Kechun Liu

– Updated July, 2024

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EDUCATION

University of Washington **Seattle, WA**

Ph.D, Computer Science & Engineering *Sept. 2019 – Dec. 2024 (Expected)*

Advisor: Prof.Linda Shapiro GPA: 3.87/4.0

Tsinghua University **Beijing, China**

Bachelor of Engineering, Electrical Engineering *Sept. 2015 – June. 2019*

GPA: 3.74/4.0 (Rank 20/216)

EXPERIENCE

3D Reconstruction for Driving Scene

Rivian, Infotainment, Imaging and Vision (ICIV) Team *June. 2023 - Sept. 2023*

- Developed Neural Radiance Field (NeRF) model with unknown camera pose learning.
- Built vehicle camera dataset for parking and driving.
- Accelerated NeRF model training and inference process.

Image-adaptive Codebook Representation Learning

Sensebrain Technology *Sept. 2022 - Sept. 2022*

- Developed AdaCode, an adaptive VQGAN-based model for class-agnostic image restoration and reconstruction. (published in ICCV2023) [github][website]

Low-light Portrait Enhancement

Sensebrain Technology *June. 2022 - Sept. 2022*

- Developed deep learning models to enhance low-light images in Bayer format.
- Integrated models to mobile device camera pipeline.

Computer-aided Diagnosis and Analysis for melanoma whole slide image

University of Washington *Sept. 2019 - Present*

- Developed SAG, a semantic-aware attention guiding framework to optimize attention learning for Transformer and MIL models.
- Developed VSGD-Net, a novel multi-task model for generating virtual-stained whole slide images and cell detection.

PUBLICATIONS

[1] **Liu, K.**, Wu, W., Elmore, J. G., Shapiro, L. G., "Semantics-Aware Attention Guidance for Diagnosing Whole Slide Images". In: *27th International Conference on Medical Image Computing and Computer Assisted Intervention* (***MICCAI***) (2024).

[2] **Liu, K.**, Jiang, Y., Choi, I., Gu, J., "Learning Image-Adaptive Codebooks for Class-Agnostic Image Restoration". In: *Proceedings of the IEEE/CVF International Conference on Computer Vision* (***ICCV***). Oct. 2023, pp. 5373–5383.

[3] **Liu, K.**, Li, B., Wu, W., May, C., Chang, O., Knezevich, S., Reisch, L., Elmore, J., Shapiro, L., "VSGD-Net: Virtual Staining Guided Melanocyte Detection on Histopathological Images". In: *Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision* (***WACV***). 2023, pp. 1918–1927.

[4] Nofallah, S., Shapiro, L. G., Wu, W., **Liu, K.**, Ghezloo, F., Elmore, J., "Automated Analysis of Whole Slide Digital Skin Biopsy Images". In: ***Frontiers in Artificial Intelligence*** (2022), p. 209.

[5] **Liu, K.**, Mokhtari, M., Li, B., Nofallah, S., May, C., Chang, O., Knezevich, S., Elmore, J., Shapiro, L., "Learning Melanocytic Proliferation Segmentation in Histopathology Images From Imperfect Annotations". In: *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition* (***CVPRw***). 2021, pp. 3766–3775.

[6] Zong, Z., Feng, J., **Liu, K.**, Shi, H., Li, Y., "DeepDPM: Dynamic population mapping via deep neural network". In: *Proceedings of the AAAI Conference on Artificial Intelligence* (***AAAI***). Vol. 33. 01. 2019, pp. 1294–1301.

Academic Service & Teaching

Reviewer at Conference

- International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI) 2024
- IEEE/CVF Winter Conference on Applications of Computer Vision (WACV) 2022, 2024

Teaching Assistant at University of Washington

- CSE455 Computer Vision 2024
- CSE473 Artificial Intelligence 2023
- CSE576 Computer Vision 2021, 2023, 2024
- CSE/STAT416 Intro to Machine Learning 2023

Fellowships & Awards

Excellent Honors Graduate, Tsinghua University 2019
Outstanding Student Award, Tsinghua University 2018
ICBC Scholarship, Industrial and Commercial Bank of China 2018
Jiang Nanxiang Scholarship, Tsinghua University 2017
National Scholarship, Tsinghua University 2017