Rohan Chacko

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EDUCATION

Carnegie Mellon University - School of Computer Science Pittsburgh, PA
Master of Science in Computer Vision (Robotics Institute) - GPA: 4.08/4 Dec 2022

- Teaching Assistant for 16-720 Computer Vision.
- Courses taken: Deep Learning Systems*, Robot Localization & Mapping*,
  Learning for 3D Vision, Computer Vision, Machine Learning.

International Institute of Information Technology Hyderabad, India
Bachelor of Technology in Computer Science & Engineering (Hons. in Computer Vision) - GPA: 9.13/10 May 2021

- Part of Dean's List for academic excellence. Awarded to top 5% out of 210 students.
- Teaching Assistant for Computer Vision, Computer Systems Organisation, Data & Applications.
- Founding member of the cybersecurity club. Responsible for organizing CTF contests and technical sessions.

EXPERIENCE

TikTok, Intelligent Creation Lab - Virtual Humans May 2022 – Aug 2022
Research Intern
- Proposed and developed a generative model pipeline for 3D consistent clothed full-body humans.
- Implemented a realistic rendering pipeline for multi-view capture of 3D virtual humans in Blender.
- Presented the project internally for product development and paper publication.

Carnegie Mellon University - Robotics Institute Jan 2022 – Dec 2022
Capstone project. Advisor: Prof. Aswin Sankaranarayanan
- Formulated a Neural Radiance Field-based representation for camera aperture and focus control.
- Explored a lightfield-based approach using multiplane images and a thin-lens model.
- Implemented a synthetic data generation pipeline to capture scenes with different camera settings.

International Institute of Information Technology Aug 2019 – May 2021
Research Assistant. Advisor: Prof. P.J. Narayanan, Prof. Avinash Sharma
- Formulated a novel shape representation for monocular 3D human body reconstruction.
- Developed an end-to-end conditional GAN pipeline in PyTorch which was 18.8% more accurate and 2× faster at inference
  time than prior state-of-the-art. Work resulted in a 3DV 2020 publication.
- Extended the method to reconstruct humans with extremely loose clothing styles by fusing SMPL priors with non-parametric
  shape predictions. Method was 52.96% more accurate than prior state-of-the-art. Pending US patent.
- Implemented a ResNet-based encoder-decoder architecture in PyTorch. Work currently under journal submission.

PUBLICATIONS & PATENTS

PeeledHuman: Robust Shape Representation for Textured 3D Human Body Reconstruction. Sai Sagar Jinka, **Rohan Chacko**,
Avinash Sharma, P.J. Narayanan. **International Conference on 3D Vision, 2020** [Project Page]

SHARP: Shape-Aware Reconstruction of People In Loose Clothing. Sai Sagar Jinka, **Rohan Chacko**, Astitva Srivastava, Avinash
Sharma, P.J. Narayanan. *Under journal submission* [Arxiv]

U.S. Patent Application 20220157016A1, filed November 2021. "System and method for automatically reconstructing 3d model of
an object using machine learning model". Avinash Sharma, Narayanan P.J., Sagar Sai Jinka, Teja Sai Dhondu, **Rohan Chacko**.

PROJECTS

Zero-shot object detection with attention [Link]
- Developed a zero-shot object detection pipeline in PyTorch using a ResNet-50 backbone feature extractor and a VGG-19
  network for bounding box regression.
- Implemented an attention module using feature pyramids to improve predictions. Tech stack: PyTorch, OpenCV.

3D Scene Reconstruction from short video clips [Link]
- Developed a method to utilize camera shake occurring in captured videos to reconstruct a 3D scene. Implemented
  Kanade-Lucas-Tomasi tracking, SfM, CRF algorithms. Tech stack: OpenCV, Python/C++.

TECHNICAL SKILLS

Programming Languages: Python, C/C++
ML/CV Libraries: PyTorch, Tensorflow, OpenCV
Miscellaneous: Blender, Meshlab, Git