Siddhant A. Ranade

Research Scientist

About

Research scientist with expertise in 3D computer vision and related fields such as monocular line reconstruction, dynamic scene reconstruction with neural radiance fields, point cloud registration, simultaneous localization and mapping (SLAM), and human pose estimation. Passionate about graphics and video quality with experience in video enhancement (denoising, frame interpolation), multi-view temporal free-rendering with NeRFs, and ray-tracing.

Experience

Topaz Labs, *Deep Learning Researcher, Video AI* Dallas, TX | Jun 2023 – Present

- Developed and trained machine learning algorithms for high-quality video denoising and upscaling, and integrated and deployed them into our desktop application. *(PyTorch, C++, Qt)*
- Owned the video frame interpolation project, optimizing and maintaining the inference pipelines to enhance slow-motion capabilities. *(C++, ONNX, TensorRT, CoreML)*
- Improved accuracy and colorspace-correctness of the in-app display. *(C++, FFMpeg, Qt)*

Meta, *Research Intern* Boston, MA | Aug 2021 – Mar 2022

- Developed algorithms for creating high-quality, labeled, human-centric 3D scenes using semantically decomposed neural radiance fields. *(Python, PyTorch, OpenCV)*

Facebook AR/VR, *Research Intern* Salt Lake City, UT | May – Aug 2020

- Trained neural networks for human pose estimation. *(Python, PyTorch, OpenCV)*
- Diagnosed and resolved bugs in the original implementation, improving precision. *(TensorFlow)*

Amazon Lab126, *Applied Scientist Intern* Sunnyvale, CA | May – Nov 2019

- Developed algorithms for unsupervised 3D human pose estimation from a single view, achieving an 18% improvement over the state-of-the-art. *(Python, PyTorch, OpenCV)*

Adobe Research, *Research Intern* Seattle, WA | May – Aug 2017

- Published research on material-aware local descriptors for 3D shapes for tasks such as classification and material-aware retrieval using neural networks. *(Python, Caffe)*

Publications

- A. Mateus, **S. Ranade**, S. Ramalingam, P. Miraldo, "Fast and accurate 3D registration from line intersections constraints," *Int. J. Comput. Vis.*, 2023.
- **S. Ranade**, C. Lassner, K. Li, C. Haene, S.-C. Chen, J.-C. Bazin, S. Bouaziz, "SSDNeRF: Semantic Soft Decomposition of Neural Radiance Fields," *arXiv preprint arXiv:2212.03406*, 2022.
- **S. Ranade**[*], X. Yu[*], S. Kakkar, P. Miraldo, S. Ramalingam, "Mapping of sparse 3D data using alternating projection," in *Proc. Asian Conf. Comput. Vis.*, 2020.
- S. Tripathi[*], **S. Ranade**[*], A. Tyagi, A. Agrawal, "PoseNet3D: Learning temporally consistent 3D human pose via knowledge distillation," in *Int. Conf. 3D Vis.*, 2020.
- H. Lin, M. Averkiou, E. Kalogerakis, B. Kovacs, **S. Ranade**, V. Kim, S. Chaudhuri, K. Bala, "Learning material-aware local descriptors for 3D shapes," *Int. Conf. 3D Vis.*, 2018.
- **S. Ranade**, S. Ramalingam, "Novel single view constraints for Manhattan 3D line reconstruction," *Int. Conf. 3D Vis.*, 2018.

Patent

- S. Tripathi, A. Tyagi, A. K. Agrawal, **S. Ranade**, "Three-dimensional pose estimation," U.S. Patent 11 526 697, 2022.

Education

University of Utah, *PhD*

Computing – Graphics

Aug 2017 – May 2023

Inferring Shape and Appearance of 3D Scenes – Advances and Applications.

IIT Bombay, *B.Tech.*

Engineering Physics / Computer Science

Jul 2013 – May 2017

Service and Honors

Reviewer at:

- Int. Conf. 3D Vis.: 2021, 2022, 2024
- Indian Conf. Comput. Vis. Graph. Image Process.: 2018, 2021, 2022
- AAAI Conf. Artif. Intell.: 2023
- IEEE Int. Conf. Robot. Automat.: 2023

Department Fellowship 2017
School of Computing, University of Utah

Undergraduate Research Award 2016
IIT Bombay

KVPY Fellowship 2013
DST, Govt. of India

Technical Skills

Languages: Python, C++, C, MATLAB, R, Bash, PHP, HTML

Frameworks: PyTorch, TensorFlow, CUDA, OpenGL, OpenCV, Eigen, Gurobi, NumPy, FFMpeg, Caffe, ONNX, TensorRT, CoreML

Contact

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