Yajie Guan, PhD

Personal info

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Citizenship: Australia (Eligible for E3 Visa)
Language: Chinese (Native); English (Proficiency, IELTS [8/9])

Professional Summary

Self-directed and motivated PhD Student from ANU Centre for Gravitational Astrophysics with research background of photonics sensing and laser stabilization. Involved in multiple research projects, including cavity enhanced spectroscopy and fibre array sensing. Having a broad knowledge in applied optics, from physics point of view (including free space optics, optical resonator, fibre, lasers, etc) to engineering prototyping (from software programming to hardware analog design). Demonstrated ability to work in a challenging and fast-paced environment. Having two years of experience in a start-up company working on industrial projects and volume production, especially in charge of hardware design and associated QA/QC test development. Recognized as a strong collaborator with ability of efficient communication with third-party manufacturers (domestic and international). Skilled at multiple programming languages and interested in learning state-of-the-art techniques (such as machine learning algorithms) and utilizing it to solve problems in different projects.

Personal skills

Programming Languages	C/C++; Matlab; Python Hardware Description Language (HDL)
Software	Visual Studio; Vivado; Vitis; LTspice; Labview Multiphysics Coupling and Analysis (Comsol) Optical Waveguide Simulation Software (RSoft) Machine Learning tools (Pytorch, scikit-learn) AutoDesk; Solidworks
Optical skills	free-space optics handling (lens, PBS, waveplates, etc.) optical fibre handling (stripping, splicing, etc.) free-space cavity design and alignment cavity mode calculation and modeling laser mode matching; laser stabilization polarization analysis and simulation optical equipment handling (spectrometers, detectors, EOM, OTDR, etc.)
Electronic skills	PID control system design and analysis electronic circuit simulation analog system design and testing (ADC, DAC, trigger, etc.) digital system design and testing (SoC, WiFi, USB, etc.) electronic devices handling (oscilloscope, spectrum analyser, probes, etc.)

Research Projects

Free-space optic sensing
Cavity Enhanced Laser Absorption Spectroscopy 2015 - 2020
Acoustic sensing using optical interferometry 2018 - 2019

Optical fibre array sensing
Lead fiber noise reduction using time-delay interferometry 2013 - 2014

Education

Australian National University 2015 - 2021
Doctor of Philosophy in Physics (Photonics)

- Advisor: Professor. Jong Chow
- Thesis title: Novel cavity - enhanced techniques for metrology

Australian National University 2012 - 2014
Bachelor of Engineering with First Class Honors

- Major: Electronic and Communications.
- Minor: Physics.
- GPA: 6.7/7.0

Beijing Institute of Technology 2010 - 2012
Bachelor of Engineering

- Major: Optical Information Science and Technology.
- GPA: 4.0/4.0

Honors and Awards

2019 - 2020	Postgraduate Research Scholarship
2017 - 2019	Australian Government Research Training Program Scholarship
2016 - 2017	Australian Postgraduate Award
	Higher Degree By Research (HDR) Supplementary Scholarship
2015 - 2016	HDR Fee Remission Merit Scholarship
	ANU PhD Scholarship
2014 - 2014	Outstanding Graduates with First Class Honors
2012 - 2014	ANU CECS Undergraduate International Scholarship
2012 - 2012	National Scholarship (top 0.2%)
2010 - 2011	University First Prize scholarship (top 1%)

Industry experience

Liquid Instruments 2019 - Present
Test and QA Engineer

Beijing SWT Science and Technology Co 2012–2013
Trainee engineer

Major responsibilities and roles

QA/QC Test Development 2019 - 2021
Create the test plan for the manufacturing line; identify quality assurance process; develop automation tests to verify the product functionalities with respect to the FPGA (including the DDR, Bluetooth, EMAC, eMMC, USB, QSPI, JTAG, WiFi, SFP, SATA, I2C/SPI continuity and etc); generate test documents and specification of the product.

Hardware Design 2019 - 2021
Develop hardware circuitry that meets certain functionalities and requirements; circuitry simulations and validations; PCB review.

Project Coordinator 2019 - 2021
Contact and communicate with business partners; involved with project plans and schedules.

Optical device testing 2012 - 2013
Optical waveguide simulation and design; optical fibre coupler testing.

Teaching experience

Australia National University 2016 - 2019
Academic Staff
Beihang University 2012 - 2012
Lab assistant

Publication and Talks

Polarization Impedance Matching Cavity Enhanced Laser Absorption Spectroscopy
Y. J. Guan, C. P. Bandutunga, J. Dong, T. T. Lam, R. Fleddermann, M. B. Gray, and J. H. Chow.
Manuscript Submitted to Optics Express, 2021

Quantum Noise Limited Trace Gas Cavity Enhanced Polarization Spectroscopy
Y. J. Guan, J. Dong, C. P. Bandutunga, R. Fleddermann, T. T. Lam, M. B. Gray, and J. H. Chow.
Light, Energy and the Environment 2018 (E2, FTS, HISE, SOLAR, SSL), OSA Technical Digest (Optical Society of America, 2018), paper EW3A.8.

Cavity Enhanced Polarization Impedance Matching Spectroscopy
J. Dong, T. T. Lam, R. Fleddermann, Y. Guan, C. P. Bandutunga, D. E. McClelland, M. B. Gray, and J. H. Chow
Light, Energy and the Environment 2015, OSA Technical Digest (Optical Society of America, 2015), paper ETh2A.2.

Cavity Polarization Mode Impedance Matching Spectroscopy
Y. J. Guan, J. Dong, T. T. Lam, R. Fleddermann, C. P. Bandutunga, D. E. McClelland, M. B. Gray, and J. H. Chow.
Oral Presentation at The Australian and New Zealand Conference on Optics and Photonics (ANZCOP) 2017

Double Pass Cavity Enhanced Absorption Measurement with Scattering Minimisation
Y. J. Guan, C. P. Bandutunga, J. Dong, R. Fleddermann, M. B. Gray, T. T. Lam, and J. H. Chow.
Oral Presentation at The Australian and New Zealand Conference on Optics and Photonics (ANZCOP) 2015

References

Available upon request