

ZHUO LI

Central South University, China
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EDUCATION

B.S Central South University (Universities Of The 985 Project)

June 2016 - Present

Master in Data Science and Big Data Technology

Department of Computer Science

RESEARCH INTERESTS.

Continual Learning

- Solving Catastrophic Forgetting
- Understanding Generalization in Continual Learning

Theory of Deep Learning

- Interpretation and Generalization in Deep Neural networks

PUBLICATIONS

Chen, Li, et al. "Understanding the Importance of Single Directions via Representative Substitution." arXiv preprint arXiv:1811.11053 (AAAI2019 workshop accepted).

Peng J, Hao J, Li Z, et al. Overcoming Catastrophic Forgetting by Soft Parameter Pruning[J]. arXiv preprint arXiv:1812.01640, 2018.

COMPETITION

The 1-st International Collegiate Competition for Brain-inspired Computing (Top 8%)

Center for Brain Inspired Computing Research(CBICR)

Tsinghua University

July, 2017 - October, 2017

- Proposed a Gate mechanism in progressive neural network which could control the information flow to overcome the negative transfer.
- Defined and analyzed the usefulness of transfered knowledge from information bottleneck.

The 2-nd International Collegiate Competition for Brain-inspired Computing (Top 5%)

Center for Brain Inspired Computing Research(CBICR)

Tsinghua University

July, 2018 - October, 2018

- Proposed a continual learning framework to storage and generalize of knowledge in deep neural networks and solve the catastrophic forgetting, referring to the memory mechanism of human brain.
- Proposed a pruning method on connections among convolutional cells based on feature space to mitigate catastrophic forgetting, in order to model the synaptic connections and disconnections.
- This framework reached the state-of-art in solving catastrophic forgetting at that time.

RESEARCHING EXPERIENCE

Control the negative transfer

Central South University

GeoXLab

August, 2017 - February, 2018

- Proposed a Gate mechanism to control the negative transfer in progressive neural network by simulating knowledge distillation.
- Analyzed the dynamic change process of knowledge in Deep neural networks through saliency map.
- Participated in the competition(referred to COMPETITION)

Understand and split the representation through visualization

Central South University

GeoXLab

May, 2018 - August, 2018

- Analyzed the distributed representation of feature space in deep neural network by visualizing.
- Proposed Identified Activation Maximum (IAM) to explain the importance of Single Directions(mentioned by DeepMind) via representative substitution.

Analyze and solve catastrophic forgetting

Central South University

GeoxLab

August, 2018 - November, 2018

- Proposed a brain-inspired regularization method named Soft Parameter Pruning to mitigate the catastrophic forgetting by simulating the connection and disconnections of synapses in human brain.
- Analyzed the dynamic change process of feature space in multi-continual-tasks through Activation Maximum Maps.
- Participated in the competition(referred to COMPETITION)

TEACHING EXPERIENCE

Summer School

Central South University

GeoxLab

June 2018 - August 2018

- I was responsible for teaching the foundation courses of Deep Learning for 40 graduate students for almost four weeks.

Teaching Assistant in Machine Learning Course

Central South University

Department of Computer Science

March 2018 - July 2018

- I was responsible for assisting the teacher to complete the experimental examination and answer questions, and I got a score of 98 in this course.

SKILLS

Python C/C++ Tensorflow Pytorch