

YONGZHONG LI

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[LinkedIn](#)

EDUCATION

- University of Toronto (UofT)** Ontario, Canada
Electrical and Computer Engineering (Electromagnetics) M.A.Sc. 2021-2023(expected)
Supervisor: [Prof. Piero Triverio](#)
- Beihang University (BUAA)** Beijing, China
Electronic Information Engineering B.S. 2016-2020
Bachelor Thesis in Computational Electromagnetics
Supervisor: [Prof. Qiang Ren](#)
 - Outstanding Bachelor Thesis Award (5/339)
 - College Graduate Excellence Award

RESEARCH INTERESTS

- Primary:** Multiphysics modeling (Electromagnetics, Thermal, Acoustics), Wave functional Materials and Machine learning
- Broad:** Scientific and High Performance Computing

BOOK

Qiang Ren*, Yinpeng Wang, **Yongzhong Li**, Shutong Qi, [Sophisticated Electromagnetic Forward Scattering Solver via Deep Learning](#), **Springer**, Singapore, 2022

JOURNAL (CHRONOLOGICALLY)

- Yongzhong Li**, Jiawei Xi, Leung Ka Wun Casey, Tan Li, Wing Yim Tam, Jensen Li*, Imaging by Unsupervised Feature Learning of Wave Equation, **Physical Review Applied**, 2021, *In Review*
- Yongzhong Li**, Yinpeng Wang, Shutong Qi, Qiang Ren*, Lei Kang, Sawyer D. Campbell, Ping Werner, Douglas H. Werner, [Prediction scattering from complex nano-structure's via deep learning](#), **IEEE Access**, 8: 139983 - 139993 (2020)
- Guorui Chen, **Yongzhong Li**, Bick Michael, Jun Chen* [Smart textile for electricity generation](#), (Front Main Cover), **Chemical Review** (IF: 54.3), 120(8), 3668 - 3720 (2020)
- Shutong Qi, Yinpeng Wang, **Yongzhong Li**, Xuan Wu, Qiang Ren*, Ren Yi, [2D Electromagnetic Solver Based on Deep Learning Technique](#), **IEEE Journal on Multiscale and Multiphysics Computational Techniques**, 5, 83-88 (2020)
- Nannan Zhang†, Fang Huang†, Shenlong Zhao, Xinghao Lv, Yihao Zhou, Siwei Xiang, Shumao Xu, **Yongzhong Li**, Guorui Chen, Changyuan Tao, Yi Nie*, Jun Chen*, Xing Fan* [Photo-Rechargeable Fabrics as Sustainable and Robust Power Sources for Wearable Bioelectronics](#), **Matter (Cell Press)**, 2(5), 1260-1269 (2019)
- Cheng Yan, Yuyu Gao, Shenlong Zhao, Songlin Zhang, Yihao Zhou, Weili Deng*, Ziwei Lia, Gang Jianga, Long Jin, Guo Tian, Tao Yang, Xiang Chu, Da Xiong, Zixing Wang, **Yongzhong Li**, Weiqing Yang*, Jun Chen* [A Linear-to-Rotary Hybrid Nanogenerator for High-Performance on Body Biomechanical Energy Harvesting](#), **Nano energy** (IF: 15.4), 67, 104235 (2019)

CONFERENCE

Yinpeng Wang, **Yongzhong Li**, Shutong Qi, Qiang Ren* Electromagnetic Scattering Solver for Metal Nanostructure via Deep Learning, **PIERS**, Hangzhou, 2021

RESEARCH EXPERIENCE

- The Hong Kong University of Science and Technology** Hong Kong SAR, China
Photonics, Metamaterials, & Electromagnetics Lab
Research Assistant - [Prof. Jensen Li](#) Sep 2020 - Sep 2021
 - Imaging in Wave Systems:** Imaging by unsupervised feature learning of wave equations (acoustics, photonics, fluids), knowledge discovery on complex wave propagation data, physics-informed modeling for inverse problem.
 - Experimental Physics:** Vibration analysis of elastic wave system, hands on experience of laser doppler vibrometers.
- Beihang University** Beijing, China

Computational Physics Research Lab

Research Assistant - Prof. Qiang Ren

May 2018 - Aug 2020

- **Computational Electromagnetics:** Scattering predictions from isolated nano-structures in near field regime via Finite Difference Frequency Domain method.
- **Scientific Machine Learning:** Data-driven modeling of scattering in nano-photonics system, computational acceleration via neural network and GPU parallel computing (three-orders-of-magnitude).
- **Thermal Modeling:** Nonlinear inverse heat conduction problem solved by three-dimensional spectral elements time domain method and conjugated gradient descent method.

University of California, Los Angeles

Los Angeles, CA

Wearable Bioelectronics Research Lab

Visiting Student - Prof. Jun Chen

July 2019 - October 2019

- **Smart Textile:** Reviewed the textile-based wearable electronics for energy harvesting in the ambient environment.
- **Nanogenerator:** Constructed sophisticated electronic devices to greatly improve the efficiency of low-frequency on-body biomechanical energy harvesting based on triboelectric and electromagnetic effect.

HONORS AND AWARDS

- Edward S. Rogers Sr. Graduate Scholarships, University of Toronto
- 2020 Redbird Fellowship, HKUST
- 2019 & 2018 Innovation Scholarship for Undergraduate Students **First Prize**
- 2019 Innovation Scholarship for Undergraduate Students **First Prize**
- 2019 Academic Scholarship for Undergraduate Students **Second Prize**
- 2019 The Elite Undergraduate Training Program of Dept. of Electrical Engineering of BUAA (**40/300+**)
- 2018 COMAPs Mathematical Contest in Modeling (MCM/ICM) **Meritorious Winner (Top 10% Out of World Competitors)**
 - **Multi-Objective Programming:** Proposed a solution for locating Electrical Vehicles charging stations by using multi-objective evolutionary optimization algorithm.
- 2019 Beijing Integrated Circuit Design Competition **First Prize (3%)**

SELECTED COURSEWORK

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|------------------------------------|-------------------------------------|
| • Electromagnetics Theory | • Electro and Magneto Statics |
| • Experimental Physics (2 courses) | • Modern Semiconductor Physics |
| • Circuits Analysis | • Electronic circuits (2 courses) |
| • Microwave Technology | • Mathematical Methods in Physics |
| • Introduction to Machine Learning | • Electronic Design Lab (4 courses) |

SKILLS

- **Programming Languages:** Python, C, C++, Verilog, VHDL
- **Packages for Scientific Computing:** SciPy, SymPy, Pandas, Tensorflow, Pytorch, FEniCS
- **Tools:** Matlab, COMSOL Multiphysics, Mathematica, SPICE
- **Hardware Experience:** Laser Doppler Vibrometer, Microcontroller, FPGAs, Raspberry Pi, Oscilloscopes, Multimeters

TEACHING EXPERIENCE

Teaching Assistant

Hong Kong SAR, China

PHYS 1115 Laboratory for General Physics II

June 2021 - Aug 2021

- **Lab Duties:** Worked directly with lead teacher and technician to deliver course contents, supervised lab session while maintained accurate records including students' performance, progress and attendance.
- **Management Experience:** Ensured the lab is set up ready for the days learning and remain a safe and comfortable for students learning, with experience in both in-person and online teaching mode.
- **Grading:** Graded reports of students' data analysis, assisted in answered students' question in office hours and gave feedback for their strengths and weaknesses.

Undergraduate Research Mentor

Beijing & Hong Kong, China

Beihang University & HKUST

June 2020 - Aug 2021

- **Beihang University:** Mr. Nianru Wang, Project: Sophisticated Electromagnetic Forward Scattering Solver via Deep Learning. Now at Delft University of Technology.
- **HKUST:** Mr. Leung Ka Wun Casey, Project: Imaging by Unsupervised Feature Learning of Wave Equation. Now at The Hong Kong University of Science and Technology.

PROFESSIONAL SERVICE

- **Journal Reviewer:** Microwave and Optical Technology Letters, 2019