

# Jishuai He

Tel: (86) 15840151975

Email: [hjs18@tsinghua.org.cn](mailto:hjs18@tsinghua.org.cn)

Homepage: [jishuaihe.github.io](http://jishuaihe.github.io)

## EDUCATION

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**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

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\* 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 tumor surgery. 2022.

## RESEARCH EXPERIENCE (SELECTED)

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### Development of the Skin Tumor Surgery Navigation system

Jul 2021 – present

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

- Developed the skin tumor segmentation algorithm based on MLP-based model. Compared to UNet, on clinical image, the above algorithm achieved the improvement of 0.1 in term of Dice.
- Developed the automatic surgery planning algorithms to help surgeons design surgical margins and sampling grids.
- Developed the control software of the navigation system and deployed above algorithms to the software.

### Anatomical Objects Tracking and Segmentation in 2D/3D Ultrasound Sequence

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) landmark tracking.
- Proposed the 3D US landmark 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 landmark tracking based on triplanar transformation.

#### **Anatomical Landmark 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 forecasting the motion of the anatomical targets.

#### **Construction, Feature Extraction and Analysis of Brain Function Network**

Mar 2017 - Mar 2018

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

- Collected MRI data from ADNI database and used DPABI to preprocess data
- Used the convolutional auto-encoder and SVM to diagnose Alzheimer's disease, based on Functional MRI images.

### **EMPLOYMENT**

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**AI Lab, Tencent**

Junior Researcher

**Shenzhen, CN**

Jul 2021 - Present

### **SKILLS**

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Programming: Python, C/C++

Frameworks & Tools: Pytorch, Keras, Tensorflow, MATLAB

### **SCHOLARSHIPS AND AWARDS**

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- 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