Weijie Ma

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Education

The Chinese University of Hong Kong M.Phil. (Cand.), Computer Sci. & Tech. 2021 – present
Zhengzhou University B. Eng., Communication Engineering 2017 – 2021

Relevant Subjects

Calculus: 4.0/4.0 Probability and Statistics: 4.0/4.0 Complex Function and Integral Transform: 4.0/4.0
Programming Basic: 4.0/4.0 Principle of Microcomputer: 3.7/4.0 Information Theory and Coding: 3.7/4.0

Selective Projects and Research Experience

Colorectal Polyp Recognition via Cross-modal Representation Consistency 2022.02–2022.03

- Proposed a novel Transformer-base framework for colorectal polyp recognition with Cross-modal Global Alignment and Spatial Attention Module. With multi-level consistency between White-light (WL) and advanced Narrow Band Imaging (NBI) images, there is a more accurate diagnosis performace during WL-only model inference. Specifically, the proposed method achieve 2.4% higher performance with even approximately 1 million parameters decline. (This work was submitted into MICCAI 2022 and under review)

Unified Medical Multi-disease Classification and Report Generation (open item) 2021.10–2022.01

- Based on the multi-task model with feature-level interaction and consistency learning, explore the unified paradigm of medical image multi-disease classification and corresponding report generation. In current stage, adopt Transformer-based architecture to encode general feature and subsequently task-levelly specify it. Meanwhile there is a further interaction between them to acquire consistent information for auxiliary supervision.

The IJCAI-2019 Eldercare Robot Challenges (The 3rd Place) 2019.05–2019.08

- Utilize OpenPose to form a simple skeleton feature map and designing a VGG-based CNN for pose estimation, thereby triggering the response to the specific posture behavior through ROS; Use multi-angle and multi-scale data augmentation to collect dataset, and combine YOLOv4 to quickly obtain accurate recognition results under the limited number of on-site drugs in the competition to assist the elderly in taking medicine.

Automatic MRI diagnosis Pipeline of fetal lateral ventricle abnormalities 2020.06 – 2020.10

- Utilizing a dual-CNN-based localization and segmentation to obtain the 3D mask, thus generating a fetal brain de-skull image, which addresses the problem of the blurring and variable shape and direction of the raw sampled brain image; Proposing an automatic diagnosis CNN pipeline of the task for insufficient and ambiguous fetal brain dataset based on transfer learning strategy, and the AUC value can be as high as 98.32±1.46%.

Academics & Competition

Paper "Toward Clinically Assisted Colorectal Polyp Recognition via Structured Cross-modal Representation Consistency", MICCAI 2022, **Under Review** 2022.03
The 3rd Place The IJCAI-2019 Eldercare Robot Challenges (*Task Challenge*)
Excellent Design Work The IJCAI-2019 Eldercare Robot Challenges (*Design Challenge*) Macao, 2019.08
Champion RoboCup Asia-Pacific TianJin Invitational Tournament 2019 @*Home League* Tianjin, 2019.05
Champion RoboCup China 2019 @*Home League* Shaoxing, 2019.04
The 2nd Place China Robotics Competition Service Robot Special Competition (*WhoIsWho Event*)
The 3rd Place China Robotics Competition Service Robot Special Competition (*Follow Event*) Jinan, 2019.06

PERSONAL ABILITY

- Familiar with Python & C++, Ever Java development experience, Good programming style
- Familiar with the common algorithms of deep learning, Good at PyTorch and Linux.
- Familiar with the development and distributed communication of ROS (Robot Operating Platform).

OTHERS

- Honors: Provincial-level Merit Student in Henan Province; School-level Merit Student, Excellent Student Cadre and first-class scholarships,
- Grade-level and Class-level Student Committee in ZZU; IELTS 6.5; CET-6.
- Personal characteristics: Enthusiastic, Persistent, Good team spirit, Love of thinking and innovation.