Yan Bingjie(闫冰洁)

Machine Learning · Federated Learning · Big Data

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``Nothing is impossible."

Education

School of Computer Science and Technology, Hainan University   Hainan, China

Undergraduate Student, Software Engineering, Big data branch   2018.09 - Exp. 2022.06

· GPA: 89.69/100 (3.67/4)
· Has won the honorary title of Merit Student and the honorary title of Hainan University Volunteer Service Model.
· Has won the first-class comprehensive scholarship in Hainan University.

Publications

FedCM: A Real-time Contribution Measurement Method for Participants in Federated Learning   IJCNN 2021(CCF-C)

First Author.   To appear, Oral Presentation.

· Propose a method to evaluate and measure participant contributions in federated learning in real-time.
· This method is more sensitive to data quality and quantity than traditional methods.

An Improved Method for the Fitting and Prediction of the Number of COVID-19 Confirmed Cases Based on LSTM   Computers, Materials & Continua(SCI, JCRQ1)

First author.   2020.5

· Propose an improved method for the number of COVID-19 confirmed cases prediction using LSTM, which is more precise.

Experiments of Federated Learning for COVID-19 Chest X-ray Images   ICAIS 2021(EI)

First author, cited 18 times.   To appear.

· First to apply federated learning to the identification and classification of COVID-19 medical images.
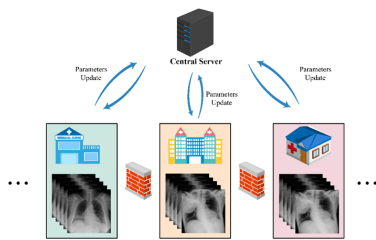· Visualization of lesion sites using the Grad-CAM++ method.

Project Experience

Smart Image: Medical Image Recognition System based on Federated Learning   Hainan, China

Host   2020.03 - PRESENT

We designed a medical image recognition software based on federated learning that allows for multi-party federation while protecting the privacy of patient data. In the aspect of data, we aggregate several published datasets on the Internet. In terms of models, we fused four models including ResNet and COVID-Net for model fusion to enhance system stability and generalization capability. We use GradCAM++ to visualize the convolutional layers for annotating lesion sites, and finally the software can generate medical reports automatically. In addition, we propose the FedCM contribution evaluation algorithm in the multiparty contribution measurement. [Code]

5G Road Patrol Car   Hainan, China

Participate   2020.05 - PRESENT

We designed an unmanned road inspection robot based on 5G and multi-sensor fusion for city patrol. The main functions are multi-sensor fusion-based detection of road cracks, potholes and other defects and reporting them to the cloud, and parking violation detection. For mapping and localization, we adapt and improve the algorithm based on LeGO-LOAM. For road detection, we have trained our own model based on Yolov5, and the F1-score reached 0.68.

ROV technology-based underwater sightseeing robot. China

Participate 2020.05 - PRESENT

This is a national student innovation and entrepreneurship project. We use underwater ROV for image collection and transmission. After defogging, we perform stitching of video frame sequences to achieve panoramic landscape viewing.

Mid-air Draw: Gesture Recognition and Tracking based on YOLOv5 Hainan, China

Owner 2020.09 - PRESENT

We label the data ourselves and use YOLOv5 for gesture recognition and finger key point recognition. It is able to interact with PPT and other software to achieve the function of mid-air drawing. [Code] [Video]

Honors & Rewards

International

2017	**Silver,** Asia-Pacific Informatics Olympiad, APIO		Beijing, China

National

2019.9	**First prize,** The 3rd Silk Road Robotics Innovations Competiton	Xi'an
2020.11	**Second prize,** Contemporary UnderGradeuate Mathematical Contest in Modeling	China
2020.12	**Individual second prize,** CCCC - Group Programming Ladder Tournament	China
2020.12	**Third prize,** CCCC - Artificial Intelligence Innovation Contest	Hangzhou
2020.11	**Bronze,** The 6th China Internation College Students' 'Internet +' Innovation and Entrepreneurship Competition	China

Provincial

2020.12	**Special award for Group,** CCCC - Group Programming Ladder Tournament	Hainan
2020.10	**Gold & Sliver,** The 6th China Internation College Students' 'Internet +' Innovation and Entrepreneurship Competition in Hainan	Hainan
2021.5	**First prize,** Chinese Undergraduate Electronic Design Contest in Hainan	Hainan
2020.8	**Second prize,** CCCC - Artificial Intelligence Innovation Contest in South China	Hainan
2021.5	**Third prize,** The "Challenge Cup" College Students Extracurricular Science & Technology Work Contest in Hainan.	Hainan

Skills

Language	Chinese(Native), English(Fluent, CET-6: 478, CET-4: 539)
Machine Learning	PyTorch, TensorFlow, OpenCV
Big data	Hadoop, HBase, Hive, ZooKeeper, Storm, Kafka, Sqoop, Flume

Leadership Experience

The IEEE Hainan University Branch Hainan, China

President 2021.03 - PRESENT

· Participation in frontier academic conferences.
· Receive advanced academic information.

Association of Robotics and Artificial Intelligence, Hainan University Hainan, China

Vice President, Co-Founder 2020.07 - PRESENT

· Learn about machine learning, and write academic papers.
· Organize group members to prepare and participate in competitions
· Conduct machine learning sharing lectures.

Youth Volunteer Association, Hainan University Hainan, China

Minister 2019.09 - 2020.07

· Participate in various volunteer activities.
· Enhance leadership and work distribution skills.

Cyberspace Security Association, Hainan University Hainan, China

Vice President 2019.09 - 2020.07

· Learn about cyberspace security.
· Understand and carry out related work such as preparation of association activities.