

Neerja Aggarwal
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VISION I am an engineer, artist, and athlete. With my strengths in electro-optics and leadership, I will create new imaging technologies that will impact women's health and global sustainability.

EDUCATION **University of California at Berkeley** Currently Pursuing
Ph.D Candidate in Electrical Engineering and Computer Science Berkeley, CA

Massachusetts Institute of Technology Jun 2018
Master of Engineering in Electrical Engineering Cambridge, MA

Massachusetts Institute of Technology Jun 2017
Bachelor of Science in Electrical Science and Engineering Cambridge, MA
and in Music and Theater Arts

RESEARCH **Computational Imaging Lab** Sep 2019 - Present
UC Berkeley EECS Berkeley, CA

Graduate Research Assistant; Advised by Laura Waller

- Beginning new research project in hyperspectral imaging with applications in medical diagnostics and environmental monitoring
- Serving on optical society chapter on professional events committee

Physical Optics and Electronics Group Jul 2016 - Aug 2018
MIT Research Laboratory of Electronics Cambridge, MA

Graduate Research Assistant; Advised by Rajeev Ram

- Investigated optical techniques for non-invasive glucose sensing through skin; won prestigious Siebel Scholarship
- Designed and debugged an electro-optical system to achieve a new measurement; in progress for publication
- Communicated project status and results directly to research sponsors; wrote 190+ page comprehensive thesis to document findings

Physical Optics and Electronics Group Sep 2014 - June 2015
MIT Research Laboratory of Electronics Cambridge, MA

Undergraduate Research Assistant

- Designed and fabricated a new wearable laser heat sink for optical biosensing
- Presented work as one of six finalists at EECSScon 2015 research conference

Barron Research Group Oct 2010 - Aug 2012
Department of Chemistry at Rice University Houston, TX

High School Research Student

- Synthesized multi-walled carbon nanotubes via chemical vapor deposition; analyzed samples using Raman spectrometry and electron microscopy
- Work resulted in publication and award at international science fair level

INDUSTRY

- LivaNova** Sep 2018 - Jul 2019
Full-time Electrical Engineer II Houston, TX
- Led the design of the power circuitry for next generation implantable neuro-modulation device for epilepsy
 - Collaborated across functional teams of software, mechanical, clinical engineers
 - Started new team seminar initiative to encourage continuous learning and pitched a new young professionals development program
- Formlabs** Jun 2015 - Aug 2015
Print Process Engineer Intern Somerville, MA
- Designed the heater control and temperature sensor calibration for the Form 2, advanced stereolithography 3-D printer for product launch in Sep 2015
 - Collaborated across electrical, mechanical, software, materials, and process teams to solve print failures and system integration issues
- Halliburton** Jun 2014 - Aug 2014
Electro-optics Engineer Intern, Wireline and Perforating Houston, TX
- Evaluated effect of temperature and vibrations on fiber optic components to obtain faster down-hole telemetry data rates
 - Exceeded expectations and presented results as a finalist out of 100+ interns (including Ph.Ds) to the Vice Presidents of Technology, Wireline, Cementing, and Landmark Product Service Lines
- MD Anderson Cancer Center** Oct 2010 - Jun 2012
Intern, Dept of Neuro-oncology, Dept of Head and Neck Houston, TX
- Analyzed MRIs and executed physical examinations while shadowing a physician; observed surgeries, procedures, and follow-ups for 100+ hours

PATENTS

- D. Stark, D. Barfoot, W. Zhang, **N. Aggarwal**. Multiple Polarization Fiber Optic Telemetry. US Patent No. 10,218,435 B2. 2019
- N. Aggarwal**, M. Cavuto, M. Li, N. Rodman. Compact Proton Beam Energy Modulator - US Patent Pending. 2017

PUBLICATIONS

- N. Aggarwal**. Raman and Fluorescence Spectroscopy of In Vitro Skin Tissue for Diagnostics and Monitoring. MEng Thesis. Dspace@MIT. 2018
- N. Aggarwal**, M. Cavuto, M. Li, N. Rodman. Design of Compact Proton Beam Energy Modulator for Imaging. Manuscript in peer-review for publication in *Nuclear Instrumentation Methods*. 2019
- A. Orbaek, **N. Aggarwal**, A. Barron. The development of a process map for the growth of carbon nanomaterials from ferrocene by injection CVD. *Journal of Materials Chemistry A*. 2013

AWARDS

- Siebel Scholarship** 2017
Prestigious international scholarship presented for excellence in engineering research and community leadership;
- MIT Music and Theater Arts John Everingham Award** 2017
Presented for single creative accomplishment: directing *Einstein's Dreams*

MIT EECS Paul L. Penfield Student Service Award 2015
Presented for outstanding student service to the department: founding Voltage

QuestBridge College Match Finalist 2012
National scholarship presented to high-achieving low-income students

Girl Scouts National Gold Award 2012
Highest award in scouting, presented for engaging youth into science

Intel International Science Fair - 3rd Place Chemistry 2012
Presented for novel high school research in carbon nanotubes

THEATER

Einstein's Dreams, Writer, Director, MIT Theater Arts 2017
MIT Theater Arts 2017 Spring Production; Thesis Project
A new multi-media adaptation of the novel by Alan Lightman exploring Einstein's journey to special relativity
Featuring original music, choreography, and script; led cast and crew of 30+

Block Party, Writer, Performer, Bard College in Berlin 2016
Final performance about Home and Exile at the Bard Berlin Summer Theater Intensive - a month-long devised theater conservatory program with workshops from top experimental theater companies
Awarded MIT Kelly Douglas Grant and MIT Summer Fellowship to fund travel and performance

Connections, Writer, Cinematographer, Actress 2016
Short film about impact of social technology on human relationships

Now Then Again, Director, MIT Experimental Theater Company 2015
A time-bending romantic comedy about the transactional interpretation of quantum mechanics; led cast and crew of 10+ Awarded the Council of Arts at MIT Director's Grant to fund production

Colours of Madness, Writer, Performer 2015
Nonlinear narrative, live motion theater piece

The Importance of Being Earnest, Director, MIT Theater Arts 2014
One-act version of the classic Oscar Wilde play; led cast and crew of 10+

SERVICE LEADERSHIP

MIT Alumni Association, Class of 2016 Co-President Jun 2018 - Present

- Elected to serve 5 year term as alumni class council co-president representing 1000+ alumni across the world
- Lead council committees of 20+ volunteers to organize regional and national reunions

Bay Area Disc Association, Coach Sep 2019 - Present

- Volunteer coach for middle school mixed gender ultimate frisbee team
- Lead practices and tournaments focusing on sportsmanship and skill from 7+ years of experience playing

MIT IEEE Voltage, Founder and Chair Sep 2014 - Jun 2016

- Founded the undergraduate electrical engineering club to increase exposure and build a cohesive community by connecting students, faculty, and alumni

- Organized the first ever EE Expo matching freshmen and sophomores with over 80 summer research and internship opportunities

MIT Theater Arts and Clubs, Stage Director Sep 2014 - 2017

- Directed 30+ actors, designers, and technicians across all departments: acting, set, lighting, video, costumes, music, and publicity
- Led every rehearsal; made all final acting and design decisions
- Led the creative vision for three major productions at MIT bridging the boundary between physics and theater

MIT EECS Teaching Assistant Sep 2013 - 2017

- Undergraduate Advanced Research Seminar (2 semester): Head TA; advised 40 chemical, biological, and electrical engineering students on independent research projects; reviewed and edited student proposals and posters
- Intro to EECS (3 semesters): Worked one-on-one with undergraduate students through circuits, signals, and probabilistic models
- Received high ratings from student evaluations (6.4 out of 7.0)

PRESS

M. Rosenburg, *Practicum: Directing Einsteins' Dreams*, MIT News, Jun 2017
<http://news.mit.edu/2017/featured-video-bringing-einsteins-dreams-to-life-0620>

M. Tenenbaum, *Learning to Think Like an Engineer*, MIT News, Mar 2016
<http://news.mit.edu/2016/learning-think-engineer-neerja-aggarwal-0309>

P. Sampson, *Voltage: A new community of electrical engineers*, MIT News, May 2015
<http://news.mit.edu/2015/voltage-new-community-electrical-engineers-0520>

C. Ziervogel, *Passion Impels Her, Fort Bend Lifestyles and Homes*, Jul 2011
http://barron.rice.edu/aggarwal_2011.pdf