Arun Nagpal

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Present Address:
3610 Partridge Path
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8353 Warwick Groves Ct
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Education

Sept. 2014 – May 2018 (Expected)

B.S. Electrical Engineering, University of Michigan, Ann Arbor
GPA: 3.70/4.00

Honors

May 2016 Dean's List: All Semesters
Jan. 2016 College of Engineering Honors Student
Jan. 2016 IEEE Student Chapter Member
May 2015 Most Valuable Freshman: MiTEE
Sept. 2015 TBP Centennial Endowment Scholarship
Sept. 2014 Regents Merit Scholarship

Relevant Coursework

- Programming Data Structures & Algorithms
- Discrete Math, Abstract Algebra, Analysis
- Applied Electromagnetics (Adv. Undergraduate)
- Quantum Mechanics
- Introductory courses in electronic circuits, digital/analog signals and systems, semiconductor devices

Experience

May 2016- Aug. 2016 **California Institute of Technology: Choo Lab**
Summer Undergraduate Research Fellow

- Wrote novel machine-learning-based signal processing algorithms for the analysis of Raman spectra
- Integrated algorithm into existing spectroscopic system, providing quantitative analysis for the first time
- Performed biomolecule-sensing at nM and μM regimes: multiple orders of magnitude below that reported by current literature
- **Invited Presentation: Statistical Analysis for the Quantification of Raman Signals**
  Publication in Progress

May 2015- May 2016 **University of Michigan: Radiation Laboratory (RADLAB) & Center for Ultrafast Optics (CUOS)**
Undergraduate Researcher in Computational Optics

- Investigated optimization of visible light transmission through human skin and other turbid media using digital optical phase conjugation
- Developed software interfaces between a camera, spatial light modulator, and computer
- Generated diffractive optical elements (DOEs) numerically using the Gerchberg-Saxton phase retrieval and simulated annealing algorithms.
- Led the design of an optical testbed still in use by current post-doctoral researchers and others for wavefront-shaping experiments

Sept. 2014- Sept. 2015 **University of Michigan: Miniature Tether Electrodynamics Experiment (MiTEE)**
Plasma Electrodynamics Subsystem Lead (2015), Plasma Electrodynamics Subsystem Member (2014)

- A mission on the use of electrodynamic tethers as a form of propulsion for a CubeSat
- Performed multiphysics simulations of electron trajectories near the satellite using COMSOL Multiphysics software to drive engineering requirements
- Developed an instrumental amplifier board for the onboard Langmuir Probe, including differential amplifiers, gain select circuitry, and interfaces between digital and analog components
- Designed & fabricated a thermionic cathode and a testbed for the characterization of said cathode

Sept. 2014- May 2015 **University of Michigan: Plasmadynamics & Electric Propulsion Laboratory (PEPL)**
Research Assistant for the CubeSat Ambipolar Thruster (CAT)

- Optimized propellant feed system for miniature plasma thruster designed for a CubeSat form factor in CAD Solidworks and Inventor
- Wrote documentation for the features, components and functionality of the system

Sept. 2014- Jan. 2015 **University of Michigan: Michigan Autonomous Aerial Vehicles (MAAV)**
Structures Subsystem Member

- Performed vibration analysis, recommend dampening material for camera-airframe mounts
- Designed specialized instrumentation mounts for quadrotor-mounted cameras using CAD Solidworks

Computer Skills

Languages: MATLAB, C/C++, Python **Software:** Solidworks, Inventor, LTSpice, Altium, COMSOL, μManager

Volunteering

Jan. 2016- Present **Tau Beta Pi (TBP) Member**
Campus Outreach Chair

- Oversaw revamping of peer tutoring office; Personally tutored students in Calculus & Discrete Math

Sept. 2014- Present **Students for the Exploration and Development of Space (SEDS)**
Co-President (2016), Publications and Publicity Director (2015)

- Wrote articles for local publications; STEM outreach to underserved populations around Ann Arbor