

JUSTIN A. BRANTLEY



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RESEARCH INTERESTS

Brain/Human-Machine Interfaces Prosthetics & Orthotics Rehabilitation Biomechanics
Robotics & Mechatronics Engineering in Clinical Medicine Machine Learning Motor Control

EDUCATION

Ph.D Electrical & Computer Engineering Dec 2019

University of Houston

📍 Houston, TX

- Advisor: Jose Luis Contreras-Vidal, Ph.D
- Thesis: A Noninvasive Neural Interface for Control of a Powered Lower Limb Prosthesis
- NIH Doctoral Fellow—NIH Blueprint Diversity Specialized Predoctoral to Postdoctoral Advancement in Neuroscience (D-SPAN) Award (NIH 1F99NS105210-01) [↗](#)

M.S., Biomedical Engineering Dec 2014

University of New Mexico

📍 Albuquerque, NM

- Advisor: Mahmoud Reda Taha, Ph.D, PEng
- Thesis: A Biomechanical Analysis of One-Third Tubular Plates for the Treatment of Benign Lesions in the Distal Femur. [↗](#)
- *Graduated with Distinction*

B.S., Mechanical Engineering Dec 2011

New Mexico State University

📍 Las Cruces, NM

- Minor: Mathematics
- NIH Building Research Achievement in Neuroscience (BRAiN) Scholar [↗](#)
Advisor: Elba Serrano, Ph.D

RESEARCH EXPERIENCE

Kording Lab [↗](#) Feb 2020–Present

Department of Bioengineering, University of Pennsylvania

Supervisor: Konrad Kording, Ph.D.

Laboratory for Non-Invasive Brain Machine Interfaces [↗](#) Aug 2014–Jan 2020

Electrical & Computer Engineering, University of Houston

Advisor: Jose L. Contreras-Vidal, Ph.D.

UNM Orthopaedic Biomechanics & Biomaterials Laboratory [↗](#) Aug 2012–Aug 2014

Dept. of Orthopaedics & Rehabilitation, University of New Mexico

Advisors: Mahmoud Reda Taha, Ph.D, PEng; Deana Mercer, MD;

Christina Salas, Ph.D; Robert Schenck, MD

Building Research Achievement in Neuroscience (BRAiN) 

Aug 2011–May 2012

Dept. of Biology, New Mexico State University

Advisor: Elba Serrano, Ph.D

Building Research Achievement in Neuroscience (BRAiN) 

Jun 2011 - Aug 2011

Department of Bioengineering, Center for NeuroScience

University of Colorado Anschutz Medical Campus

Supervisors: Emily Gibson, Ph.D. and Diego Restrepo, Ph.D.

NASA Lunabotics Mining Competition 

Jan 2011 - Aug 2012



Dept. of Mechanical Engineering, University of New Mexico

Supervisor: Gabe Garcia, Ph.D

FELLOWSHIPS & AWARDS

NIH Blueprint D-SPAN Award (F99/K00)

Aug 2020

K00 Phase: NIH Award 4K00NS105210-03  , **DPSAN Biography** 

UH Graduate Research Showcase 1st Place Poster 

Nov 2019

UH Graduate Research Showcase 3-Minute Thesis (3MT) Finalist 

Jan 2019

SFN Trainee Professional Development Award



Nov 2018

UH Cullen Fellowship Travel Grant 

May 2016, Oct 2017, Nov 2018

NIH Blueprint D-SPAN Award (F99/K00)

Sep 2017

F99 Phase: NIH Award 1F99NS105210-01  , **DPSAN Biography** 

1st Place Urvish Medh & Betty Barr Award, ECE GRC 2017

May 2017

UH College of Engineering Future Faculty Program

Aug 2016

MS Defense Passed with Distinction

Aug 2014

UNM Graduate & Professional Student Association Travel Award

Feb 2014

UNM Department of Orthopaedics Research Assistantship

Aug 2012

BP ENDURE BRAiN Cohort Participant 

Jan 2011

NIH R25GM097633

NMSU Engineering College Scholarship

Aug 2011

NMSU Regents Scholarship

Aug 2007

PUBLICATIONS

A list of my publications can be found at:



** *Indicates joint first authorship*

Book Chapters

1. ****Brantley, JA, **Paek, A, Steele, A, and Contreras-Vidal, JL.** Springer Handbook of Neuroengineering. In: ed. by Thakor, NV. Springer Nature, chap. BMI for Upper and Lower Limb Prostheses. *In press.*

Journal Articles

1. ****Paek, AY, **Brantley, JA**, Evans, BJ, and Contreras-Vidal, JL. Concerns in the Blurred Divisions Between Medical and Consumer Neurotechnology. *IEEE Systems Journal* 2021;15:3069–3080.
2. Paek, AY, **Brantley, JA**, Sujatha Ravindran, A, et al. A Roadmap Towards Standards for Neurally Controlled End Effectors. *IEEE Open Journal of Engineering in Medicine and Biology* 2021;2:84–90.
3. **Brantley, JA**, Luu, TP, Nakagome, S, Zhu, F, and Contreras-Vidal, JL. Full body mobile brain-body imaging data during unconstrained locomotion on stairs, ramps, and level ground. *Scientific data* 2018;5. PubMed PMID: 29989591; PubMed Central PMCID: PMC6038848.
4. Salas, C, **Brantley, JA**, Clark, J, Taha, MR, Myers, OB, and Mercer, D. Damage in a Distal Radius Fracture Model Treated With Locked Volar Plating After Simulated Postoperative Loading. *The Journal of Hand Surgery* 2018;43. PubMed PMID: 29426604; PubMed Central PMCID: PMC6035079.
5. ****Cruz-Garza, JG, **Brantley, JA, **Nakagome, S**, et al. Deployment of Mobile EEG Technology in an Art Museum Setting: Evaluation of Signal Quality and Usability. *Frontiers in Human Neuroscience* 2017;11. PubMed PMID: 29176943; PubMed Central PMCID: PMC5686057:527.
6. ****Luu, TP, **Brantley, JA**, Nakagome, S, Zhu, F, and Contreras-Vidal, JL. Electrocortical correlates of human level-ground, slope, and stair walking. *PLOS ONE* 2017;12:1–15. PubMed PMID: 29190704; PubMed Central PMCID: PMC5708801.
7. **Brantley, J**, Majumdar, A, Jobe, JT, Kallur, A, and Salas, C. A Biomechanical Comparison Of Pin Configurations Used For Percutaneous Pinning Of Distal Tibia Fractures In Children. *The Iowa Orthopaedic Journal* 2016;36. PubMed PMID: 27528850; PubMed Central PMCID: PMC4910788:133.
8. Contreras-Vidal, JL, Bhagat, NA, **Brantley, J**, et al. Powered exoskeletons for bipedal locomotion after spinal cord injury. *Journal of Neural Engineering* 2016;13:031001. PubMed PMID: 27064508.
9. Evans, S, **Brantley, J**, Brady, C, Salas, C, and Mercer, D. Structures at risk during volar percutaneous fixation of scaphoid fractures: a cadaver study. *The Iowa Orthopaedic Journal* 2015;35:119. PubMed PMID: 26361453; PubMed Central PMCID: PMC4492137.
10. Kontson, K, Megjhani, M, **Brantley, JA**, et al. Your Brain on Art: Emergent cortical dynamics during aesthetic experiences. *Frontiers in Human Neuroscience* 2015;9:626. PubMed PMID: 26635579; PubMed Central PMCID: PMC4649259.

Conference Proceedings

1. **Brantley, JA**, Luu, TP, Nakagome, S, and Contreras-Vidal, JL. Prediction of lower-limb joint kinematics from surface EMG during overground locomotion. In: *2017 IEEE International Conference on Systems, Man, and Cybernetics (SMC)*. IEEE. 2017.
2. **Brantley, JA**, Luu, TP, Nakagome, S, and Contreras-Vidal, JL. Towards the development of a hybrid neural-machine interface for volitional control of a powered lower limb prosthesis. In: *2017 International Symposium on Wearable Robotics and Rehabilitation (WeRob)*. IEEE. 2017:1–1.
3. Luu, TP, **Brantley, JA**, Zhu, F, and Contreras-Vidal, JL. Cortical features of locomotion-mode transitions via non-invasive EEG. in: *2017 IEEE International Conference on Systems, Man, and Cybernetics (SMC)*. IEEE. 2017:2437–2441.

- Luu, TP, **Brantley, JA**, Zhu, F, and Contreras-Vidal, JL. Electrocortical amplitude modulations of human level-ground, slope, and stair walking. In: *2017 39th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*. PubMed PMID: 29190704; PubMed Central PMCID: PMC5708801. IEEE. 2017:1913–1916.
- Nakagome, S, Luu, TP, **Brantley, JA**, and Contreras-Vidal, JL. Prediction of EMG envelopes of multiple terrains over-ground walking from EEG signals using an unscented Kalman filter. In: *2017 IEEE International Conference on Systems, Man, and Cybernetics (SMC)*. IEEE. 2017:3175–3178.
- Brantley, JA**, Luu, TP, Ozdemir, R, et al. Noninvasive EEG correlates of overground and stair walking. In: *2016 38th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*. PubMed PMID: 28325029. IEEE. 2016.
- Winslow, AT, **Brantley, J**, Zhu, F, Vidal, JLC, and Huang, H. Corticomuscular coherence variation throughout the gait cycle during overground walking and ramp ascent: a preliminary investigation. In: *2016 38th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*. PubMed PMID: 28269308. IEEE. 2016:4634–4637.

Publicly Contributed Data

- Brantley, J**, Luu, TP, Zhu, F, Nakagome, S, and Contreras-Vidal, JL. Full body mobile brain-body imaging data (EEG, EMG, and kinematics) during unconstrained locomotion on stairs, ramps, and level ground. 2018. DOI: [10.6084/m9.figshare.5616109.v5](https://doi.org/10.6084/m9.figshare.5616109.v5). URL: https://figshare.com/articles/EEG_Data/5616109/5.
- Cruz-Garza, JG, **Brantley, JA**, **Nakagome, S**, Kontson, K, Robleto, D, and Contreras-Vidal, JL. Mobile EEG Recordings in an Art Museum Setting. 2017. DOI: [10.21227/H2TM00](https://doi.org/10.21227/H2TM00). URL: <http://dx.doi.org/10.21227/H2TM00>.

Thesis

- Brantley, J**. A Biomechanical Analysis of One-Third Tubular Plates for the Treatment of Benign Lesions in the Distal Femur. University of New Mexico. 2015.

INVITED PRESENTATIONS

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| 1. Recent Advances in NeuroRobotics for Rehabilitation | Mar 2019 |
| 📍 9th International IEEE EMBS Conference on Neural Engineering, San Francisco CA | |
| 2. Enhancing Neuroscience Diversity through Undergraduate Research Education Experiences (ENDURE) 8th Annual Meeting | Nov 2018 |
| 📍 Society for Neuroscience (SfN 2018), San Diego CA | |

PROFESSIONAL AFFILIATIONS

Institute of Electrical and Electronics Engineers (IEEE)	2016-Present
Society for Neuroscience	2014-Present

PROFESSIONAL SERVICE

Ad hoc reviewer: Neuroscience, IEEE Society for Systems, Man, and Cybernetics, BCI Society

MENTORSHIP

NSF Research Experiences for Undergraduates (REU) Student Dana Seibert - BS, Mechanical Engineering expected 2020	May 2018 - Present
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LANGUAGES

Proficiency in conversational Spanish

MEDIA COVERAGE










News Articles


1. Researchers Map Brain Activity to Improve Prosthetic Design [↗](#) Nov 2017
2. Researchers Observe Effects of Art on the Brain - Wall Street Journal [↗](#) Dec 2015
3. At the intersection of neuroscience and art [↗](#) Nov 2015

Videos

1. Your Brain On Art - Exquisite Corpse [↗](#) Oct 2015
2. Minecraft Brainwave Reading Event [↗](#) Aug 2015
3. Dario Robleto: The Boundary of Life is Quietly Crossed [↗](#) Nov 2014

OUTREACH & SERVICE

- 2019 REU Camp: Neuro  Summer 2019
Demonstration of neurotechnology for 2019 UH REU students
 University of Houston, Houston, TX
- Your Brain on Art: The Exquisite Corpse Summer 2018
STEAM outreach—demonstrating neuroimaging during art creation
 Childrens Museum of Houston, Houston, TX
- Your Brain on Music: : The Exquisite Corpse Summer 2018
Demonstrated neuroimaging technology and recorded EEG during live music presentation
 Houston Health Museum, Houston, TX
- UTHealth Stomp Out Stroke Festival Summer 2017
Demonstration of brain imaging devices and rehabilitation robotics
 Discovery Green, Houston, TX
- Seminar for Baylor Orthotics & Prosthetics Students Spring 2017
Demonstration of brain imaging devices, rehabilitation robotics, and neuro-prosthetics
 Non-Invasive Brain-Machine Interfaces Lab, University of Houston, Houston, TX
- UTHealth Stomp Out Stroke Festival Summer 2016
Demonstration of brain imaging devices and rehabilitation robotics
 Bray's Bayou, Houston, TX
- Your Brain on Art: The Exquisite Corpse Fall 2016
STEAM outreach—demonstrating neuroimaging during art creation
 Childrens Museum of Houston, Houston, TX
- National Engineers Week Spring 2016
Demonstration of brain imaging devices and rehabilitation robotics
 The Childrens Museum of Houston, Houston, TX

- **Minecraft Mayhem**  Summer 2015
 Recorded brain activity of over 200 children while playing Minecraft
 📍 The Childrens Museum of Houston, Houston, TX
- **UTHealth Stomp Out Stroke Festival** Summer 2015
 Demonstration of brain imaging devices and rehabilitation robotics
 📍 Discovery Green, Houston, TX
- **The Menil Collection STEAM Outreach** Fall 2014
 Discussed interface of art and science. Recorded brain activity of 430 participants during weekly four hour session every Saturday for fourteen weeks
 📍 The Menil Collection, Houston TX
- **Middle School Structures Seminar** Spring 2014
 Day long workshop on structures. Provided lessons and demos on the human body as a mechanical structure.
 📍 Bosque School, Albuquerque, NM
- **The Perry Initiative Volunteer** Fall 2013
 Assisted in planning and organization. Led station on engineering in medicine
 📍 UNM Health Sciences Center, Albuquerque, NM
- **FIRST Robotics Mentor (Las Cruces, NM Team)** Spring 2012
 Provided semester-long mentorship to highschool robotics team
 📍 Las Cruces, NM
- **FIRST Robotics Mentor (Deming, NM Team)** Spring 2012
 Provided semester-long mentorship to highschool robotics team
 📍 Deming, NM
- **FIRST Robotics Competition Volunteer** Spring 2012
 Assisted in competition setup and daily maintenance
 📍 NMSU, Las Cruces, NM