# RAY(RUIYU) MAO

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## EDUCATION

**The University of Texas at Dallas** Aug. 2021 - Dec. 2023
Master of Science in Computer Science (GPA:3.67) **Richardson, Texas**

**Case Western Reserve University** Aug. 2017 - May . 2021
Bachelor of Science in Aerospace Engineering **Cleveland, Ohio**

## SKILLS

**Programming Languages, libraries ,and tools:** Java, C#, Python, Go, TensorFlow, PyTorch, OpenCV, NumPy, Matplotlib, C++

**Relevant Courses:** Algorithm Analysis and Data Structures, Operating Systems, Computer Architecture, Computer Vision, Virtual Reality, Information Security

## PROJECTS

### An Application of Semantic Segmentation on Car Background Detection and Portrait Background Detection
Jan 2022 - May. 2022

- This project is application-oriented, we applied state of-the-art semantic segmentation methods, U-Net Convolutional Neural Network, for the background detection with the Carvana Image Masking dataset. Besides U-Net our team also deployed Fully Convolutional Networks known as FCN and SegNet as control groups and the result shows that U-Net scored 0.9568 IOU and 0.9760 Accuracy which higher than the control groups' results.
- We also use the dataset from Deep Automatic Portrait Matting project of The Chinese University of Hong Kong to train our U-Net model and Our project can detect the background of portrait and replace it with the user inputs background.

### YOLO Algorithm for Object Detection
Jan 2022 - May. 2022

- This project is based on the paper: You Only Look Once: Unified, Real-Time Object Detection. I implemented the YOLO network from scratch, from DataLoader, building networks, to training and testing. I used the Cracker box dataset to train the model and after tuned the hyper-parameters, I achieved 44% AP for my trained model on the validation set.

### Two-Layer Neural Network for CIFAR-io Dataset Classification
Jan 2022 - May. 2022

- Implemented a two-layer fully-connected artificial neural network (ANN) to perform classification in the CIFAR-10 dataset from scratch. After training the Two-Layer Network model, the model achieves 44.38% AP on the validation set.

### Hiding Traffic Fingerprints
Jan 2022 - May. 2022

- Using Wireshark to collect web traffic data and then set up a deep learning classifier, based on the TensorFlow neural network model, in Google Colab and trained the classifier to recognize real time traffic using the Pandas dataframes. Our deep learning classifier had an 81.8% accuracy, Naive Bayes had an 82.9268% accuracy, and the J48 tree had a 90.2439% accuracy. Website fingerprinting attacks are always possible. With the method used, we can obtain up to an accuracy of 90.2439%.

### Multiplayer Virtual Reality Game
Jan 2022 - May. 2022

- Using Unity and Photon Engine, build a Multiplayer Virtual Reality Game about cooking for both iOS and Android users. Players can use Google Cardboard with any joystick controller to interact with the objects in the game scene to accomplish goals with other players.

## EXPERIENCE

**CWRU China-U.S. Medical Summit** Aug. 2017 - Dec. 2019 (Cleveland, OH)

- Co-founder and marketing department leader of U.S.-China international Summit at Case Western Reserve University, A.K.A. CWRU Medical Summit, which creates a platform that generates innovative ideas and constructive dialogues since 2017.
- We invite leading entrepreneurs, academics, policymakers, and venture capitalists to exploring the opportunities and challenges that both U.S. and China are facing.

**Volunteer for panda protection in Wolong National Nature Reserve** May. 2016 - Aug. 2016 (Wenchuan, Sichuan, China)

- Participate in patrolling, clearing and recording of protected areas. Participate in the production and feeding tasks of panda food of different ages in the Panda Breeding Center.
- Participated in the local scientific research team's record survey of wild pandas, including recording panda distribution, population estimation, and feces sampling and analysis