Aohan He

NUS, Singapore, 117575 Email:heaohan@u.nus.edu Phone: +65 84635846

Education

Jan 2016-Current PhD candidate, Department of Mechanical Engineering, **National University of Singapore**

Sept 2011-June 2015 Bachelor, Department of Measurement Control and Information Technology, **Beihang University**

Awards

Research Scholarship, NUS, (Jan 2016 - Current)

National Scholarship of China (2013)

First-prize Scholarship of Academic Performance of Beihang University (2012, 2013, 2014)

Research interests

Phase retrieval techniques for optical measurement: the fringes obtained by different optical measurement techniques such as digital speckle pattern interferometry (DSPI), digital holography interferometry (DHI), shadow moiré, etc., are processed to obtain the phase, which is related to the measuring quantities, such as displacement, curvature, and strain. Other fringe analysis techniques, e.g., filtering and normalization, fringe direction estimation, and phase unwrapping, are also included. Currently I am working on the CUDA based GPU acceleration for the phase retrieval algorithm.

Computational imaging: transport equation of intensity; single pixel imaging; diffraction tomography.

Optical encryption: Build and attack on optical image cryptosystem.

Publications

[1] **A. He** and C. Quan, "Wavefront correction for spatial nonuniformity of the liquid crystal on silicon based spatial light modulator", **Optics and Lasers in Engineering**, vol. 121, pp. 377-388, 2019.

[2] **A. He** and C. Quan, "An improved principal component analysis based region matching method for fringe direction estimation," **Optics Communications**, vol. 413, pp. 87-102, 2018.

[3] **A. He**, B. Deepan, and C. Quan, "Simplified paraboloid phase model-based phase tracker for demodulation of a single complex fringe," **Applied Optics**, vol. 56, pp. 7217-7224, 2017.

[4] Y. Xiong, **A. He**, and C. Quan, "Security analysis and enhancement of a cryptosystem based on phase truncation and a designed amplitude modulator," **Applied optics**, vol. 58, pp. 695-703, 2019.

[5] Y. Xiong, **A. He**, and C. Quan, "Cryptoanalysis on optical image encryption systems based on the vector decomposition technique in the Fourier domain," **Applied optics**, vol. 58, pp. 3301-3309, 2019.

[6] Y. Xiong, **A. He**, and C. Quan, "Specific attack and security enhancement to optical image cryptosystem based on two random masks and interference," **Optics and Lasers in Engineering**, vol. 107, pp. 142-148, 2018.

[7] Y. Xiong, **A. He**, and C. Quan, "Security analysis of a double-image encryption technique based on an asymmetric algorithm," **JOSA A**, vol. 35, pp. 320-326, 2018.

[8] Y. Xiong, **A. He**, and C. Quan, "Hybrid attack on an optical cryptosystem based on phase-truncated Fourier transforms and a random amplitude mask," **Applied optics**, vol. 57, pp. 6010-6016, 2018.

[9] Y. Xiong, **A. He**, and C. Quan, "Cryptanalysis of an optical cryptosystem based on phase-truncated Fourier transform and nonlinear operations," **Optics Communications**, vol. 428, pp. 120-130, 2018.