

# CLAUDIA KANN

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## EDUCATION

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<b>California Institute of Technology</b>	Pasadena, CA
M.S. in Social Sciences	September 2020 - Present
<b>California Institute of Technology</b>	Pasadena, CA
M.S. in Mechanical Engineering, PhD Candidate, GPA: 4.0	September 2017 - September 2020
<ul style="list-style-type: none"><li>• National Science Foundation Graduate Research Fellowship (\$138,000)</li><li>• Henry L. Guenther Graduate Fellowship in Mechanical Engineering</li><li>• \$75,000 in additional research grants</li></ul>	
<b>Rice University</b>	Houston, TX
B.S. in Mechanical Engineering, GPA: 3.8	Graduated May 2017
<ul style="list-style-type: none"><li>• Honors: <i>Cum Laude</i>, Distinction in Research and Creative Work, President's Honor Roll (2015, 2016)</li></ul>	

## EXPERIENCE

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<b>Graduate Student Researcher</b>	California Institute of Technology
<i>Theoretical and experimental research in bipedal robotics</i>	Sept. 2017 - Sept. 2020
<ul style="list-style-type: none"><li>• Managed six undergraduate summer researchers to create a semi-soft ankle exoskeleton</li><li>• Conducted research into cutting edge robotic theory for robotic assistive devices</li><li>• Worked on software, simulation, and experimentation for a lower body exoskeleton used to enable patients with paraplegia to walk without crutches</li></ul>	
<b>Undergraduate Student Researcher</b>	Rice University
<i>Design of mechatronic systems to rehabilitate or augment human motor control</i>	Sept. 2015 - May 2017
<ul style="list-style-type: none"><li>• Investigated collaboration with Pediatric Orthopedic Surgeon to create a way to assess the effectiveness of surgery meant to negate the effects of Cerebral Palsy in young children</li><li>• Created software and hardware to use the OptiTrack Motion Capture System to analyze wrist movement in space<ul style="list-style-type: none"><li>– Utilized optimization methods presented by E.V. Biryukova in 2000 to artificially create wrist axes</li><li>– Created a simple calibration and assessment game using MATLAB and QUARC</li><li>– Built experimental hardware and investigated best arrangement of cameras and wearable markers</li><li>– Processed data using a SavitzkyGolay filter</li><li>– Prepared a pilot study and publication for Fall 2016</li></ul></li><li>• Diagnosed and repaired legacy experimental robotic hardware</li></ul>	
<b>Teaching Assistant</b>	Rice University
<i>Thermal System Design Course</i>	Aug. 2016 - Dec. 2016
<ul style="list-style-type: none"><li>• Graded and assessed student performance</li><li>• Held office hours to help students further understand the class material</li></ul>	
<b>Structural Engineering Intern</b>	Pratt and Whitney
<i>Structural analysis for jet engine turbomachinery</i>	June 2016 - Aug. 2016
<ul style="list-style-type: none"><li>• Assessed current mid turbine frame geometry for new application<ul style="list-style-type: none"><li>– Used finite element analysis to convert thermal and barometric information for a full mission onto a structural model</li><li>– Investigated key time points and geographical locations on model and pulled detailed information such as stresses, temperatures, strains, and displacements</li><li>– Analyzed the low cycle fatigue and thermal mechanical fatigue life cycles of the part</li></ul></li><li>• Modeled high pressure turbine blades to simulate frequency testing</li></ul>	

- Analyzed Low Pressure Turbine Case to assess displacement due to thermal and pressure gradients as well as external loading

### **Robotics Intern**

*Robotic assistive devices for space station and space suit applications*

NASA Johnson Space Center

June 2015 - Aug. 2015

- Conducted research on Human Joint Position Sensing Technology
  - Performance trade study
  - Implemented Cartesian sensing into high level controls software
  - Performed integrated testing with robotic system
- Designed, tested, and implemented housings
- Developed a “Design of Experiments” for addressing wearable robotic control sensitivities using the Taguchi Method
  - Carried out testing and provided report and recommendations to team
  - Assisted in human in the loop testing of wearable robotic systems

### **Engineering Intern**

*Electromechanical design and fabrication for aerospace and academic clients*

LumaDyne, LLC

June 2014 - Dec. 2014

- Key contributor to a machine used by Baylor School of Medicine to research brain trauma in rats
  - Independently researched, designed, and engineered a pneumatic control system
  - Designed and fabricated release mechanism
  - Tested to ensure desired results and safety
- Independently updated and recreated a spectrometer cooler
  - Populated PCB's and integrated them into designs
  - Edited drawings to accurately represent the updated project
- Created and tested a Solar Steam Generator to be used in underdeveloped nations
  - Researched, designed, and engineered pulley system to enable horizontal and vertical rotational movement

### **Marketing Intern**

*Global manufacturer of lifting and material processing products*

Terex Corporation

May 2013

- Corporate Marketing Review – review of customer facing material to ensure consistency
- Marketing Budget Analysis – created a comprehensive report on spending
- Trade Show Review – presented summary of findings regarding how the company approaches trade shows and the effectiveness of the most recent one

## **AWARDS AND HONORS**

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<b>National Science Foundation Graduate Research Fellowship (NSF GRFP)</b>	2017 - 2020
<b>Henry L. Guenther Graduate Fellowship in Mechanical Engineering</b>	2017
<b>Distinction in Research and Creative Work</b> , George R. Brown School of Engineering	2017
<b>President's Honor Roll</b> , Rice University	2015, 2016

## **STANDARDIZED TESTING**

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- GRE: Verbal 162, Quantitative 165, Analytical Writing 4.5
- SAT: Critical Reading 760, Math 800
- SAT Subject Tests: Physics 750, Chemistry 750, Biology 800, Math II 800

## **TECHNICAL SKILLS**

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- Mastered Google Office Suite, LaTeX, Mathematica, MATLAB, Microsoft Office Suite, Simulink, SolidWorks
- Proficient ANSYS, C++, LaTeX, ProE, Python, R

## PUBLICATIONS

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- Reher, Jenna, Claudia Kann, and Aaron D. Ames. "An Inverse Dynamics Approach to Control Lyapunov Functions." arXiv preprint arXiv:1910.10824 (2019).
- Tucker, Maegan, Ellen Novoseller, Claudia Kann, Yanan Sui, Yisong Yue, Joel Burdick, and Aaron D. Ames. "Preference-Based Learning for Exoskeleton Gait Optimization." arXiv preprint arXiv:1909.12316 (2019).
- C.G. Rose, E. Pezent, C.K.Kann, A.D. Deshpande, M.K. O'Malley., "Assessing Wrist Movement with Robotic Devices," in IEEE Transactions on Neural Systems Rehabilitation Engineering (TNSRE), 2017
- C. G. Rose, C. K. Kann, A. D. Deshpande, M. K. O'Malley., "Estimating Anatomical Wrist Joint Motion with a Robotic Exoskeleton," in IEEE Intl. Conf. on Rehab. Robotics (ICORR), 2017

## INTERESTS

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Rock climbing, weight training, reading non fiction, cooking, international travel

## ACTIVITIES

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Bartender at Willy's Pub	2016 - 2017
Brown College Academic Fellow	2015 - 2016
Rice University Cheerleader	2013 - 2015
Tutor at Caroline house, Education Center for Immigrant Women and Children	2008 - 2013