Ming LYU (吕铭)

PhD candidate, Electrical Engineering, Princeton University

- github.com/CareF
- @ me@mail.caref.xyz
- Applied Physics, Optics, Photonics, Semiconductors, Computer Science

I am a PhD student doing research on Quantum Cascade Laser, with physics background and some experience of Quantum Information, Quantum Computing and Quantum Optics. I am interested in Computer Science and Technology and familiar with high-tech development.

🎓 EDUCATION

Princeton University 09/2016 - expected 2021	**PhD in Electrical Engineering** (GPA 3.891/4.0) ❯ Advisor : Dr. Claire Gmachl ❯ Long wavelength Quantum Cascade Laser and GaAs/AlGaAs Photonic Devices
Tsinghua University 08/2012 - 07/2016	**B.S. in Physics (GPA : 93.0/100, top 3/33), Minor in Computer Science (GPA 92.9/100)** ❯ Thesis : "*Long Coherence Time Quantum Memory on Ion Trap System with Dynamical Decoupling*" (Thesis Advisor : Dr. Kihwan Kim) ❯ Graduate with hornor : 2016 "Chi-Sun Yeh" Award (highest honor for physics undergraduate), 2016 Beijing Outstanding Graduate, 2013-2016 Outstanding Student Scholarship

📖 PUBLICATION

"**Design and Characterization of 14 −20μm Wavelength GaAs/AlGaAs Quantum Cascade Lasers**", Infrared Terahertz Quantum Workshop (2019), **M. Lyu**, Loren Pfeiffer, Ken West, C. Gmachl

"**Design and Optimization of 14-20 μm Wacelength GaAs/AlGaAs Quantum Cascade Lasers**", 4th International Workshop on Infrared Technologies (2017), **M. Lyu**, C. Gmachl

"**Single-Qubit Quantum Memory Exceeding Ten-minute Coherence Time**", Nature Photonics 11, 646-650 (2017), Y. Wang, M. Um, J. Zhang, S. An, **M. Lyu**, J.-N. Zhang, L.-M. Duan, D. Yum, K. Kim

"**Non-Markovian Dynamics of Open Quantum Systems without Rotating Wave Approximation**", Arxiv :1047.5359 (2014), M. Tang*, Y. Wu*, **M. Lyu***, J. Tang, Z. Guo, T. Chen, X.-B. Wang (*equal contribution)

👥 SOCIAL SERVICES AND ACTIVITIES

Vise-president : Association of Chinese Students and Scholars at Princeton University (ACSSPU)   03/2018 - 04/2019
- ❯ Coordinated advertising and public relations
- ❯ Built connection with student groups for unionization issue

President : Student Association for Science and Technology, Physics Department, Tsinghua University   06/2015 - 07/2016
- ❯ Led the update of the student-run server and department SNS website and FTP services
- ❯ Organized student academic colloquium
- ❯ Organized campus competition for China Undergraduate Physics Tournament

Founder and Team Leader : the Student Debate Team in Physics Department, Tsinghua University   09/2013 - 05/2016

Vice-president : Student Union, Physics Department, Tsinghua University   09/2014 - 02/2015

Chair of Student Life and Right : Student Union, Physics Department, Tsinghua University   09/2013 - 09/2014

Outstanding Answerer on Physics and Quantum Physics 知乎 逸心 , with 16k followers

💻 PROFESIONAL EXPERIENCE

University of Waterloo 07/2015 - 09/2015	Research Assistant, THE INSTITUTE FOR QUANTUM COMPUTING (IQC) ❯ Advisor : Dr. Raymond Laflamme, Dr. Guanru Feng ❯ Electron Spin Resonance implementation of Quantum Computing and Simulation

Princeton University
2019 Spring
 	
2018 Fall
 	
2017 Fall
	Teaching Assistant, SCHOOL OF ENGINEERING AND APPLIED SCIENCE
	❯ ELE 351 : Electromagnetic Field Theory and Physical Optics
	    ❯ Prepared and helped students with numerical simulation tools for Maxwell equations
	❯ ELE 308 : Electronic and Photonic Devices
	    ❯ Fabrication of Si-based devices like MOSFET, CMOS, PN junction, solar cells, etc.
	❯ EGR 151 : Foundations of Engineering : Mechanics, Energy, and Waves
	    ❯ General physics for engineering freshmen
	    ❯ Lab sessions for physics and creative thinking

💻 PROJECTS

ERWINJR2 2017 - PRESENT

 github.com/CareF/ErwinJr2

A quantum cascade laser numerical simulation software, with GUI and data visualization. The computational intense part is coded by C and integrated into Python. New eigen-solver with knowledge of semi-periodical structure was implemented, optimized with OpenMP parallelization.

`Python` `C` `Qt` `OpenMP` `matplotlib` `doxygen` `sphinx` `continuous integration`

NEOWEATHER 2018 - PRESENT

 github.com/CareF/deepin-dock-plugin-neoweather

A weather plugin based on `OpenWeatherMap.org` API for Deepin Desktop Environment on Linux

`C++` `Qt` `Linux` `RESTful API`

AI FOR CONNECT4 BOARD GAME 2015 SPRING

Course project for "introduction for Artificial Intelligence"
Implemented Monte Carlo tree search with adaptive sampling, and modified the algorithm with alpha-beta prunning and depth-first-search at the leaf node. The result beat 98% competitors.

`C++` `Monte Carlo Tree search`

SOMEPHYS : A SIMPLE PHYSICS ENGINE 2015 AUTUMN

Joint course project for "Fundamentals of Computer Aided Design" and "Software Engineering"
Implemented Newtonian mechanics simulator and OpenGL rendering. Created demos for chaotic phenomenon.

`C++` `OpenGL` `Qt`

☰ SKILLS

Languages	Chinese (native), English (fluent)
Programing	Python, C, C++, Qt, Git, LaTeX, OpenMP (basic), Bash (basic)
Experiment	Cleanroom Fabrication, Nano-structure Imaging, Infrared and Laser Optics