

WENLIANG GUO

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EDUCATION

Columbia University, Fu Foundation School of Engineering and Applied Science New York, US
MS in Electrical Engineering (GPA: 3.75 / 4.0) Expected Feb 2024
Coursework: Machine & Deep & Reinforcement Learning, Big Data Analytics, Causality

Xidian University, School of Telecommunications Engineering Xi'an, CN
BE in Telecommunications Engineering (GPA: 3.6 / 4.0) Jun 2022
Coursework: Digital Signal Processing, Stochastic Process, Information Theory, Computer Network

TECHNICAL SKILLS

- Programming: Python, C/C++/C#, Verilog, MATLAB, LaTeX
- Applications: Linux (Ubuntu), Jupyter, Spark, Hadoop, Visio, Vivado, OPNET

PUBLICATIONS

- Yulei Niu, **Wenliang Guo**, Long Chen, Xudong Lin, and Shih-Fu Chang, SCHEMA: State CHangEs MATter for Procedure Planning in Instructional Videos, openreview.net/forum?id=abL5LJNZ49. (Under Review)
- Xiao Xiao, **Wenliang Guo**, Rui Chen, Yilong Hui, Jianing Wang, and Hongyu Zhao, A Swin Transformer-Based Encoding Booster Integrated in U-Shaped Network for Building Extraction, *Remote Sensing* 14, no. 11 (2022): 2611.
- **Wenliang Guo**, Xiao Xiao, Yilong Hui, Wenming Yang, and Amir Sadovnik, Heterogeneous Attention Nested U-Shaped Network for Blur Detection, *IEEE Signal Processing Letters* 29 (2021): 140-144.

RESEARCH EXPERIENCE

Digital Video and Multimedia (DVMM) Lab, Columbia University New York, US
Research Assistant Jan 2023 - Present

- Participated proposal to enhance state representation via cross-modal contrastive learning for procedure planning task.
- Implemented novel data-split based on original dataset to debias probability of co-occurring actions in procedures.
- Implemented networks with different designs and experimented with performances on multiple video datasets.
- Visualized intermediate process and experimental results using Python.

Advanced Transportation Research Lab, Xidian University Xi'an, CN
Student Researcher Jun 2021 - May 2022

- Designed a deep learning network based on U-shaped architecture for remote sensing building extraction.
- Integrated a novel encoding booster to convolutional neural network for surpassing limitation of local receptive field and extracting large-scale feature, accuracy is improved by at most 5% compared with state-of-the-art algorithms.
- Constructed a shifted-window Transformer pyramid and explored a new approach to enable hierarchical extraction of semantic information for multi-scale objects capture.

Student Researcher Dec 2020 - Jul 2021

- Proposed an end-to-end convolution neural network for blur detection application and improved more than 5% accuracy than state-of-the-art networks.
- Introduced pyramid pooling into encoders to extract multi-scale features, reduce semantic loss and parameters.
- Embedded U-shaped networks and introduced a channel attention mechanism into decoders to increase depth and to augment informative features while maintaining a low number of parameters.

COURSEWORK PROJECTS

EECS E6691 Advanced Deep Learning, Columbia Engineering New York, US

- Proposed framework using language-description to supervise multi-scale feature extraction.

EECS E6893 Big Data Analytics, Columbia Engineering New York, US

- Designed and implemented Transformer-based system anomaly detection algorithm.

EECS E6691 Reinforcement Learning, Columbia Engineering New York, US

- Implemented model-agnostic meta-learning algorithm, applied to Atari gaming environments.

COMS E6998 Causal Trustworthy AI, Columbia Engineering New York, US

- Analyzed action recognition from causal perspective, build causal relation via transportable training.