k samples per pixel) without a significant performance cost.
- Our [implementation](#) of raytracer was unbiased and **ranked 4th** by HPG.

Temporal data for loosely clothed people

- Generated the temporal sequences of the SMPL fitted raw scans with the help of linear blend skinning.
- Generating the temporal data for loose clothed people by simulating 3D garments on the person's scan using Blender's cloth simulation.
- Was involved in volumetric capture of clothed humans using multiple Azure Kinect cameras.

Annotation of SMPLX poses in complex dance scenes.

- Developed an annotation pipeline with the help of Blender and PyQT5 to annotate the complex dance videos.
- Pipeline involves importing SMPLX pose and shape parameters from off the shelf method to Blender, where poses are refined.
- Once the pose refinements are done, camera scale and translation parameters are refined using a PyQT5 framework.

Virtual Tryon

Uplara

- Played a significant role in developing an end-to-end pipeline for Virtual Tryon, which included training the whole pipeline with active pruning and quantization aware training.
- Trained a neural network to regress Thin Plate Spline (TPS) parameters to warp the cloth on the person in 2D.
- Came up with a novel way of regularization to ensure the stability of warping.

OTHER ACHIEVEMENTS

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| I was one of the 250 selected people all over India to attend Google Research Week'23 at Bengaluru | 2023 |
| I was invited to beautiful Daegu, Korea to present our work at SIGGRAPH-Asia | 2022 |

REFERENCES

[Dr. Srinath Sridhar](#)

Assistant Professor & P.I of the Interactive 3D Vision & Learning Lab (IVL)
Brown University
(*Research Collaborator*)

[Dr. Avinash Sharma](#)

Assistant Professor
International Institute of Information Technology Hyderabad
(*Master thesis advisor and project guide*)