Yujia Yuan

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Education

University of Waterloo (GPA 3.93/4, top 5% || GRE 327+5/340+6) **Sep. 2017 – May 2022**
Electrical Engineering (Physical science option) *Waterloo, Ontario*

Relevant Coursework

- Quantum Mechanics III
- Statistical Mechanics
- Algorithm with C++
- Digital Computers
- Communication Systems
- Analog Circuit
- Radio Frequency
- Nano Fabrication

Experience

Princeton University **Sep 2021 – present**
Research assistant at the Thompson Lab, instructed by professor Jeff Thompson *Princeton, New Jersey*

- Designed the scheme, set up lasers and built the double-pass structure for optically pumping ^{171}Yb to $^{3}P_0$ state.
- Implemented the white light interferometer for measuring the thickness of the vacuum chamber

Institute for Quantum Computing **Sep 2018 – present**
Undergraduate Researcher in Quantum Nanophotonics, instructed by professor Michal Bajcsy *Waterloo, Ontario*

- **Developing a cost effective fabrication method for grating-based MOT for atom cooling (in progress)**
- **Designed and built a compact system for broadband polarization tomography**
- Numerical simulation for design and optimization of dichroic mirrors based on photonic crystal slabs (in progress)
- Fabricated on-chip fiber splicers based on angled SU8 by UV-lithography.
- Optical pulse system for quantum dot excitation based on CW laser, 70ps electric pulse generator, and fiber EOM
- Implemented MATLAB–Lumerical communication for local morphological optimization after the adjoint design.
- Designed and built an Arduino-controlled motorized stage for making nano-tip optical fibers through acid etching

University of Waterloo **May 2018 – Dec 2018**
Optical Researcher, instructed by professor Simarjeet Saini *Waterloo, Ontario*

- Designed and 3-D printed a cuvette holder for detecting Melamine in potable liquid by spectrometer.
- Simulated surface plasma resonance effect of silver with RSoft.

Jannatech Technologies **Dec 2017 – April 2018**
Software Developer *Sudbury, Ontario*

- Utilized Android Studio to develop visualized application in Android.
- Developed serial tools in VB.NET for communication between computers and micro-controllers

Conference, projects and publications

Diffraction grating for atom cooling produced with photolithography **Ongoing, 50-page term report**
Yujia Yuan, P. Anderson, S. Venuturumilli, M. Bajcsy

A compact setup for broadband polarization tomography **Manuscript in preparation**
Yujia Yuan, S. Venuturumilli, M. Li, S. Kuru, B. Semnani, P. Anderson, M. Bajcsy

Generating Single Photon Pulse From a Quantum Dot using a Cointinuous Wave laser and an Electro-Optic Modulator (contributed poster with refereed abstract) **CLEO 2021**
P. Anderson, D. Bharadwaj, R. Maruf, J. Qiu, **Yujia Yuan**, B. Semnani, M. Reimer, M. Bajcsy

Interfacing quantum dots with laser-cooled atomic ensembles (invited paper) **Proc SPIE 117003Z 2021**
D. Bharadwaj, P. Anderson, S. Venuturumilli, R. Maruf, J. Qiu, T. Yoon, B. Semnani, **Yujia Yuan**, et al.

Technical Skills

Languages: Python, C++, Lumerical, Arduino, Mathematica, MATLAB, LaTex, QuTip, K-Layout, VB.NET
Industrial Skills: Machining, 3D Modelling, Optics Table, Circuit Design, Blender, Advanced Design System
NanoFab: SEM, AFM, MLA-150, Filmetric, Spincoating, DRIE, Evaporation, Piranha, Profliometer

Awards

2022 Gerry Heckman Scholarship (Includes a stipend of 3000$)
2021, 2022 University of Waterloo President's Research Award (Includes a stipend of 3000$, 1500 each)
2021 NSERC Undergraduate Student Research Award (Includes a stipend of 4500$)
2018 University of Waterloo President's Scholarship of Distinction (Includes a stipend of 2500$)
Dean's list every year