

Xiao Zhou

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EDUCATION

Boston University, Boston, Massachusetts, USA

- Ph.D. student in Computer Science Sep 2016 – Present
 - Adviser: Prof. Peter Chin
 - Focus: Image restoration, pattern recognition, language processing
- B.A. in Mathematics Sep 2012 – May 2016
- B.A. in Computer Science Sep 2012 – May 2016

RESEARCH INTEREST

Machine learning, deep learning, language processing, image restoration, robotics

PUBLICATIONS

CONFERENCES

- [1] [Xiao Zhou](#), Chengchen Wang, Yiteng Xu, Xiao Wang and Peter Chin. “DOMAIN SPECIFIC INPAINTING WITH CONCURRENTLY PRETRAINED GENERATIVE ADVERSARIAL NETWORKS,” in *IEEE/GlobalSIP2017*, Montreal, Québec, Canada, Nov 2017.
- [2] [Xiao Zhou](#), Xiao Wang and Peter Chin. “Learning in Parrondo’s Paradox,” in *International Conference on Game Theory*, Stony Brook, NY, USA, Jul 2018.

TEACHING EXPERIENCES

Boston University, Boston, Massachusetts, USA

- CS 111: Introduction to Computer Science I 2016 – 2019
- CS 591SA2: Graph Theory and Computational Topology for the Internet Age Summer I 2017/2018
- CS 542: Machine Learning Summer II 2017/2018
- CS 660: Graduate Introduction to Database Systems Fall 2019

RESEARCH & PROJECTS

Programming Language Correction

Sep 2016 – Present

- Adviser: Prof. Peter Chin
Apply and compare the performance of different recurrent neural network structures in program correction. Various approaches and structures have been applied and tested. The latest results show that the code correction is handled better in character-level with attention mechanism.

Improvements of Prediction Accuracy on Alzheimers Using Enhanced MRI Images Composed by A Lightly-Trained Generative Adversarial Network

May 2019 – Present

- Adviser: Prof. Vijaya B. Kolachalama, co-adviser: Prof. Peter Chin
Mainly working on improving clarity and details of images produced through magnetic resonance imaging (MRI). A neural network based on DCGAN’s structure is trained to supplement additional information to an 1.5 Tesla image, by learning from its corresponding 3 Tesla image. The results reflect effective improvements in: numerical loss, classification accuracy, and viewing quality.

Real-time Prediction of Crimes by Mixed Spatio-Temporal Neural Networks

Mar 2017 – Feb 2019

- Adviser: Prof. Peter Chin
A deep-learning-based approach, which combines various methods in neural networks to handle the spacial temporal problem. The model is trained on a dataset about crime information in Los Angeles at a scale of hours in block-divided areas, released by the LA Police Department (LAPD). The results of experiments on this dataset demonstrates the proposed model’s ability in predicting potential crimes in real time.

Ransomware Detection on Recurrent Neural Networks

Fall 2018

- Adviser: Prof. Peter Chin
- Paper submit to a conference
This paper uses recurrent neural network (RNN) on ransomware detection; while training it by generating a specific dataset straight on this direction. By taking advantages of time as one of the information, RNNs could learn more and learn better than other machine learning methods that are not able to utilize the time information well in the data. The network has achieved an accuracy of 72% in identifying malware after training.

Supervised Learning on Parrondo’s Paradox

Mar 2017 – Feb 2018

- Adviser: Prof. Peter Chin
- Paper published on International Conference on Game Theory

Proposed a supervised learning framework that maps playing history directly to the decision space using multiple layer perceptron (MLP). Our results show that it learned to combine two individually-losing games to have a positive expectation 6 times better than random strategy.

Domain Specific Inpainting with Concurrently Pre-trained GANs

Feb 2017 – Jul 2017

- Advisor: Prof. Peter Chin
 - Paper published on IEEE/GlobalSIP 2017
 - Code available on GitHub (<https://github.com/rexwangcc/RecoverGAN>)
- Mainly work on recovering noised or cropped images by training a neural network based on DCGAN's and WGAN's structures. Various approaches have been used including the generative model using deep neural network. The results reflect improvements in both numerical loss and classification accuracy.

BoostMap for Biological Data.

Spring 2018

Understanding the genes has been a hot topic for decades. In this project we trying to apply BoostMap to gene sequences and/or proteins with some extensions for efficient data retrieval and/or classification; and compare its performance with other ordinary methods.

PRESENTATIONS

- IEEE/GlobalSIP presentation @ Montreal, Quebec, Canada
Presented the accepted paper: Domain Specific Inpainting with Concurrently Pre-trained GANs
- BU research talks @ Metcalf Ballroom, George Sherman Union
Presented the progress about programming language correction project.

PROGRAMMING SKILLS

Python, Java, C/C++, Matlab, ATS
JSP, HTML & CSS, Latex
PostgreSQL/MySQL, OpenCV, Keras, Tensorflow, Theano

REFERENCES

Professor Peter Chin

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[CV compiled on 2019-09-19]