Jishuai He

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EDUCATION

School of Medicine, Tsinghua University **Beijing, CN**
M.S. in Biomedical Engineering, GPA: 3.82/4.00 (3 / 21) Sep 2018 - Jun 2021

College of Medicine and Biological Information Engineering, Northeastern University **Shenyang, CN**
B.E. in Biomedical Engineering, GPA: 3.85/4.00 (5 / 138) Sep 2015 - Jun 2018

PUBLICATIONS

***** indicates equal contribution

1. Yao, C., **He, J.***, et al. Feature pyramid self-attention network for respiratory motion prediction in ultrasound image guided surgery. International Journal of Computer Assisted Radiology and Surgery, 2022
2. **He, J.**, et al. FPSN-FNCC: an accurate and fast motion tracking algorithm in 3D ultrasound for image-guided interventions. Physics in Medicine & Biology, 2021.
3. Huang, Y., **He, J.***, et al. Tracking 3D ultrasound anatomical landmarks via three orthogonal plane based scale discriminative correlation filter network. Medical Physics, 2021
4. **He, J.,** et al. Siamese spatial pyramid matching network with location prior for anatomical landmark tracking in 3-Dimension ultrasound sequence. In Chinese Conference on Pattern Recognition and Computer Vision, 2019.
5. Shen, C., **He, J.**, et al. Discriminative correlation filter network for robust landmark tracking in ultrasound guided intervention. In International Conference on Medical Image Computing and Computer-Assisted Intervention (Oral), 2019

Under Review

1. Huang K.*, Liao J.*, **He J.***, et al. A real-time augmented reality device integrated with artificial intelligence for skin toumor surgery. 2022.

RESEARCH EXPERIENCE

Development of algorithms and software for surgical navigation systems Jul 2021 - Jan 2023

Junior Researcher at Tencent AI lab, worked with Dr. Jianhua Yao

- Proposed a skin tumor segmentation algorithm based on a multi-layer perceptron (MLP) model, which achieved an improvement of 0.1 in terms of the Dice coefficient when applied to clinical images, compared to the performance of a UNet model.
- Proposed the novel computer-assisted planning algorithms for skin tumor resection surgery for the first time, which were subsequently proven to improve surgical accuracy through clinical tests.
- Developed the control software of the skin surgery navigation system and specialized software for processing images of skin tumors.
- Developed a 6D pose estimation algorithm for the patient's head in a neurosurgery navigation system.

Anatomical landmarks Tracking in 2D/3D Ultrasound Images Oct 2018 - Jun 2021

M.S. student at Tsinghua University, advised by Prof. Jian Wu

- Coupled the SPP and the MatchNet and firstly introduced the deep network into 3D Ultrasound (US) landmarks tracking.
- Proposed the 3D US landmarks tracking algorithm based on Siamese network and normalized cross correlation (SiamNCC) and achieved the most accurate tracking performance in the CLUST dataset (The first anonymous participant in results of 3D point-landmark tracking). In this approach, a fast NCC (FNCC) was proposed, which could reduce the computation and improve the tracking speed.
- Introduced the FPN into SiamNCC and further improved the network's tracking speed.
- Introduced scale DCFNet into 3D US landmarks tracking based on triplanar transformation.

Detection of Ablation Needle in ultrasound-guided Interventional Therapy Jun 2019 - Jun 2021

M.S. student at Tsinghua University, advised by Prof. Jian Wu

- Collected, cleaned and labeled 2D ultrasound images for needle detection.

Anatomical Landmarks Motion Prediction based on Time Series Feb 2020 - Jun 2021

M.S. student at Tsinghua University, advised by Prof. Jian Wu

- Collected 2D/3D target motion time series data from hospital.
- Utilized TCN and transformer to forecast the motion of the anatomical landmarks.

Computer-assisted diagnosis of Alzheimer's disease based on deep learning Mar 2017 - Mar 2018

B.E. student at NEU, advised with Prof. Yueyang Teng

- Collected fMRI data from ADNI database and used DPABI to preprocess data.
- Generated the function connection matrix based on fMRI.
- Used the convolutional auto-encoder and SVM to diagnose Alzheimer's disease.

EMPLOYMENT

AI Lab, Tencent **Shenzhen, CN**

Junior Researcher Jul 2021 – Jan 2023

SKILLS

Programming: Python, C/C++

Frameworks & Tools: Pytorch, Keras, MATLAB

SCHOLARSHIPS AND AWARDS

- Comprehensive excellent second class scholarship of Tsinghua University Shenzhen Graduate School, Tsinghua University 2018-2019
- Outstanding student cadres of Northeast University 2018
- Second class scholarship of Northeast University, Northeastern University 2015-2016
- Neusoft scholarship, Northeastern University 2015-2016