

# Recruitment of Ph.D. students and postdoctoral fellows (computational imaging) in Prof. Jinyang Liang's group at INRS – University of Quebec

## About INRS

The Institut National de la Recherche Scientifique (INRS) — University of Quebec (<https://inrs.ca/en/>) is a small-scale, high-level research university affiliated with the University of Quebec system. INRS has first-class scientific research facilities and strong scientific research strengths. The per capita scientific research funding ranks first in Quebec and the top three in Canada. There are four research centers under INRS. Among them, the Center Energy Materials Telecommunication (EMT), located in Montreal, mainly conducts research in photonics, materials science, energy, telecommunication, and electrical engineering.

## Introduction to Professor

Prof. Jinyang Liang received his Ph.D. from the University of Texas at Austin in 2012. From 2012 to 2017, he worked as a postdoctoral fellow at Washington University in St. Louis and the California Institute of Technology. Prof. Liang has published >90 journal papers and conference proceedings, including Nature (cover story), Science Adv., Nature Commun., Light-Sci. & App., and Nature Photonics. Professor Liang is an associate professor at INRS. He established and currently leads the Laboratory of Applied Computational Imaging.

## About the Laboratory

The Laboratory of Applied Computational Imaging (<https://jinyangliang.com/>) is dedicated to developing high-speed computational imaging systems and using these new optical systems to capture and study transient processes, including (1) imaging system design and simulation, (2) system construction, testing, and optimization, (3) image reconstruction and analysis, etc. This multi-disciplinary program enables students to gain the newest knowledge in ultrafast imaging, computational optics, optical physics, biomedicine, materials science, advanced manufacturing, etc., and accumulate practical skills and experience. These highly marketable skills lay a solid foundation for the student's future career in academia and/or industry. The representative publication from the laboratory in the past several years include:

- *Nat Commun* **11**, 5252 (2020)
- *Laser Photonics Rev* **14**, 2000122 (2020) [Cover]
- *Nat Commun* **12**, 6401 (2021)
- *Photonics Res* **8**, 1808 (2020)
- *Rep Prog Phys* **83**, 116101 (2020) [Invited review]
- *Optica* **8**, 139 (2021)

## General Description and Requirements

We plan to recruit **2 Ph.D. students** and **2 postdoctoral fellows**. The enrollment for Ph.D. students will be in Fall 2023. The starting time for postdoctoral fellows is negotiable. Doctoral students are offered full scholarships (tuition fee + stipend). The package for postdoctoral fellows is competitive (for details, please see: <https://inrs.ca/en/studies/postdoctoral-fellowships/>).

Candidates should have (or are about to obtain) a Master's (or Bachelor's) degree in engineering or physical sciences, such as Optical (or Optoelectronic) Engineering, Electrical Engineering, Physics, and Biomedical Engineering.

The successful candidate will develop new schemes and design novel ultrafast computational imaging systems and apply these systems to diverse applications, including materials science, advanced manufacturing, optical physics, and biomedicine. The recruitment will be focused on the following two directions. Preference will be given to students with research experience in one (or more) of the following area:

### **(1) System development**

- Optical engineering: imaging system design, system construction, system miniaturization.
- Optical imaging: computational optics, high-dimensional imaging, single-pixel imaging, photoacoustic microscopy, none-of-the-sight imaging, structured light microscopy.
- Image processing: image reconstruction, imaging theory, system control, machine learning.
- Ultrafast photonics: laser cavity design, ultrashort pulse amplification, nonlinear optics simulation.

## **(2) Novel applications**

- Biophotonics: tissue optics, biochemistry, molecular biology, neuroscience.
- Materials Science: nanoparticles, Fluorescent/Phosphorescent labels.
- Optical materials and phenomena: plasma emission theory, transient absorption, other transient phenomena in optical physics.
- Quantum optics: theory and construction of ghost imaging systems, correlators.

## **Contact**

Interested students are welcome to contact Prof. Liang by phone or email. Selected candidates will be contacted by email to arrange an interview.

### **Prof. Jinyang Liang, Ph.D.**

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Qualified candidates from the underrepresented group (e.g. women, Indigenous Peoples, members of racialized minorities, people with disabilities, and LGBTQ2+ individuals) are highly encouraged to apply, and they will be included and supported by the project.