

WENLIANG GUO

wg2397@columbia.edu | linkedin.com/in/wenliang-guo | github.com/BrightGuo048 | (917)330-2933

EDUCATION

Columbia University, Fu Foundation School of Engineering and Applied Science New York, US
MS in Electrical Engineering (GPA: 3.75 / 4.0) Expected Dec 2023

Coursework: Machine & Deep & Reinforcement Learning, Big Data Analytics, Speech Processing

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

- **Preprint:** Yulei Niu, **Wenliang Guo**, Long Chen, Xudong Lin, and Shih-Fu Chang, State-Enhanced Procedure Planning in Instructional Videos.
- 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 – May 2023

- 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 signals to supervise multi-scale feature extraction for segmentation.

EECS E6893 Big Data Analytics, Columbia Engineering New York, US
• Designed and implemented Transformer-based system anomaly detection algorithm using public log data.

EECS E6691 Reinforcement Learning, Columbia Engineering New York, US
• Implemented model-agnostic meta-learning algorithm and applied it to Atari gaming environments.

ECBM E4040 Deep Learning, Columbia Engineering New York, US
• Reproduced Swin Transformer using TensorFlow and explored performance with different parameter settings.