Shreyas Hampali Shivakumar

Zurich,
Switzerland

https://shreyashampali.github.io/
shreyas.hampali@gmail.com

Areas of interest

Computer Vision, Machine Learning

Work Experience

AI Research Scientist **Oct 2022 – Present**
Meta Reality Labs, Zurich

- Research related to hand shape and pose estimation from ego-centric images. Deployment of hand-tracking solutions on Oculus devices.
- Collaborate and supervise intern projects leading to publications in top conferences.

PhD Researcher **Sep 2018 – Sep 2022**
TU Graz, Austria
Advisor: Prof. Vincent Lepetit

- Developed novel solutions and datasets for accurate shape and pose estimation of objects.
- Publications in top research conferences.

Senior Lead Engineer **Jun 2015 – Jul 2018**
Qualcomm Research India, Bangalore

- Development of image processing and optimization algorithms for display and camera engine in Qualcomm Snapdragon chip sets.

Graphics Design Engineer **Jul 2012 – Jul 2015**
Visual and Parallel Computing Group,
Intel India, Bangalore

- Video processing and video encoder/decoder algorithm optimization and implementation for increased parallelism and optimum use of hardware and GPU resources.

Education

Doctor of Philosophy **Sep 2018 – Sep 2022**
Computer Vision for Augmented Reality Lab,
TU Graz, Austria
Advisor: Prof. Vincent Lepetit
Thesis: 3D Pose and Shape Estimation of Objects and Hands in Challenging Scenarios
pdf : `https://tinyurl.com/7pvd3jc2` *slides* : `https://tinyurl.com/yckzv46d`

Master of Engineering (Signal processing) **Aug 2010 – Jul 2012**
Medical Intelligence and Language Engineering Lab,
Indian Institute of Science, Bangalore, India.

- Relevant Coursework : Matrix theory, Random processes, Linear and non-linear optimization, Digital signal compression, Time-frequency analysis, Spectrum analysis, Pattern recognition and neural networks, Detection and estimation theory
- CGPA : 6.5/8.0
- Thesis : Non-negative Independent Component Analysis motivated Monaural Sound Source Separation.
  pdf : `https://goo.gl/EiPOHT` *slides* : `https://goo.gl/rtiGoW`
- Adviser : Prof. A. G. Ramakrishnan

Bachelor of Technology **Aug 2006 – May 2010**
Department of Electrical and Electronics Engineering,
National Institute of Technology - Karnataka (NITK), Surathkal, India

- Specialization : Electrical and Electronics Engineering
- CGPA : 8.42/10.0
- Major project : Harmonic Analysis of Supply Currents in VFD fed Induction Motors

Publications

- Prithviraj Banerjee, Sindi Shkodrani, Pierre Moulon, **Shreyas Hampali**, ..., Tomas Hodan. HOT3D: Hand and Object Tracking in 3D from Egocentric Multi-View Videos. In *arXiv*, 2024
- Chenhongyi Yang, Anastasia Tkach, **Shreyas Hampali**, Linguang Zhang, Elliot J Crowley, Cem Keskin. EgoPoseFormer: A Simple Baseline for Egocentric 3D Human Pose Estimation. In *Proc. European Conference on Computer Vision (ECCV), 2024*
- Sammy Christen, **Shreyas Hampali**, Fadime Sener, Edoardo Remelli, Tomas Hodan, Eric Sauser, Shugao Ma, Bugra Tekin. Diffh2o: Diffusion-based synthesis of hand-object interactions from textual descriptions. In *SIGGRAPH Asia, 2024*
- **Shreyas Hampali**, Tomas Hodan, Luan Tran, Lingni Ma, Cem Keskin, Vincent Lepetit. In-Hand 3D Object Scanning from an RGB Sequence. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2023
- **Shreyas Hampali**, Sayan Deb Sarkar, Mahdi Rad, Vincent Lepetit. Keypoint Transformer: Solving Joint Identification in Challenging Hands and Object Interactions for Accurate 3D Pose Estimation. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2022
- **Shreyas Hampali***, Sinisa Stekovic*, Sayan Deb Sarkar, Chetan S Kumar, Friedrich Fraundorfer, Vincent Lepetit. Monte Carlo Scene Search for 3D Scene Understanding. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2021 *(*First two authors contributed equally)*
- **Shreyas Hampali**, Mahdi Rad, Markus Oberweger, Vincent Lepetit. HOnnotate: A method for 3D Annotation of Hand and Object Poses. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2020
- Sinisa Stekovic, **Shreyas Hampali**, Mahdi Rad, Sayan Deb Sarkar, Vincent Lepetit. General 3D Room Layout from a Single View by Render-and-Compare. In *Proc. European Conference on Computer Vision (ECCV)*, 2020
- Anil Armagan, Guillermo Garcia-Hernando, Seungryul Baek, **Shreyas Hampali**, ..., Vincent Lepetit, Tae-Kyun Kim. Measuring Generalisation to Unseen Viewpoints, Articulations, Shapes and Objects for 3D Hand Pose Estimation under Hand-Object Interaction. In *Proc. European Conference on Computer Vision (ECCV)*, 2020

Patents

- **Shreyas Hampali**, Vincent Lepetit, Clemens Arth, "Keypoint-based Sampling for Pose Estimation", U.S Patent filed, Application no. 63/162,305
- **Shreyas Hampali**, Sinisa Stekovic, Friedrich Fraundorfer, Vincent Lepetit, "Scene layout estimation", U.S Patent no. 11797724
- **Shreyas Hampali**, "Video Coding Including a Stage-Interdependent Multi-Stage Butterfly Integer Transform", U.S. Patent 20160021369, published Jan 21, 2016.
- **Shreyas Hampali**., Ajit Rao, Yogesh Gupta and Conrad Harrison, "Artifact detection in a contrast enhanced output image", U.S. Patent filed, Application no. 15/702,394

- **Shreyas Hampali**, Pawan Baheti and Naveen Srinivasamurthy, "Systems and methods for non-recursive image signal processor tuning using a reference image", India Patent filed, Application no. 201841003400
- Shilpi Sahi, Pawan Baheti, Aarrushi Shandilya, **Shreyas Hampali**, Naveen Srinivasamurthy and Yogesh Gupta, "Systems and methods for assisted image signal processor tuning", India Patent filed, Application no. 201841003395
- Pawan Baheti, Shilpi Sahu, Naveen Srinivasamurthy, Yogesh Gupta, Uday Kiran Pudipeddi, **Shreyas Hampali**, "Systems and methods for assisted image signal processor tuning using a reference image", India patent filed, Application no. 201841003373
- **Shreyas Hampali** and Dowray Raghvendra Rao, "Remote Image based Measurement System", India Patent 4785/CHE/2012, filed November 2012.

Scholastic Distinctions

- Reviewer: CVPR'22, ECCV'22, Transactions on Visualization and Computer Graphics
- Graduate Aptitude Test in Engineering (Mar 2010) : Ranked 6th in the country in electrical engineering stream
- All India Engineering Entrance Examination (Mar 2006) : Ranked 155 in the state

Computer Skills

Languages : OpenCV, C, C++, Python, Matlab, Tensorflow
Typography : LaTeX

Nationality

Indian

Languages

English, Kannada, Hindi