Alexander Sludds

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EDUCATION

MASSACHUSETTS INSTITUTE OF TECHNOLOGY (MIT)
Cambridge, MA
PhD in Electrical Engineering (Started May 2019)
M.Eng. in Electrical Engineering and Computer Science (May 2019)
B.S. in Electrical Engineering and Computer Science (May 2018)

BRUNSWICK COMMUNITY COLLEGE (BCC)
Supply, NC | June 2014
Associates Degree in Arts
Associates Degree in Science

SKILLS

ENGINEERING
Analog Circuit Design • Integrated Photonic Design and Testing

PROGRAMMING
Python • C++ • Keras • Tensorflow • Numpy • LaTeX

LICENCES
Amateur Radio Extra Class Licence : KC1GAZ • General Radiotelephone Operator License • Marine Radio Operator Permit • GMDSS Radio Operator License • Restricted GMDSS Radio Operator License • GMDSS Radio Maintainer's License • Ship Radar Endorsement

RELEVANT COURSES

Graduate Applied E and M
Nonlinear Optics
Algorithms
Signal Processing
Machine Learning
Numerical Simulation

AWARDS

BBC PRESIDENT'S AWARD
Awarded for Highest GPA in graduating class at Brunswick Community College

FELLOWSHIPS
NSF Graduate Research Fellowship (received April 2019)

EXPERIENCE

RESEARCH ASSISTANT
MIT RLE: Dirk Englund Quantum Photonics Group
July 2018 - Present | Cambridge, MA

- Design and taped out several silicon photonic devices and systems using commercial silicon photonic foundaries
- Designing and constructing several setups for characterizing and testing silicon photonic circuits

SOFTWARE ENGINEERING INTERN
Typhoon HIL
January -March 2016 | Cambridge, MA

- Created an impedance analyzer software that characterizes electrical systems by plotting bode graphs based on signal gain calculations.

Google Summer of Code
Summer 2018 | Cambridge, MA

- Created a turfcutting application to be used with CiviCRM.

PUBLICATIONS AND CONFERENCES

Publications

- Freely scalable and reconfigurable optical hardware for deep learning (L. Bernstein*, A. Sludds*, R. Hamerly, V. Sze, J. Emer, D. Englund) Scientific Reports (2021)
- Large-Scale Optical Neural-Networks based on Photoelectric Multiplication (R. Hamerly, L. Bernstein, A. Sludds, D. Englund) Physical Review X (2020)

Conferences

- SPIE Photonics West 2020 Presentation: A scalable optical neural network architecture using coherent detection
- Microsystems Annual Research Conference (MARC) 2019 Poster : Simulation of the effects Effects of Shot Noise on Optical Neural Networks
- Opening of MIT College of Computing Poster Session : Deep Learning with Coherent Nanophotonic Circuits

TEACHING EXPERIENCE

MIT
Jan 2016 – June 2019 | Cambridge, MA

- Grad TA for Control Theory, Spring 2019
- Grad TA for Graduate Electromagnetics (6.630), Fall 2018
- Grad TA for Electromagnetics and Applications (6.013), Spring 2018
- Instructor for Introduction to Signals and Systems, IAP 2018, 2017, 2016
- Lab Instructor for Machine Learning, Fall 2017
- Lab Instructor for Circuits and Electronics (6.002), Fall 2017
- Lab Instructor for Control Theory, Spring 2017. EdX version summer 2016
- Instructor for Introduction to Digital Electronics, Fall 2016, 2017