TYLER W. HUGHES

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San Francisco, CA 94107

OBJECTIVE

Physics researcher with computational proficiency, looking for an internship in the space of AI and Data Science. Currently a 4th year PhD candidate in Stanford's applied physics department, my work is focused on developing algorithmic design strategies for photonic devices.

EDUCATION

PhD, Applied Physics (in progress) Sept 2014 - Autumn 2018 (?)
Stanford University, Stanford, CA
Research advisor: Prof. Shanhui Fan

Master of Science, Applied Physics Sept 2014 - June 2016
Stanford University, Stanford, CA

Bachelor of Science, Physics Sept 2009 - May 2013
University of Michigan, Ann Arbor, MI
With Distinction and Highest Honors
GPA: 3.82/4.0

SKILLS AND INTERESTS

Skills	mathematics, software development, machine learning, AI, scientific programming
Interests	AI, machine learning, data, technology, & society
Platforms	python, matlab, C, C++, TensorFlow, mathematica, HTML/CSS/javascript, LaTeX, SQL

EXPERIENCE

Graduate Research Assistant Sept 2014 - present
Fan Group, Stanford University *https://web.stanford.edu/group/fan/*

- Developing a laser delivery system to power particle accelerators on a chip (https://achip.stanford.edu).
- Invented novel algorithm to generate nano-structures with 2-3 times better acceleration performance.
- Proposed theoretical model and corresponding device for spectral control of light transport in metal-optic systems.

Junior Software Engineer Jan 2014 - Aug 2014
GudTech Inc. *www.gudtech.com/*

- Full-stack development of web application software for commercial inventory management.
- Designed a business intelligence tool based on multidimensional databases.

Research Assistant July 2013 - Jan 2014
Centre for Quantum Technologies, National University of Singapore *https://sites.google.com/site/coldiongroup*

- Designed and simulated surface electrode ion traps for scalable quantum computation.
- Worked on vacuum chamber assembly, electrical component design and construction, & laser operation.

Research Assistant Sept 2011 - May 2013
Optoelectronic Components and Materials, University of Michigan *umich.edu/~ocm/*

- Helped develop a process to greatly reduce GaAs thin film, flexible solar cell cost through substrate reuse.
- Led computational optimization study for device ARC thickness, contact grid design, and concentrator shape.

SELECTED PUBLICATIONS

Tyler Hughes et al. **On-Chip Laser Power Delivery System for Dielectric Laser Accelerators**. (submitted)

Tyler Hughes, et al. **Method for Computationally Efficient Design of Dielectric Laser Accelerator Structures,** Opt. Express 25, 15414-15427 (2017)

Wang, J., Shi, Y., Hughes, T.W., et al. **Adjoint-Based Optimization of Active Nanophotonic Devices** (submitted)

Tyler Hughes, and Shanhui Fan. **Plasmonic Circuit Theory for Multiresonant Light Funneling to a Single Spatial Hot Spot.** Nano letters 16.9 (2016): 5764-5769.

Lee, K., Zimmerman, J. D., Hughes, T. W., Forrest, S. R.. **NonDestructive Wafer Recycling for LowCost ThinFilm Flexible Optoelectronics**. Advanced Functional Materials, 24(27), (2014) 4284-4291.

Oh, J., Lee, K., Hughes, T., Forrest, S., Sarabandi, K. **Flexible antenna integrated with an epitaxial lift-off solar cell array for flapping-wing robots**. IEEE Transactions on Antennas and Propagation, 62(8), (2014) 4356-4361.

SELECTED COURSEWORK (S=STANFORD, M=MICHIGAN)

(S)	CS 229	Machine Learning
(S)	CS 221	Artificial Intelligence
(S)	CS 230	Deep Learning
(S)	CS 107	Computer Organization & Systems
(S)	CS 42	Contemporary Javascript
(S)	CS 106B	Programming Abstractions
(M)	CMPLXSYS 535	Theory of Social and Technological Networks
(S)	CMPLXSYS 511	Theory of Complex Systems
(S)	EE 263	Linear Dynamical Systems
(M)	PHYS 413	Nonlinear Dynamics & Chaos
(S)	EE 261	Fourier Transform & Applications
(M)	PHYSICS 211	Computational Physics
(S/M)	Quantum Mechanics	(through quantum field theory I)
(S/M)	Statistical Mechanics	(through graduate level)
(S/M)	Electricity and Magnetism	(through graduate level)
(S/M)	Classical Mechanics	(through graduate level)
(S)	PHYS 211	Continuum Mechanics
(M)	EE 336	Nanophotonics

LINKS

Personal Website	https://twhughes.github.io
Google Scholar	https://scholar.google.com/citations?user=-AHhToYAAAAJ&hl=en
Github	https://github.com/twhughes
LinkedIn	https://www.linkedin.com/in/tylerwhughes/