

ZHIQI CHEN

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Education

New York University

Ph.D. candidate in Electrical Engineering, GPA 3.88

Sept. 2018 – Jun. 2023 (expected)

New York

Beihang University (BUAA)

B.S. in Biomedical Engineering, GPA 3.7

Sept. 2014 – Jun. 2018

Beijing

Skills

Programming Languages: Python, MATLAB, C/C++, Java

Tools & Frameworks: PyTorch, Tensorflow, Keras, Git, GCP/AWS

Languages: Chinese, English

Work Experience

Philips Research

Computer vision engineer intern

May 2021 – Aug. 2021

Cambridge

- Designed and developed a MATLAB framework to remove large motions in liver ultrasound image sequences.
- Implemented, optimized, and validated different algorithms for a series of tasks including automatic region-of-interest selection, active object tracking, and automatic threshold selection.
- Drafted an invention disclosure for the designed framework which could potentially be commercialized on Philips' next-generation premium ultrasound scanner.

Projects

PDWN: Pyramid Deformable Warping Network for Video Interpolation (Python, PyTorch)

- A compact and accurate deep learning model to upconvert video frame rate by generating realistic intermediate frames given video sequences.
- Designed a pyramid structure to generate deformable convolution kernels, which modeled object motion and appearance, through coarse-to-fine successive refinements so as to address large motions.
- Applied deep feature warping and cost volume calculation in the pyramid to help the inference.
- Achieved 0.53 dB PSNR gain with a model size that is only 5.8% of that of the state-of-the-art model.
- Accepted as a [paper in the IEEE Open Journal of Signal Processing](#). [Demo](#) available.

Macular GCIPL Thickness Map Prediction via Time-Aware Convolutional LSTM (Python, PyTorch)

- A time-aware convolutional long short-time memory (LSTM) model to predict next-visit retinal layer (GCIPL) thickness maps based on past four visits.
- Designed a time gate to address sampling interval variance by decomposing memories into the short-term and long-term memories and penalizing the short-term memories.
- Demonstrated the superiority of the proposed model over standard convolutional LSTM by 3 ophthalmologists preferring the proposed approach for over 90% of test sets in subjective evaluations.
- Accepted as a [paper in 2020 IEEE International Symposium on Biomedical Imaging \(ISBI\)](#).

Interactive 2D Editor for Vector Graphics (C++, SDL2)

- An interactive application that allows to add, edit, delete, and rasterize triangles. [Demo](#) available.
- Built functions to apply transforms like translation, rotation, and scale to selected primitives and view transformations.
- Implemented interpolations between key frames to generate animations.

Publications

- **Zhiqi Chen**, Lei Zheng, Eitan Shemuelian, Gadi Wollstein, Yao Wang, Hiroshi Ishikawa, Joel S Schuman; "A Deep Learning Approach to Estimate Point-Wise Visual Field Thresholds from OCT Volumes." Invest. Ophthalmol. Vis. Sci. 2022. (submitted)
- Haojie Liu, Ming Lu, **Zhiqi Chen**, Xun Cao, Zhan Ma, Yao Wang, "End-to-end Neural Video Coding Using a Compound Spatiotemporal Representation." in IEEE Transactions on Circuits and Systems for Video Technology. (in revision)
- **Zhiqi Chen**, Ran Wang, Haojie Liu and Yao Wang, "PDWN: Pyramid Deformable Warping Network for Video Interpolation." in IEEE Open Journal of Signal Processing, vol. 2, pp. 413-424, 2021.
- **Zhiqi Chen**, Ronald Zambrano, Gadi Wollstein, Joel S Schuman, Hiroshi Ishikawa; "OCT Denoising Performance Comparison on 2D and 1D Approaches." Invest. Ophthalmol. Vis. Sci. 2021.
- **Zhiqi Chen**, Yao Wang, María de los Angeles Ramos-Cadena, Gadi Wollstein, Joel S Schuman, Hiroshi Ishikawa; "Predicting Macular Progression Map Using Deep Learning." Invest. Ophthalmol. Vis. Sci. 2020;61(7):4532.
- **Zhiqi Chen**, Yao Wang, Gadi Wollstein, Maria de los Angeles Ramos-Cadena, Joel S. Schuman, Hiroshi Ishikawa (2020). "Macular GCIPL Thickness Map Prediction via Time-Aware Convolutional LSTM." In 2020 IEEE International Symposium on Biomedical Imaging (ISBI). IEEE, Conference Proceedings, in press.