Julia Costacurta

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EDUCATION

Stanford University Palo Alto, CA, enrolling Sept 2020

M.S. and Ph.D., Electrical Engineering

Funding Sources:
- NSF Graduate Research Fellowship
- Stanford Graduate Fellowship
- Enhancing Diversity in Graduate Education (EDGE) Fellowship

Johns Hopkins University Baltimore, MD, May 2020

B.S., Biomedical Engineering, Mathematics, Applied Mathematics and Statistics Cum. GPA: 3.95

Honors and Awards:
- Goldwater Scholarship: $7500 award for biomedical undergraduate research
- Gates Cambridge Scholarship Finalist
- Professor Joel Dean Excellence in Teaching Award for Undergraduates: Mathematics Department
- David T. Yue Memorial Teaching Award: Biomedical Engineering Department
- Richard J. Johns Award for Outstanding Academic Achievement: Biomedical Engineering Dept.

RESEARCH EXPERIENCE

JHU Neuromedical Control Systems Lab Baltimore, MD

Undergraduate Research, Advisor: Dr. Sridevi Sarma *September 2017 – May 2020*

- Awarded $3000 fellowship to study development of system of controllers to provide upper-limb prosthesis users with a more natural method of device operation and sensory feedback. Applied optimal control techniques to write code that tunes controllers using error minimization in MATLAB.

JHU Directed Reading Program (DRP) Baltimore, MD

Undergraduate Independent Study, Advisor: Dr. Richard Brown *Spring 2018, Spring 2020*

- Completed mathematics independent study project with guidance from a PhD student. Read an advanced text and gave a final presentation. Topics: Control Theory (2018), Applied Topology (2020)

Fields Institute for Research in the Mathematical Sciences Toronto, ON

Undergraduate Research, Advisors: Drs. Adam Stinchcombe & Mihai Nica *Summer 2019*

- Collaborated with two other undergraduates to design and implement Python code which approximates numerical solutions to partial differential equations, using tools from probability theory and machine learning.

JHU Center for Educational Resources (CER) Baltimore, MD

CER Tech Fellows Project, Advisor: Dr. Sridevi Sarma *September 2018 – May 2019*

- Won $4000 fellowship to create educational resources for JHU students. Developed online, interactive applet using R to demonstrate biological applications of control theory. Implemented applet in the course “Systems and Controls,” a 120-person undergraduate engineering course.

University of Washington Ability and Innovation Lab Seattle, WA

REU Undergraduate Research, Advisor: Dr. Katherine Steele *Summer 2018*

- Earned $5000 NSF Research Experience for Undergraduates (REU) summer grant to study ankle-foot orthoses. Created MATLAB data-processing pipeline to investigate effects of ankle-foot orthosis properties on gait characteristics during transient, or non-steady-state, walking in healthy adults.

TEACHING EXPERIENCE

Bridge to Enter Advanced Mathematics (BEAM)

Counselor and TA, BEAM Summer Away *July 2020*

- Serve as a counselor and TA for approximately 40 eighth-graders in a four-week online summer program, aimed at teaching love of math to students from underserved and underrepresented groups.

Johns Hopkins University Baltimore, MD

Teaching Assistant *Fall 2018 – May 2020*

- Prepared weekly lecture for 30-person section, graded homework and exams, held office hours, and led review sessions for undergraduate courses in depts of Mathematics and Biomedical Engineering.
  - Differential Equations (Fall 2018, Spring 2019, Spring 2020), 200-person ordinary differential equations course.
  - Systems and Controls (Spring 2019 & 2020), 120-person biomedical eng. control theory course.
  - Calculus III (Fall 2019), 350-person vector calculus course.

JHU Jail Tutorial Project Jessup, MD

Volunteer Tutor *September 2017 – May 2020*

- Instructed inmates at Jessup Women's Correctional Institution on mathematics topics for the GED.

SELECTED PUBLICATIONS, CONFERENCE PRESENTATIONS, AND SEMINARS

Costacurta, J., Osborn, L., Thakor, N. V., & Sarma, S.V. Designing Feedback Controllers for Human-Prosthetic Systems Using H-Infinity Model Matching. Conference Paper published in 2018 International Conference of the IEEE Engineering in Medicine and Biology Society.

Costacurta, J., Lee, J.M., Sczerba, R., & Sarma, S.V. An Interactive Applet for Teaching Biomedical Applications of Feedback Control Theory. Abstract accepted to 2019 Biomedical Engineering Society (BMES) Conference.

Rosenberg, M.C., Eyre, M., **Costacurta, J.**, Peters, K.M., & Steele, K.M. Kinematic and myoelectric response to ankle exoskeletons during non-steady state locomotion in healthy adults. Abstract accepted to 2019 Congress of the International Society of Biomechanics.

Martin, C., Zhang, H., **Costacurta, J.**, Nica, M., and Stinchcombe, A., "Solving Elliptic Equations with Brownian Motion: Bias reduction and Temporal Difference Learning," in preparation.

Seminar Participation:

2019 Institute for Advanced Study Program for Women and Mathematics Princeton, NJ

2018 Graduate Research Opportunities for Women Conference Ann Arbor, MI

TECHNICAL SKILLS AND INTERESTS

- Proficient in **MATLAB, Python,** and **LaTeX**. Experience in **R**.
- Interests: reading and writing fiction, gardening, period dramas, cooking.