

# Zhi-Bo Liu

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## EDUCATIONS

**Xi'an Jiaotong University, Xi'an, China**

Ph.D. Student in CS, AI Medical Image Analysis, 09/2021- Now

**George Washington University, Washington, DC**

Master of Science in Statistics, Dec 2016

**Peking University, Beijing, China**

Visiting Student, Computer Vision, 04/2017-11/2019

**Huazhong University of Science and Technology, Wuhan, China**

Bachelor of Science in Applied Mathematics, Jun 2014

## RESEARCH INTERESTS & SKILLS

**Medical AI, Green AI, AI Art, Reinforcement Learning, Statistical Learning**

**Coding Skills:** Python, Pytorch, Bash, Latex, TensorFlow, R, MATLAB, JavaScript

## ACADEMIC EXPERIENCES

**Boyuu Electric Company | Xi'an, China**

12/2019-12/2020

*Senior AI Researcher*

- Built a Non-Intrusive Load Monitoring (NILM) deep learning model in Pytorch based on bidirectional encoder representations from transformers (BERT). Trained & tested on publicly available dataset. Completed paper writing independently.
- Participated in the science and technology project of State Grid Wuxi Electric Power Supply Company, and was responsible for the sub-project of data mining application. Independently completed the sixth chapter section of the technical report: the application of data mining technology in the prediction of power quality background indicators.

**National Engineering Laboratory for Video Technology | Peking University, Beijing, China**

04/2017-11/2019

*Visiting Student*

- Accomplished *chAir* project, an AI-Aided Chair Design model by utilizing Deep Convolution GAN(DCGAN) to generate enormous chair candidates in order to facilitate human designer by creating sketches and 3d models accordingly based on the generated chair sketches.
- Participated in research project: Effective Master-Slave Communication on Multi-Agent Deep Reinforcement Learning System. In charge of coding and training model on publicly available dataset.
- Collaborated with Tsinghua Future Lab using Generative Adversarial Network (GAN) to build an unpaired domain transfer/artistic style transfer model.
- Led an artistic style transfer project by applying Neural Style Transfer model to transfer silhouettes to any given styles.

## PROJECTS IN PROGRESS

**GymHisto: Custom OpenAI Gym Environment for Histopathology Image Analysis**

- Built a Custom OpenAI Gym environment using OpenSlide Python library for downstream task of whole slide image analysis. Paper writing is in progress

**HistoRL: Histopathology Image Classification with Deep Reinforcement Learning**

- Developed RL model based on policy gradient method in order to solve gigapixel whole slide image classification task. Model training & testing are in progress.

## PUBLICATIONS

**Zhibo Liu, Feng Gao, Yizhou Wang. A Generative Adversarial Network for AI-Aided Chair Design. *IEEE Conference on Multimedia Information Processing and Retrieval (MIPR)*, 2019**

- Presented a deep neural network for improving human design of chairs which consists of an image synthesis module and a super-resolution module.
- Select one of the candidates as design prototype and create a real life chair based on it. To the best of our knowledge, this is the first physical chair created with the help of deep neural network, which bridges the gap between AI and design.

**Juncheng Liu, Zhibo Liu. Analysis of Power Quality Evaluation Method Stipulated by IEC 62749: Assessment of power quality-characteristics of electricity supplied by public networks. *High Power Converter Technology*, 2016**

- The paper analyses different approaches to evaluating power quality (PQ) and Electromagnetic Compatibility (EMC)
- Draw a conclusion that under the same limitation values, the evaluation method for PQ is harsher than that for EMC.
- Data visualization and statistical analysis are conducted.

**Juncheng Liu, Zhibo Liu. Analysis for Active Power Filter (APF) Application Bottlenecks. *Information Technology - Power Quality*, 2012**

- The research looks into the bottlenecks of Active Power Filter (APF) application, especially its characteristics of response for dynamic harmonics.
- Simulation of APF response for dynamic harmonic source changing is conducted by MATLAB APF Module.