Karthik Venkatasivareddy

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Research Summary

Ph.D. candidate focusing on unsupervised non-rigid 3D point cloud registration for human pose estimation. Research leverages neural deformation fields, loss functions, and transformer models. Demonstrated robust alignment on FAUST, SCAPE, and custom occluded datasets using deformation-aware benchmarks and learned metrics.

Publications & Preprints

Karthik Venkatasivareddy and Xiaohui Yuan. "UND-Net: Unsupervised Neural Deformation Network for Robust Non-Rigid Registration." WACV 2026 (under review).

Research Experience

Graduate Researcher, Computer Vision & Intelligent Systems Lab, UNT | Advisor: Dr. Xiaohui Yuan

- Proposed UND-Net using Positional encoded neural network with correntropy loss.
- Improved strict accuracy by +4.7 pts over the following best method on the MPI-FAUST occlusion benchmark dataset.
- Designed a custom deformation benchmark suite with low/medium/high difficulty bins for 3D human pose point clouds.
- Synthetically generated occluded 3D point clouds for evaluation of our method.
- Benchmarked registration accuracy on intra/inter-subject partial pairs using EPE, Accuracy, and Outlier Ratio.
- Implemented CUDA-accelerated registration, achieving 30× speedup over traditional methods like BCPD with 90% alignment accuracy on test pairs.

Professional Experience

Platform QA Engineer, Dolby Laboratories, Sunnyvale, CA **2019 - 2023**

- Defined experimental test plans for Dolby Vision pipeline components, aligning system specs with research validation.
- Automated test workflows using Python/MATLAB to generate configs, modify vectors, and produce Golden outputs.
- Executed performance and memory profiling tests; enhanced reproducibility via Bamboo/Jenkins-based CI pipelines.

Junior Software Developer, Roughneck Systems, Forney, TX **2018 - 2019**

- Built modular components for desktop (C++) and Android (Java) apps, ensuring functional correctness and UI abstraction.
- Developed reusable class libraries and implemented SQL logic for dynamic reporting and user interaction.
- Translated stakeholder requirements into specs and a responsive UI.
- Integrated cross-platform backup and communication routines.

Education

Ph.D. in Computer Vision, University of North Texas, Denton, TX (Expected: May 2028)
M.S. in Computer Science, The University of Texas at Arlington (2017–2019)
B.E. in Information Science & Engg., VTU, India (2013–2017)

Technical Skills

Programming:	Python, C++, MATLAB, CUDA, Java
Libraries:	PyTorch, Open3D, PyTorch3D, NumPy, SciPy, scikit-learn, OpenCV
ML Tools:	Neural deformation fields, Transformer networks
CI & Automation:	Bamboo, Jenkins, Dolby Electric Flow, GitHub, GitLab
Platforms:	Linux/Ubuntu, Windows, MacOS