Ren Sucheng

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EDUCATION

South China University of Technology
Expected Graduation Date: June 2020

- Overall GPA: 3.68/4(Postgraduate candidates can be exempted from graduation entrance exam)
- Major: computer science (English Innovation Class, only top 20% students in the department could join the class)
- IELTS score: 7(L:8.0 R:7.0 W:6.0 S:6.0)

RESEARCH DIRECTION

Generative Model

- Auto-encoder variational auto-encoder GAN flow-based model
- GAN theory: the way to measure the difference and distance between distributions from maximum likelihood to Wasserstein distance. The way to satisfy 1-Lipschitz Continuity from weight clip to gradient penalty and spectral norm.
- Learning representation with GAN
- Application: style transfer including pixel to pixel, cycle-GAN, and text to image, face attribute editing, data argumentation
- Evaluation of generated image: Inception score, perceptual path length

Deep Reinforcement Learning

- On-policy
- Off-policy and constraint: Proximal policy optimization
- Intelligent Gobang algorithm based on reinforcement learning. Deep Q-learning: add critic, temporal-difference, Monte-Carlo,
- Asynchronous advantage actor-critic
- The connection between GAN and deep reinforcement learning

PROFESSIONAL EXPERIENCE

Class Behavior Recognition **May 2018 – April 2019**

- A Research on the Student's Behavior in Class Based on Deep Learning

- Three components: object detection, detect the special undisciplined behavior in class like sleeping or playing phones; classify whether the detected object is a positive class or a negative class; people re-id: matching patches and people in the database.
- Student research project of South China University of Technology with the funding of 6000 RMB from the South China University of Technology.
- In the process to apply for the patent.
- Accomplishment: developed a practical system to detect student behavior in class.

Unfinished Paper named *Adversarial Attack on K-means Clustering* since October 2018

- Duties include: doing the experiment, and writing the paper. (I will be the second author)
- Researching the weakness of traditional but important clustering algorithm, k-means clustering algorithm in the adversarial environment.
- Basic idea-refine-new method: I follow the basic direction which k-means is unstable and the final result depends on the start center points given by supervisor. During the experiment, I find a Universal approach.

Unfinished Paper about "ship re-id" since January 2019

- A Research on people re-id makes great progress, but less work is applied on ship re-id. We apply some algorithm from people re-id into ship re-id. Some improvements and modifications have been made to fit ship data sets. An extra research dataset would be constructed.
- Duties include: Annotating data, doing the experiment, and writing the paper. (I will be the Third author)

Image Manipulation Algorithm Based on Saliency Since February 2019

- Research on saliency-based image processing algorithm. The main idea is to use the target saliency map and source image which saliency is different from target saliency map to generate target image. The images have different saliency visually instead of just deceiving saliency detection models. It is similar to pix2pix and cycle-GAN mission, but due to the lack of ground truth, we design many different losses to ensure the authenticity and saliency of the generated pictures.
- National Training Programs of Innovation and Entrepreneurship for Undergraduates with the support 10000 RMB of national funding.
- Principal responsible person, responsible for project application, report writing, project planning, etc.
- Data collection and algorithm design.

Prediction and Optimization on Traffic Flow Since February 2019

- Research on the prediction and optimization of traffic flow. We have two directions. The first is using reinforcement learning build a traffic flow and reward system by simulating in software, and interactive with the environment by DNQ or A3C, some reinforcement learning method. The other is an evolutionary algorithm. Due to the slow interaction with the environment, we also design a simple model for online quick decision and updating with reinforcement learning.
- National Training Programs of Innovation and Entrepreneurship for Undergraduates with the support of national funding.
- Main participate, responsible for project application, brainstorm, report writing, project planning, etc.

LEADERSHIP EXPERIENCE

South China University of Technology Since September 2016

The Leader of application design team

- Cooperated to develop a path planning system based on Evolutionary Computation & Optimization.

- Organize and complete the recruitment and the replacement of members.

HONOR

- South China University of Technology scholarship in 2017.
- Outstanding student union officer of South China University of Technology in 2018.
- Excellent volunteers for the founding of Institute of Electrical and Electronics Engineers (IEEE) Guangzhou branch in 2018.
- Awarded for serving as a student helper presented by The International Conference on Machine Learning and Cybernetics and The International Conference on Wavelet Analysis and Pattern Recognition in 2018.
- Successful participant of Mathematical Contest in Model and Interdisciplinary Contest in Modeling in 2018.
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