

Aaron Estes

Contact Information

Department of Mechanical and Aerospace Engineering
University at Buffalo
217 Bell Hall
Buffalo, New York 14260
Phone: 716-645-1430
E-mail: aaronest@buffalo.edu

Research Area: Dynamics and Control, System Identification, Game-Based Learning in Engineering Higher Education

Education: Ph.D., 2016, Mechanical Engineering, University at Buffalo.
Dissertation: Dynamics and Control of Constrained Flexible Structures

B.S.E., 2011, Mechanical Engineering, Arizona State University, Tempe, Arizona, United States. Summa Cum Laude. Barrett Honors College. Honors Thesis: “Modeling Scorpion Tail Dynamics”

Employment History: **Teaching Assistant Professor** (Since Spring 2017), Department of Mechanical and Aerospace Engineering, University at Buffalo

Adjunct Instructor, Road Vehicle Dynamics MAE 454/554 (Fall 2016), University at Buffalo

MAE Ph.D. Teaching Fellow (Summer 2016), University at Buffalo

Research Assistant (Spring 2016), University at Buffalo

Teaching Assistant (2011-2015), Department of Mechanical and Aerospace Engineering, University at Buffalo

Undergraduate Research Assistant (2009-2011), Fulton Undergraduate Research Initiative, Arizona State University

Honors and Awards: **Professor of the Year**, awarded by Tau Beta Pi Engineering Honor Society, University at Buffalo (2018)

Excellent Reviewer Recognition, *AIAA Journal of Guidance, Control, and Dynamics*, Oct. 1, 2017 – Sept. 30, 2018; Oct. 1, 2015 – Sept. 30, 2016.

Teaching Assistant of the Year, awarded by Tau Beta Pi Engineering Honor Society, University at Buffalo (2013)

National Merit Finalist Scholarship, Arizona State University (2007-2011)

Teaching Experience

Instructor:

Teaching Assistant Professor, University at Buffalo

- Digital Control Systems (MAE 405/544): Spring 2019
- System Identification (MAE 460/566): Spring 2018
- Flight Dynamics (MAE 436): Fall 2017
- Road Vehicle Dynamics (MAE 454/554): Fall 2018, Fall 2017
- Dynamic Systems (MAE 340): Fall 2018, Fall 2017
- Manufacturing Processes (MAE 364): Spring 2017
- MAE Laboratory I (MAE 334): Spring 2019, Spring 2018, Spring 2017

Adjunct Instructor, University at Buffalo

- Road Vehicle Dynamics (MAE 454/554): Fall 2016

MAE Ph.D. Teaching Fellow, University at Buffalo:

- Dynamic Systems (MAE 340): Summer 2016

Teaching Assistant:

Teaching Assistant, University at Buffalo:

- Dynamic Systems (MAE 340): Fall 2011, Fall 2012, Fall 2013, Fall 2014
- Dynamics (EAS 208): Spring 2011, Spring 2012, Spring 2013
- Mechanical Engineering Laboratory I (MAE 334): Spring 2014
- Continuous Control Systems (MAE 443/543): Fall 2015

Journal Articles

1. Mou, F., Khakpour, H., **Estes, A.**, Hall, J., “Weighted Least Squares Approach for an Adaptive Aerodynamic Engineered Structure with Twist Transformation” accepted Jan. 2019, *ASME Journal of Energy Resources Technology*.
2. **Estes, A.**, Majji, M., “Generalization of Lagrange’s Equations for Constrained Hybrid Coordinate Systems,” *AIAA Journal of Guidance, Control and Dynamics*, Advance online publication, 2016, doi: 10.2514/1.G000450.

Conference Publications

1. Hulme, K., **Estes, A.**, Schmid, M., Torres, E., Hendrick, C., Sivashangaran, S., “Game-based Proving-grounds Simulation to Assess Driving & Learning Preferences” *Interservice/Industry Training, Simulation, and Education Conference*, Nov, 2018.
2. Mou, F., Khakpour, H., **Estes, A.**, Hall, J., “Weighted-Least Squares Optimization Method for Control and Shape Design of an Adaptive Blade Twist Distribution to Increase Wind Capture,” *ASME Dynamic Systems and Control Conference*, Atlanta, GA, Sep 30-Oct 3, 2018.
3. Mou, F., Khakpour, H., **Estes, A.**, Hall, J., “A Weighted-Least Squares Approach for the Design of Adaptive Aerodynamic Structures Subjected to an Out-Of-Plane Transformation,” *ASME International Design Engineering Technical Conferences & Computer and Information in Engineering Conference*, Quebec City, Canada, Aug 2018.
4. **Estes, A.**, Singh, T., Majji, M., “A Post-maneuver Penalty Approach to Robust Input-Shaper Design,” *AIAA/AAS Astrodynamics Specialist Conference*, San Diego, CA, July 2015, AAS 15-811.
5. **Estes, A.**, Majji, M., Juang, J., “Time-Varying Methods for Identification of Constrained Flexible Structures,” *AIAA/AAS Astrodynamics Specialist Conference*, San Diego, CA, Aug. 2014, AIAA 2014-4305.

Research Proposals

Undergraduate Supervision:

- Jason Chen, Michael Capovani, Andrew Winkelman, “Bipedal Gait Characterization Via Piezoelectric Ground Reaction Force Measurements,” *Center for Undergraduate Research & Creative Activities (CURCA)*, (Spring 2018, Summer 2018). CURCA funding: \$576.03 **Awarded**, Apr. 24, 2018.
- Vincenzo Carr, Jonatan Meza, and John Soto, “Feedback Control of Treadmill for Virtual Reality Applications,” *Center for Undergraduate Research & Creative Activities (CURCA)*, (Spring 2017, Summer 2017, Fall 2017, Spring 2018). CURCA funding: \$579.68 **Awarded**, Oct. 23, 2017.

Funded:

- “Generating Models for Systems Based on Their Response to Unmeasured Inputs,” NSF East Asia and Pacific Summer Institutes for U.S. Graduate Students (EAPSI), PI: Aaron Estes, \$5,070, **Awarded**, June 24, 2015

M.S. Student Supervision

In Progress:

- Schifferle, Mark. Expected, Spring 2020.
- Iyer, Gaurav Ranganathan. Expected, Spring 2019.

Graduate Student Committee Membership

- Mou, Fuzhao, M.S. “Weighted Least Squares Approach for an Adaptive Aerodynamic Engineered Structure with Twist Transformation” *University at Buffalo*, Spring 2018.

Undergraduate Research Supervision

- Tambe, A.; Akpan, D.; Deshmukh, S., “Development of Educational Videogames to Teach Dynamics” *MAE 498 Undergraduate Research* (Fall 2018)
- Marquez, K.; Alloush, Z.; Zaman, M.; Escobar, J., “Photoreceptor-Based Positioning System for an Adaptive Treadmill,” *MAE 498 Undergraduate Research* (Fall 2018)
- Wilday, D. and Keefner, J., “Automatic Tire-Balancer,” *MAE 498 Undergraduate Research* (Fall 2018)
- Jason Chen, Michael Capovani, Andrew Winkelman, “Bipedal Gait Characterization Via Piezoelectric Ground Reaction Force Measurements,” *Center for Undergraduate Research & Creative Activities (CURCA)*, (Fall 2018, Spring 2018, Summer 2018). CURCA funding: \$576.03 **Awarded**, Apr. 24, 2018.
- Marquez, K., “Development of Sensory System for an Adaptive Treadmill,” *UB LSAMP Summer Program*, June-August, 2018.
- Carr, V., Meza, J., Soto, J., Alam, A., Alexander, A., “Smart Treadmill for Virtual Walking Simulations,” presented at *SUNY Undergraduate Research Conference*, SUNY Oneonta, Apr. 20, 2018.
- Evan Neal, Johnathan Boorady, “Smart Snow Blower” *MAE 498 Undergraduate Research* (Spring 2018)
- Edward Carroll, “Filament Extruding Machine” *MAE 498 Undergraduate Research* (Spring 2018)
- Vincenzo Carr, Jonatan Meza, and John Soto, “Feedback Control of Treadmill for Virtual Reality Applications,” *Center for Undergraduate Research & Creative Activities (CURCA)*, (Spring 2017, Summer 2017, Fall 2017, Spring 2018). CURCA funding: \$579.68 **Awarded**, Oct. 23, 2017.
- William McMaster, “Implementation of Feedforward Vibration-Cancelling Controller on Pendulum,” *Center for Undergraduate Research & Creative Activities (CURCA)*, (Summer 2017, Fall 2017, Spring 2018, Summer 2018)
- Patatri Chakraborty, “Bipedal Gait Characterization Via Piezoelectric Ground Reaction Force Measurements,” (Spring 2017, Summer 2017)

Guest Lectures/ Invited Talks

- Academic Panel, *STEM Diversity Conference*, University at Buffalo, April 7, 2018.
- “A Professor’s Perspective,” Society of Hispanic Professional Engineers, University at Buffalo, March 7, 2017.
- “Data Analytics with Python,” *CIS 512 Introduction to Data Science*, Buffalo State College, SUNY, Nov 1, 2016.

Service

- Women in Science and Engineering (WiSE) Faculty Committee (since Fall 2018)
- MAE Scholarship Review Committee (Fall 2018)
- MAE Student Excellence and Diversity Committee (Fall 2018, Spring 2018, Fall 2017)
- MAE Faculty Mentor, (Fall 2017, Fall 2018, Spring 2018)
- Sustainable Manufacturing and Advanced Robotic Technologies (SMART) Infrastructure Committee (Spring 2017)
- Reviewer: *Journal of Guidance, Control, and Dynamics*; *Journal of Astronautical Sciences*; 2016 American Control Conference