Qiuliang Ye

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Education

The Hong Kong Polytechnic University, Hong Kong SAR 01/2019 - 07/2023 (Expected)

Ph.D. in Electronic and Information Engineering, Supervisor: *Dr. Daniel Pak-Kong Lun*
Dissertation title: Robust Phase Retrieval Using Optimization and Deep Learning Techniques

- GPA: 3.90/4.00, General Research Fund (HK$852,000)
- Assist the teaching procedures of more than 10 courses (selected: **digital signal processing**, *digital image processing*) focused on grading, leading lab sessions, and giving tutorials

Guangdong University of Technology, China 09/2014 - 06/2018

Bachelor of Science in Information Engineering, *Graduated with distinction.*

- GPA: 4.03/5.00 **(1/202)**
- Joined Signal Processing Group supervised by *Prof. Bingo Wing-Kuen Ling*, conducted research on time series analysis, and published one journal paper in the area of empirical mode decomposition
- National Scholarship 2014-2015 **(1/800)**, Outstanding Student Scholarship 2014-2018 **(1/52)**

Project Experience

Deep Learning-Based Phase Imaging System (Python) 04/2021 - 08/2022

- **Independently** designed and built a single-shot defocus-based phase imaging system that can effectively mitigate the camera saturation and avoids cost for expensive optical devices
- Proposed an attention-based end-to-end convolutional neural network in **collaboration** with a Ph.D. in computer vision using **Pytorch** platform, which outperforms existing iterative algorithms **(15.7 dB)** and learning-based methods **(1.8 dB) (Published in Optics Express, 2022)**
- Developed a physics-driven multi-scale convolutional neural network based on underlying physics that includes a scale-adaptive physic-driven learnable block for embedding the unfolded iterative engine and physical domain knowledge into the attention structure, and it outperforms existing iterative algorithms **(27.3 dB)** and learning-based methods **(4.9 dB) (Submitted to Trans. on Image Proc., 2022)**

Coded Phase Imaging System Design, (Python & MATLAB) 11/2018 - 08/2021

- Developed two coded phase imaging systems including design, purchase, and building.
- Provided theoretical analysis of non-bandlimited property in optical imaging, and proposed a coded aperture which **outperforms existing coded apertures (1.6 dB) (Published in OLE, 2021)**
- Developed an optimal coded aperture based on an optimization algorithm that **significantly outperforms existing coded apertures (up to 13.8 dB)**: proposed the designed considerations based on practical limitations, **modelled** the characteristics into an optimization problem, derivation through a gradient descent algorithm and a quick-search quantization for practical realization, programming simulation, and deployment to imaging system **(Submitted to Trans. on Signal Proc., 2022)**

SKILLS

Programming	Python (proficient), MATLAB (proficient), LaTeX(proficient), C (entry)
Software & Tools	Proficient: Pytorch, Visualisation, Data handling/analysis, Imaging System Pipeline, Cloud Platform, MS Office, Linux & Windows
Soft Skills	Decision-Making & Problem-Solving (Expert), Teamwork (Proficient), Communication (Proficient)
Language	Cantonese (Native), Mandarin (Native), English (proficient)

Publications

1. **Qiuliang Ye***, Daniel Pak-Kong Lun, Bingo Wing-Kuen Ling, and Li-Wen Wang. Optimal coded diffraction patterns for practical phase retrieval. *submitted to IEEE Trans on Signal Processing*, 2022
2. **Qiuliang Ye***, Li-Wen Wang, and Daniel Pak-Kong Lun. Towards practical single-shot phase retrieval with physics-driven deep neural network. *arXiv:2208.08604, submitted to IEEE Trans on Image Processing*, 2022
3. **Qiuliang Ye***, Li-Wen Wang, and Daniel P. K. Lun. SiSPRNet: end-to-end learning for single-shot phase retrieval. *Opt. Express*, 30(18):31937–31958, Aug 2022
4. **Qiuliang Ye**, Yuk-Hee Chan, Michael G Somekh, and Daniel PK Lun. Robust phase retrieval with green noise binary masks. ***Optics and Lasers in Engineering***, 149:106808, 2022
5. **Qiuliang Ye**, Chris YH Chan, Michael G Somekh, and Daniel PK Lun. Coded diffraction pattern phase retrieval with green noise masks. In *International Workshop on Advanced Imaging Technology (IWAIT) 2022*, volume 12177, pages 161–166. SPIE, 2022
6. **Qiuliang Ye**, Bingo Wing-Kuen Ling, Daniel PK Lun, and Weichao Kuang. Parallel implementation of empirical mode decomposition for nearly bandlimited signals via polyphase representation. ***Signal, Image and Video Processing***, 14(2):225–232, 2020
7. Xiaozhu Mo, Bingo Wing-Kuen Ling, **Qiuliang Ye**, and Yang Zhou. Linear phase properties of the singular spectrum analysis components for the estimations of the rr intervals of electrocardiograms. ***Signal, Image and Video Processing***, 14(2):325–332, 2020
8. Zheng Li, **Qiuliang Ye**, Yitong Guo, Zikang Tian, Bingo Wing-Kuen Ling, and Ringo Wai-Kit Lam. Wearable non-invasive blood glucose estimation via empirical mode decomposition based hierarchical multiresolution analysis and random forest. In *2018 IEEE 23rd International Conference on Digital Signal Processing (DSP)*, pages 1–5. IEEE, 2018
9. Faxian Cao, Zhijing Yang, Mengying Jiang, Weizhao Chen, **Qiuliang Ye**, and Wing-Kuen Ling. Spectral-spatial classification of hyperspectral image using extreme learning machine and loopy belief propagation. In *2017 IEEE International Conference on Internet of Things (iThings) and IEEE Green Computing and Communications (GreenCom) and IEEE Cyber, Physical and Social Computing (CPSCom) and IEEE Smart Data (SmartData)*, pages 1061–1064. IEEE, 2017

*** denotes the corresponding author.**

Interests

Volunteering, **Reading**, Trekking, Hiking, Photography, Trail & Road Running, Cooking, Power Lifting