Seyed Hosseini

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Portfolio | Github | LinkedIn

Work Experience

Graduate Research Assistant, Elder Research Lab, York University (2022 - Present)

- Developed a novel semantic and geometry-based algorithm, achieving a sub 0.3 relative error in metric depth estimation on the challenging Kitti and SYNS datasets.
- Presented at CVPR 2024 as an invited speaker, showcasing our algorithm's performance in the Monocular Depth Estimation Challenge workshop.

Research Assistant, NBIC Lab, Tehran University (2021 - 2022)

- Engineered a CNN-Transformer model, achieving a sub-10° angular error in brain fiber orientation estimation.
- Successfully applied the model to white matter fiber tractography, contributing to improved accuracy and efficiency in dMRI analysis.

Summer Intern, DAHA tech, Sharif University of Technology (Summer 2019)

- Designed and implemented a clustering-based wireless indoor positioning system, delivering sub-meter accuracy in real-world environments.
- Contributed to system optimization and deployment.

Education

MASc. in Electrical and Computer Engineering, York University (2022 - Present) - GPA: 4.0

Thesis: *"Metric Depth Estimation via Semantic Segmentation and Ground Geometry"*

BSc. in Electrical Engineering, University of Tehran (2016 - 2021) - GPA: 3.6

Thesis: *"Single-view 3D Reconstruction of Surface of Revolution"*

Skills

- **Programming Languages:** Python, MATLAB, C, C++
- **Frameworks and Libraries:** PyTorch, TensorFlow/Keras, OpenCV, PIL
- **Tools and Platforms:** Ubuntu, CUDA, AVR
- **Soft Skills:** Teamwork, Project Management

Projects

- **Brain Fiber 3D Reconstruction** - Developed a framework for reconstructing brain fibers using 3D data.
- **Depth estimation** - Developed a systematic monocular depth estimation network for metric depth estimation, given camera parameters.
- **Optical Flow Estimation** - Implemented optical flow estimation algorithms from scratch.
- **Voice Gender Classification** - Developed a model for classifying gender based on voice inputs with 90% accuracy.
- **Movie Server** - Built a server to manage and stream movie content.
- **Single-view 3D Reconstruction of SOR** - Worked on reconstructing 3D surfaces from single-view images.
- **Super Mario Game** - Created a version of the classic Super Mario game.
- **YOLO for Chess Piece Detection** - Fine-tuned the YOLO model for detecting chess pieces, acheiving 97.6% mAP.

Publications

1. **Spencer, et al.**, "The third monocular depth estimation challenge," *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition*, 2024. [Link]
2. **Hosseini, et al.**, "CTtrack: A CNN+Transformer-based framework for fiber orientation estimation & tractography," *Neuroscience Informatics*, 2022. [Link]
3. **Hosseini, et al.**, "Single-view 3D reconstruction of surface of revolution," 2023. [Link]