Wenqi Zhou

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University of California, Los Angeles
Department of Bioengineering
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Education

University of California, Los Angeles Sept. 2021-July 2023(expected)
M.S. in Bioengineering, GPA: 3.81

Shanghai Jiao Tong University Sept. 2016-July 2020
Bachelor of Engineering in Biomedical Engineering

Research Projects

Automatic Needle Segmentation and Localization in MRI-Guided Interventions Based on Mask R-CNN

Supervised by Prof. Holden Wu, University of California, Los Angeles Janu. 2022-now

- Mask R-CNN was adapted for automatic needle detection and segmentation with 205 intra-procedural MR images from 8 in vivo animal MRI-guided interventions.
- Localized the needle axis and needle tip by post-processing the segmentation mask.
- The proposed algorithm achieved needle feature tip localization error with a median Euclidean distance of 2.4mm and a median difference in axis orientation angle of 0.516°.

Establishment of Computational Simulation Model for Mouse Retina in Different Stages of Retinal Degeneration

Supervised by Prof. Liming Li, Shanghai Jiao Tong University Janu. 2019-June. 2020

- Built computer simulation models of normal retina and retina in three different stages of retinitis pigmentosa with COMSOL Multiphysics and NEURON.
- The electrical stimulation response characteristics were studied and provided a theoretical reference for the research of retinal prostheses.

Optimization of Data Analysis of Real-Time Phase-Contrast MRI in Cerebrovascular Reactivity Measuring

Supervised by Prof. Hanzhang Lu, Johns Hopkins University July 2019-Sept. 2019

- Adapted a real-time PC MRI technique using highly under sampled radial FLASH acquisitions with regularized nonlinear inversion reconstruction in cerebral blood flow (CBF)-based cerebrovascular reactivity (CVR) measuring.
- Utilized spontaneous fluctuations in breathing patterns to calculate the CVR of superior sagittal sinus based on the CBF measured under free-breathing conditions.
- The proposed algorithm achieved a result of R^2 over 0.89 in the linear fitting of CBF measured in regular PC MRI and real-time PC MRI.

Experiences

Johns Hopkins University July 2019-Sept. 2019
Research Internship at Johns Hopkins University School of medicine, Department of Radiology

Publications

Wenqi Zhou, Kristyna Herman, Dengrong Jiang, Hanzhang Lu, and Peiying Liu. Towards accurate quantification of cerebrovascular reactivity using real-time phase-contrast MRI. ISMRM Annual Meeting, April 18-23 2020.

Skills

Matlab, Python (TensorFlow, Keras), C/C++

Relevant Courses

Advanced Topics in Magnetic Resonance Imaging, Contrast Mechanisms & Quantification in MRI, Machine Learning and Data-Driven Modeling in Bioengineering