HELIA GOHARBAVANG

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EDUCATION

Doctor of Philosophy in Electrical Engineering, University of Houston, TX, GPA: 3.852 August 2026
Related coursework: GPU Programming, Computer Vision, Machine Learning, Adv. Computer Architecture

Bachelor of Science in Electrical Engineering, Tehran Polytechnic, GPA: 3.55 September 2021
Thesis project: "DAQ-LoRa: A data acquisition system with a central controller"

WORK EXPERIENCE

Research Assistant August 2022 - Present
University of Houston, Scalable Tissue Imaging and Modeling Lab (STIM-Lab)

- Contributor to the "tiralib" repository, a tissue imaging, reconstruction, and analysis library
- Developer of the 3D tools of the "tensor" repository, a visualization and processing program for 2D and 3D tensor fields
- Developer of the "glOrthoview", a visualization program for orthographic slices of a 3D volume using OpenGL

Teaching Assistant September 2017 - December 2017
Tehran Polytechnic, Advance Computer Programming Course

- Prepared course projects and homework for Python and C++, developed an auto-grader for course assignments

PROJECTS

GPU-Programming, GPU-accelerated vesselness filter for vascular network enhancement, developed a parallel ray tracer as a class assignment

3D Segmentation and Skeletonization, Performed and implemented state-of-the-art vascular segmentation and centerline extraction methods on several large-scale microvascular datasets and evaluated the results

CNNs and Machine Learning, Blood glucose level estimation using images of test strips, responsible AI in primary healthcare using adversarial learning, implemented vision transformers, clustering, semantic segmentation, object detection, autoencoders

Visualization Programs, Visualization tools for 3D tensor fields, 3D visualization toolkit for large-scale microvasculature data using OpenGL (glOrthoView)

Embedded Systems and Hardware Programming, Experience programming Arduino UNO and Raspberry Pi, integrating various sensors, actuators, and long-range communication technologies for IoT and robotic projects

TECHNICAL STRENGTHS

Computer Languages	Python, C, C++, MATLAB, R, HTML
Quantitative Skills	Optimization, Statistical Analysis, Signal Processing
Tools	CUDA, Git, CMake, Blender, Slicer3D, MeshLab
Libraries	Keras, OpenCV, PyTorch
Others	Fluent in English, Persian, German (B2 Niveau)

PUBLICATIONS

Goharbavang, H., Wythe, J., Chen, G., Mayerich, D. (2024). Segmentation and Modeling of Large-Scale Microvascular Networks: A Survey. **Manuscript submitted for publication**

Niger, M., **Goharbavang, H.**, Ahn, T., Alley, E., Wythe, J., Chen, G., Mayerich, D. (2024). GPU-Accelerated RSF Level Set Evolution for Large-Scale Microvascular Segmentation. **Manuscript under review**