

Helena Hurbon

EDUCATION

University of Arizona, Tucson, AZ

MD

Graduation: ~May 2031

Distinction Tracks

Commitment to Underserved People (84 hours)

Leadership in Healthcare and Innovation (25% completion)

Medical Education (25% completion)

PhD, Biomedical Engineering (starting Spring 2025)

Graduation: ~May 2029

MA, Human Rights Practice

Graduation: May 2021

GPA: 4.00

Washington University in St. Louis, St. Louis, MO

Graduation: May 2020

BS, Biomedical Engineering

GPA: 3.57

Eckerd College, St. Petersburg, FL

Graduation: May 2018

BS, Physics

GPA: 3.94

RESEARCH EXPERIENCE

Hyperspectral Imaging Researcher, Washington University, St. Louis, MO

May 2019 – June 2023

- Conducted in-depth research on the application of hyperspectral imaging in various biomedical fields, including dermatology, oncology, and public health, uncovering new possibilities and advancements
- Publication papers in progress

Mallinckrodt Institute of Radiology Summer Fellow, Washington University, St. Louis, MO

May 2019 – August 2019

- Integrated a shortwave infrared and visible hyperspectral camera with a macroscopic tube lens
- Resolved the microscope to 50 um with 50x magnification
- Took first picture of oocyte without stain
- Publication paper in progress

Undergraduate Research Experience, University of South Florida, Tampa, FL

May 2017– August 2017

- Programmed a Java and MATLAB code that simulated cancer radiation therapy to optimize treatment for patients through the Integrated Mathematical Oncology Department at Moffitt Cancer Center
- Presented poster titled “Qualitative Comparison of the Cytotoxic and Immunological Consequences of Spatially Homogeneous and Heterogeneous Radiation Dosing” at 4 conferences

Geophysics Environmental Research Trip, Eckerd College, Havana, Cuba

January 2017

- Traveled to Cuba with a group of geologists and marine scientists to take samples of the soil content
- Worked with another student to design a portable soil extraction device that was 3D printed out of nylon

ACADEMIC PUBLICATIONS, POSTER PRESENTATIONS, CONFERENCE ABSTRACTS

1. Hridoy Biswas, Helena Hurbon, Deependra Mishra, John Wang, and Mikhail Y. Berezin "Hyperspectral imaging in SWIR: Applications of geospatial approaches to biological imaging (Conference Presentation)", Proc. SPIE PC12398, Reporters, Markers, Dyes, Nanoparticles, and Molecular Probes for Biomedical Applications XIV, PC1239803 (17 March 2023); <https://doi.org/10.1117/12.2654982>
2. Visualization of blood vessels using a contrast maximization algorithm in the hyperspectral domain. Author block: Deependra Mishra; John Wang; Steven Wang; Qian Cao; Helena Hurbon; Qian Wu; Hairong Zhang; Roman Garnett; Mikhail Berezin; (2021) Washington University, St. Louis, MO, United States.
3. Cao, Q., Mishra, D., Wang, J., Wang, S., Hurbon, H., & Berezin, M. Y. (2021, March). HSKL: A Machine Learning Framework for Hyperspectral Image Analysis. In 2021 11th Workshop on Hyperspectral Imaging and Signal Processing: Evolution in Remote Sensing (WHISPERS) (pp. 1-5). IEEE.

4. Mishra, D., Wang, J., Wang, S. T., Cao, Q., Hurbon, H., Akers, W., & Berezin, M. Y. (2021, April). Selection of Hyperspectral Endmember Extraction Algorithm for Tumor Delineation in Animal Models. In Optical Molecular Probes, Imaging and Drug Delivery (pp. OF2E-2). Optical Society of America.
5. Mishra D, Hurbon H, Wang J, Wang S, Du T, Wu Q, Kim D, Basir S, Cao Q, Zhang H, Yu K, Zhang Y, Huang Y, Garnett R, Gerasimchuk-Djordjevic M, Berezin MY, IDCube Lite: Free Interactive Discovery Cube software for multi and hyperspectral applications, Journal of Spectral Imaging, 2021.
6. Hurbon, H., Topel, K., Kim, M., Park, W., & Illindala, R. (2021, May). SpanAbility Design Brief. In Assistive Technology (Vol. 33, No. 3, pp. 175-175). 530 Walnut Street, STE 850, Philadelphia, PA 19106 USA: Taylor & Francis Inc.
7. Shmuylovich, L., D. K. Mishra, H. Hurbon, A. Yu, T. Du, T. Wang, and M. Berezin. "843 Seeing water in the skin: Hyperspectral imaging in the short-wave infrared." Journal of Investigative Dermatology 140, no. 7 (2020): S110.
8. Du, T., Mishra, D.K., Shmuylovich, L., Yu, A., Hurbon, H., Wang, S.T. and Berezin, M.Y. (2020), Hyperspectral imaging and characterization of allergic contact dermatitis in the short-wave infrared. J. Biophotonics. Accepted Author Manuscript. doi:10.1002/jbio.202000040
9. Hurbon, H., Enderling, H., & Moros, E. (2018). Qualitative Comparison of the Cytotoxic and Immunologic Consequences of Spatially Homogeneous and Heterogeneous Radiation Dosing. Bulletin of the American Physical Society, 63.

WORK EXPERIENCE

Chief Operations Officer, HSpeQ LLC, St. Louis, MO

May 2020 – Present

- Strategically developed and managed customer and partner relationships across a diverse range of 10+ companies, actively driving collaborative growth and fostering long-term success
- Lead the coordination and execution of advertising and networking activities on LinkedIn, Twitter, Facebook, and Instagram, utilizing data-driven insights to optimize results
- Designed extensive social media content using Canva
- Offered technical support to users through direct contact, 60+ tutorial videos, and extensive documentation
- Worked in a collaborative manner with colleagues on grants to achieve a professional document for submission
- Engaged in extensive primary research by conducting 100 individual interviews as part of the National Science Foundation Innovation Corps National program
 - Explored the connection between hyperspectral imaging and its relevance in the agricultural sector

Medical Scribe, Retina Associates, Tucson, AZ

April 2022 – May 2023

- Documented more than 2,000 charts with patients' medical history, test results, diagnoses, treatment plans, prescriptions, and follow-up information
- Facilitated communication between the physician and medical team
- Alongside eight physicians, learned critical medical decision-making in determining cause of patient ailments

Core Facility Lab Manager, Washington University, St. Louis, MO

September 2018 – May 2020

- Maintained all spectroscopy and microscopy equipment
- Schedule all appointments with various labs across the university and with outside organizations
- In charge of \$1 million worth of equipment

Resident Advisor, Eckerd College, St. Petersburg, FL

August 2016 – May 2018

- Accounted for the safety and well-being of 33 residents, ages 18-23
- Built relationships through regular communication and organized monthly house events
- Exceed expectations and needs of all residents with a general 24/7 availability
- Trained on mediation and conflict resolution to appropriately handle issues and concerns
- Enforced policies and referred students with special issues and needs to appropriate college officials
- Served on emergency response rotation for a campus of over 1,800

Mathematics and Physics Tutor, Eckerd College, St. Petersburg, FL

September 2017 – May 2018

- Assisted students in homework and exam preparation
- Taught subjects ranging from Precalculus to Differential Equation and Introductory Physics

LEADERSHIP

- Co-president, Ophthalmology Interest Group, University of Arizona, Tucson, AZ Sept 2023 – Present
- Organized a lunch talk and scrub-in training with cataract surgery video walkthrough
 - Collaborated with Banner residents and AZTEC staff
 - Attended club fair to promote awareness of club
- Co-president, Physical Medicine and Rehabilitation Interest Group, University of Arizona, Tucson, AZ. Jan 2024 – Present
- Reestablished the PM&R Interest Group in the college of medicine by writing a charter and campaigning for the new club
 - Organized a lunch talk titled “PM&R: medical school, residency, and beyond” with fourth year medical students
 - Establishing a systematic way for college of medicine students to shadow in PM&R
 - Attended club fair to promote awareness of club
- Founder, SpanAbility LLC, St. Louis, MO Dec 2021 – Present
- Developing virtuality solutions for neurorehabilitation and interactive application for occupational therapy
 - Established LLC in 2021
 - Ongoing project from 2019 through support from Sling Health STL
 - Raise more than \$6,000 from pitch and venture competitions
 - Completed the National Science Foundation Innovation Corps Missouri S&T site program
- Sling Health Project Lead, Sling Health STL, St. Louis, MO Sept 2019 – Dec 2021
- Investigating solutions to making rehabilitation more engaging for patients with hemispatial neglect
 - Leading an interdisciplinary group of students
 - Sling Health is a student run healthcare incubator.
- Washington University Dual Degree Ambassador, Washington University, St. Louis, MO July 2019 – May 2020
- Organized Dual Degree Orientation
 - Spearheaded communication activity for new Dual Degrees
 - Collaborated with the WashU career center to plan a Dual Degree Resume Workshop with virtual peer review and Skype-in option
 - Mentored 120+ new Dual Degree engineers
- Founder & Co-President of EC MakerSpace, Eckerd College, St. Petersburg, FL August 2016 – May 2018
- Organized and facilitated meeting from 5 – 40 members
 - Trained executive board members in grant writing, advertising, poster design, and flyers
 - Submitted grants to The Honda Foundation and Lockheed Martin
 - Developed connections with 20 professors, 50 students, and 5 experienced learners
 - Presented to:
 - Eckerd College MakerSpace Introduction for the Parent Council (Feb 2017)
 - Eckerd College MakerSpace Introduction for the Board of Trustees (Feb 2017)
- ## VOLUNTEER EXPERIENCE
- Las Milpitas Community Farm, Tucson, AZ, ~50 hours Sept 2022 – Present
- Cultivated and nurtured 20+ herbs and vegetables supplying both personal and community-driven initiatives
 - Planted sizeable garden areas with the purpose of supporting small businesses and non-profits in the Tucson area
 - Developed a lesson plan and engaging workshop on the topic of Mesquite and its medicinal properties
- Crisis Text Line, Tucson, AZ, ~200 hours Sept 2021 – May 2023
- Answer texts from people in crisis using active listening and safety planning
 - 30-hour training in crisis management with a focus on reflective listening and collaborative problem solving
- SPARCC, Tucson, AZ, ~56 hours May 2021 – Aug 2021
- Work with patients experiencing concussion symptoms on active rehab protocols
 - Shadow musculoskeletal, optometric, and concussion care clinicians during visits
- Global Service Trip, Wenbo Rehabilitation Centre, Yangjiang, China, ~40 hours May 2019
- Measured, casted, built, and fit orthotic devices to a pediatric population with cerebral palsy

PRESENTATION EXPERIENCE

Oral Presentations

- Guest Lecture in Publication Writing (February 2020)
- Incoming Dual Degree Student Panel (April 2019)
- Student Speaker WashU Scholars in Engineering Dinner (Oct 2018)
- Incoming Student Activities Panel (April 2018)
- Senior Research Project: "The Intriguing Connection" (May 2015)
- TEDxBTNSchool: "Who Really Knows Best?" (Jan 2015)

Poster Presentations

- Sling Health Demo Day (April 2020)
- Sling Health Problem Day (Oct 2019)
- Delmar Divide (March 2019)
- Problem Identification and Market Analysis (December 2018)
- Eckerd College Science Symposium (April 2018)
- 2018 American Physical Society March Meeting (March 2018)
- APS CuWip (Jan 2018)
- REU Poster Symposium (July 2017)

LABORATORY AND TECHNICAL SKILLS

- *Laboratory Skills:* Chemistry: dilution, distillation, pipetting, titration; Electronics: circuit building and design
- *Equipment:* 3D Printer, Laser Cutter
- *CS Languages:* Java, MATLAB
- *Software:* AutoCAD, Onshape: Modern CAD, Qucs (circuit simulator), Repetier-Host, Slicer

AWARDS AND SCHOLARSHIPS

- Third Place in Sling Health IdeaBounce Pitch Competition, St. Louis, MO
- The Harold P. Brown Engineering Fellowship, Washington University, St. Louis, MO
- Ellis Award for Outstanding Achievement in Physics, Eckerd College, St. Petersburg, FL
- The Ronald Wilson Award for Significant Contribution to the College, Eckerd College, St. Petersburg, FL
- Natural Science Collegium Scholarship and Service Award, Eckerd College, St. Petersburg, FL
- Leadership in Residence Life, Eckerd College, St. Petersburg, FL
 - for excellence in peer counseling, residence life programming, and community education

PUBLIC RELATIONS PUBLICATIONS

- LaserFocusWorld, contribution to online article Nov 2021
- [Hyperspectral imaging captures spatial and spectral data of the human landscape](#)
- Admissions, Eckerd College, St. Petersburg, FL October 2017, 2018
- [Eckerd College Viewbook \(page 8\)](#)
- EC Feedback Magazine, Eckerd College, Eckerd College, St. Petersburg, FL May 2017
- *Make Space for EC Makerspace*
 - [EC MakerSpace](#)

EXTRACURRICULAR ACCOMPLISHMENTS

- SDI Open Water Scuba Diver
 - Certified as a Computer Nitrox Diver
 - Logged dives in the Florida Keys and Cuba
- Taekwondo Black Belt
 - 1st Dan grade registered in the Kukkiwon