SHUAI MAO

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EDUCATION BACKGROUND

Xi'an Jiaotong University **Xi'an China**
MEng Communication and Information System *Sep. 2021 - Jun. 2024*
Research Direction: Ghost Imaging **Grade: 90.57/100**
Main Courses: Antennas and Radio Wave Propagation, Multi-Antenna Techniques and Their Applications, Microwave Design and Measurement, Advanced Electromagnetic Theory

Paris-Saclay University **Saclay, France**
MEng (French Engineering Degree) *Sep. 2019 - Jun. 2024*
Double diploma student in CentraleSupelec **GPA: 4.07/4.33**
Main Courses: Information Systems and Programming, Telecommunication Systems, networks and security, Statistics and Learning, Autonomous Robotics, Optimization, Game Theory

Paris-Saclay University **Orsay, France**
BSc Mathematics *Oct. 2019 - Jun. 2020*
Dual diploma program of University of Paris XI for students in CentraleSupelec Grade: 11.556/20
Main Courses: Holomorphic Functions, Algebra, Fourier Analysis and Integration, Topology, Measure Theory and Probability, Differential Equation

Xi'an Jiaotong University **Xi'an, China**
BEng Information Engineering *Sep. 2017 - Jun. 2021*
Participated in Double Degree Program in junior year **Grade: 91.09/100 rank: 12/164**
Main Courses: Advanced Mathematics, Linear Algebra and Analytic Geometry, Signals and Systems, Digital logic circuits, Analog Electronics Technique

PUBLICATIONS

- **MAO, Shuai**, HE, Yuchen, et al. High-quality and high-diversity conditionally generative ghost imaging based on denoising diffusion probabilistic model. Optics Express. https://doi.org/10.1364/OE.496706
- HE, Yuchen, **MAO, Shuai**, et al. Optimizing speckles for dynamic objects using genetic algorithm in ghost imaging. AIP Advances, 2022, vol. 12, no 9. https://doi.org/10.1063/5.0096821
- **MAO, Shuai**, HE, Yuchen, et al. Translation-Equivalence-Based Unsupervised Ghost Imaging. IEEE International Conference of Information and Communication Technology. Accepted and oral presentation.
- ZHOU Yu, **MAO, Shuai**, et al. Fully-connected-based adaptive speckles optimization method for ghost imaging, IEEE Photonics Technology Letters. Preprint DOI:10.1109/LPT.2023.3300092

RESEARCH EXPERIENCE

Ghost Imaging (Computational Optical Imaging) Supervisor: HE Yuchen
Sep. 2021 - Present *Xi'an Jiaotong University*

Description: Ghost imaging, also known as correlation imaging or quantum imaging, is a promising technique that utilizes the second-order correlation of light field intensity fluctuations. Its advantages include lensless imaging, robustness against interference, high resolution, and non-localization properties. Nonetheless, the trade-off between imaging quality and sampling rate poses a challenge, limiting its broader application. In my research, I designed efficient measurement speckles and developed advanced ghost imaging reconstruction algorithms, ensuring high-quality imaging results at low sampling rates.

Responsibilities:
- Introduced the diffusion model to ghost imaging and skillfully utilized bucket signals as prior information for image distribution, leading to the creation of a novel ghost imaging reconstruction algorithm.

- Explored the translation equivalence property and successfully designed an unsupervised ghost imaging algorithm, enabling efficient image reconstruction without the need for labeled data.
- Innovatively treated measurement speckles as fully-connected layer parameters, implementing an end-to-end optimization approach for ghost imaging system optimization.
- Conducted an in-depth exploration of the intricate relationship between speckles and measurement, employing genetic algorithms to select adaptive speckles for dynamic targets.

Project Harvest: Ghost imaging, compressed sensing, genetic algorithm, deep learning, image denoising, medical imaging, and image superresolution.

PROFESSIONAL EXPERIENCE

Software Engineer Summer Intern Meituan China
Jun. 2023 - Aug. 2023

Intern Description: As a Java developer at Meituan, I promoted the development of the back-end business, effectively addressing the pain points of our upstream operations and driving product iterations.
Responsibility:

- Explored JSON parsing methods and utilized JMH for performance analysis, providing valuable guidance.
- Developed RPC and HTTP interfaces to verify store eligibility for the hot list, using CompletableFuture to asynchronously process Excel data streams for efficient and responsive calculations.
- Collaborated with frontend engineers and added a new field for display. Implemented functions for adding, deleting, modifying, querying, and displaying. Adjusted database structure to correctly store new fields.

Harvest: Java development process, design patterns, Spring-related frameworks, MySQL and RPC, Mock testing, code writing, and testing specifications.

Hardware Reliability Intern Amazon China
Jul. 2022 – Aug. 2022

- Conducted a comprehensive survey of common low-power chargers available in the market and performed competitive analysis on twelve chargers from four popular brands.
- Focused on investigating product reliability by conducting in-depth research on ultrasonic welding methods, wall thickness, miniaturization techniques, capacitance clearance, and fuse characteristics of the samples. Analyzed how these aspects contribute to product reliability and ensure user safety.
- Shared research findings with the team, providing valuable insights for our company's product development. Actively contributed to driving continuous improvement and enhancing the performance of our products.

Teaching Assistant Digital Logic Circuit
Feb. 2022 - Jun. 2022 *Xi'an Jiaotong University*

- Graded coursework and offered feedback to students, facilitating understanding of digital logic concepts.
- Conducted exercise classes, addressing students' questions and providing detailed explanations for homework.
- Supervised and monitored course attendance, fostering a positive learning environment and providing support.

SKILLS

Languages	English (Bilingual, IELTS 7.5), French (Fluent, DELF B2)
Programming Languages	Java, Python, Golang, MATLAB, SQL
Software & Tools	LaTeX, Excel, Word, Powerpoint, Git, Spring, Pytorch

HONOR AND PRIZE

Zhen Jiang Scholarship(15 students in total)	*2022 and 2023*
Cyrus Tang Scholarship(40 students in total)	*2018 and 2019*
Excellent Graduate, Excellent Student of Xi'an Jiaotong University	*Jun. 2021*
Excellent Volunteer of Blood Donation Service in Xi'an Central Blood Station	*Jan. 2018*