

# Zhengyu Huang

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## EDUCATION

### University of Michigan-Ann Arbor

MI, USA

*Doctor of Philosophy in Electrical and Computer Engineering; GPA: 4.0/4.0*

*Expected May 2021*

**Relevant Coursework:** Deep Learning for Vision, Machine Learning, Computer Vision, Matrix Method for Signal Processing and Machine Learning, Optimization for Signal Processing

### Hong Kong Baptist University

Hong Kong, China

*Bachelor of Science in Physics; GPA: 3.8/4.0*

*Aug 2011 - May 2015*

## SKILLS

• **Languages:** Python, C++, MATLAB, Julia

**Technologies:** AWS, Git

• **Libraries:** TensorFlow, PyTorch, Keras, Scikit-Learn, Numpy, Pandas, Jupyter, OpenCV, PIL

## PUBLICATION

- [1] Il Yong Chun, **Zhengyu Huang**, Hongki Lim, and Jeffrey A Fessler, "Momentum-net: Fast and convergent iterative neural network for inverse problems," *arXiv preprint arXiv:1907.11818*, 2019.
- [2] Dehui Zhang, Zhen Xu, **Zhengyu Huang**, Audrey Rose Gutierrez, Il Yong Chun, Cameron J Blocker, Gong Cheng, Zhe Liu, Jeffrey A Fessler, Zhaohui Zhong, et al., "Graphene-based transparent photodetector array for multiplane imaging," in *CLEO: Science and Innovations*. Optical Society of America, 2019, pp. SM4J-2.
- [3] Il Yong Chun, Hongki Lim, **Zhengyu Huang**, and Jeffrey A Fessler, "Fast and convergent iterative image recovery using trained convolutional neural networks," in *2018 56th Annual Allerton Conference on Communication, Control, and Computing (Allerton)*. IEEE, 2018, pp. 155-159.
- [4] Won Jin Choi, Gong Cheng, **Zhengyu Huang**, Shuai Zhang, Theodore B Norris, and Nicholas A Kotov, "Terahertz circular dichroism spectroscopy of biomaterials enabled by kirigami polarization modulators," *Nature materials*, vol. 18, no. 8, pp. 820, 2019.
- [5] **Zhengyu Huang**, Theodore B Norris, and Evgenii Narimanov, "Nanoscale fingerprinting with hyperbolic metamaterials," *APL Photonics*, vol. 4, no. 2, pp. 026103, 2019.
- [6] Yue Cai, **Zhengyu Huang**, Michelle HC Cheung, Vincent Motto-Ros, Po-Chun Chu, Yuanwei Wang, Haoyi Zhong, Ronald Yuen, Kelvin SY Leung, Judy TS Lum, et al., "Elemental analysis of chinese black inks on xuan paper by arf laser-excited plume fluorescence," *Analytical chemistry*, vol. 88, no. 22, pp. 10971-10978, 2016.
- [7] Xiaochun Wang, **Zhengyu Huang**, Po-Chun Chu, Yue Cai, Kelvin SY Leung, Judy TS Lum, and Nai-Ho Cheung, "The mechanism of arf laser-induced fluorescence of dense plume matter," *Journal of Analytical Atomic Spectrometry*, vol. 31, no. 12, pp. 2363-2374, 2016.

## RESEARCH PROJECTS

- **Object 3D ranging and orientation estimation using Focal Stack Images:**
  - Collected focal stack images of objects for object localization and orientation prediction, using designed CNNs.
  - Designed CNNs to achieve excellent 3D ranging performance and orientation estimation accuracy.
- **Momentum-net for applications in Inverse problems:**
  - Participated in developing the Momentum-net, a general neural network based framework for inverse problems, including image denoising, computed tomography and light field reconstruction.
  - Wrote Momentum-net codes in MATLAB and python using Pytorch.
- **Light Reconstruction and Depth Estimation from Focal Stack Images:**
  - Compared the performance on the depth estimation between Lytro Light field camera and focal stack camera using synthetic datasets.
  - Collected real focal stack image, reconstructed light field and estimated the depth map of the scene.
  - Designed a neural network for 3D object localization using focal stack images.
  - Applied deep neural network to light field reconstruction.