Junyang WU

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EDUCATION

Shanghai Jiao Tong University (SJTU) School of Biomedical Engineering *Sep. 2019 - Present*

Bachelor of Engineering in Biomedical Engineering

Major GPA: 3.95/4.3 (91.3/100), Overall: 1/77

Core Courses: Programming Ideas and Methods (C++) (93), Probability Theory and Mathematical Statistics (100), Data Structure (99), Principles of Automatic Control (95), Microcomputer Principles (94), Biomedical Image Processing (94)

RESEARCH EXPERIENCE

Nonlinear regression of remaining surgical duration via Bayesian LSTM-based Deep Negative Correlation Learning

Jul. 2021 - Present

Advisor: Prof. Guoyan Zheng, Professor, School of Biomedical Engineering, SJTU

- Proposed a novel ensemble learning framework combining negative correlation learning and Bayesian deep learning, which managed diversities among predictions, and it has a sound generalization capability.
- Developed a method to estimate uncertainty, which has a strong correlation with true errors in test stage.
- This paper has been early accepted by MICCAI 2022 (First author).

Accuracy verification method, medium and electronic equipment for calibration parameters

Jun. 2021 – Sep. 2021

Advisor: Prof. Guoyan Zheng, Professor, School of Biomedical Engineering, SJTU

- Proposed a verification method based on 3D reconstruction and point cloud registration to verify the accuracy of calibration parameters of biplane X-ray System.
- Developed a coarse-to-fine feature point matching algorithm in order to improve the accuracy of feature point matching.
- Developed a point cloud initialization algorithm in registration, to adapt the requirement of the ICP algorithm.
- The methods of this project have applied for a national invention patent.

Multimodal Brain Imaging Analysis and Outcome Prediction Study for Patients with Primary Nocturnal Enuresis

Jul. 2020 - Sep. 2021

Advisor: Prof. Lichi Zhang, Associate Professor, School of Biomedical Engineering, SJTU

- Carried out brain network analysis for assistance in investigation of pathogenesis of primary nocturnal enuresis. (Tools: python, DPARSFA (MATLAB-based) and BET)
- Preprocessed the T1 and fMRI data, and extracted corresponding functional connection matrix.
- Carried out statistical analysis about the brain network information and its correlation with several behavioral indicators (mainly intergroup analysis between patients and healthy people).
- Discovered several brain network connections which are statistically related to primary nocturnal enuresis.

AWARDS & HONORS

National Scholarship *2021*

Meritorious Winner in the Mathematical Contest in Modeling *2021*

Fujian Alumni Association Scholarship *2020*

SKILLS

- **Programming Languages:** C/C++ (10k+ Loc), Python (10k+ Loc)
- **Tools:** Linux, LaTeX, MATLAB, OpenCV
- **Deep Learning Framework**: Pytorch, TensorFlow