

# Runzhao Guo | Curriculum Vitae

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## RESEARCH EXPERIENCE

### Quantum Optic Lab

9/2024-12/2024

Supervisor: Dir. Richard Ross

Two -member Cooperative Work

- Conduct experiments in Photon Interference, Bell Inequalities Demonstration, Entangled Photons Tomography, Optical Cavities, Optical Interferometers, python coding in QuTip, Qiskit.

### Quantum Algorithm Implementation.

9/2024-12/2024

Supervisor: Prof. Jens Palsberg

Independent Work

- Implement Shor and Grover Algorithm and run simulation on classical computers using Qiskit.

### Quantum Circuit Simulator.

9/2024-12/2024

Supervisor: Prof. Jens Palsberg

Independent Work

- Designed and implemented quantum circuit simulator, achieved similar execution time as Qiskit.

### Quantum Computer Implementation.

9/2024-12/2024

Supervisor: Prof. Jens Palsberg

Independent Work

- Implemented QAOA on an operational IBM quantum computer.

### Research on Reversible Data Hiding in Binary Image Using Checkcode

9/2023-12/2023

Supervisor: Prof. Hongwei Liu

Independent Work

- Studied the implementation of Checkcode in binary images that enable partial recovery.

### Study of Reinforcement Learning Algorithm Based on Trust-Region Policy Optimization

10/2023-06/2024

Supervisor: Prof. Yu Zhao

Independent Project

- Implemented TRPO(Trust-Region Policy Optimization) algorithm using PyTorch and improved its performance by using GAE(General Advantage Estimation).

### Research on Fast Algorithm for Electromagnetic Simulation of Large-Scale Periodic Array

10/2022-06/2023

Supervisor: Prof. Yu Zhao

Four-member Cooperative Work

- Completed the solver for the fast algorithm using C++ and Math Kernal Lib(MKL). Reduced computation time by one order of magnitude by utilizing hierarchy matrix to reduce matrices detentions.

### Research on Millimeter Wave Radar Signal Processing

9/2022-12/2022

Supervisor: Prof. Nan Liu

Two-member

Project

- Design and applied Radar wave configurations, processed Radar signal, extracted heart rate and breathing rate information with less than 10% error rate.

## PUBLICATION

- Runzhao Guo, **Reversible Data Hiding in Binary Image Using Checkcode**, ICMLCA 2023

## EDUCATION BACKGROUND

### Xidian University, Xi'an, P.R. China

09/2020-06/2024

- Bachelor of Engineering in Electronic Information Engineering
- Bi Dexian Class (40 students selected from 2000 admitted students of School of Electronic Engineering(SEE) and School of Communication Engineering.)
- Scholarship: Invengo Scholarship (*enterprise scholarship*, given to 4% of all students at SEE) 11/2022

### University of California, Los Angeles, Los Angeles, CA, USA

09/2024-08/2025

- Master of Quantum Science and Technology

## INTERNSHIP EXPERIENCE

### Software and Electronic Platform, Volvo Cars, Shanghai

02/2024-06/2024

- Position: intern
- Duties: Conduct EMC analysis for EV products.

## OTHER INFORMATION

- Professional Skills:* Python, Git, QuTip, Qiskit, C, MATLAB, C++, Radar signal processing, Quantum programming, Quantum algorithm, Optic labs, CST studio suite.