BRIAN E. JACKSON

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EDUCATION

Ph.D. Carnegie Mellon University 2020 - 2023
Robotics *Pittsburgh, PA*

- Advisor: Zachary Manchester

M.S. Stanford University 2017 - 2019
Mechanical Engineering *Palo Alto, CA*

- GPA: 3.98 / 4.00
- NSF Graduate Fellowship
- Stanford Engineering Fellowship

B.S. Brigham Young University 2013 - 2017
Mechanical Engineering *Provo, UT*

- GPA: 3.98 / 4.00
- Capstone Project: BYU Mars Rover
- Manga Cum Laude
- Graduated with University Honors
- Honors Thesis: "Resolving Pseudosymmetry in γ-TiAl using Cross-Correlation Electron Backscatter Diffraction with Dynamically Simulated Reference Patterns"

PROFESSIONAL POSITIONS

Engineering Intern June 2017-Sep 2017
Raytheon Missile Systems *Tucson, AZ*

- Developed full 6 degree of freedom simulations for analysis and development of guided bullets
- Used NASA's OTIS trajection optimization tool to generate first order fin load approximations

Research Assistant Sep 2014-May 2017
Brigham Young University *Provo, UT*

- Advisor: Dr. David Fullwood
- BYU Microstructure of Materials Laboratory
- Developed software in MATLAB for cross-correlation analysis of electron backscatter diffraction (EBSD) patterns

Teaching Assistant Sep 2016-Apr 2017
Brigham Young University *Provo, UT*

- Great Questions Essay class: capstone experience of the BYU Honors Program
- Coached students from all majors and disciplines in writing 15-25 page multidisciplinary essays

Engineering Co-op May 2015-Aug 2015
Dana Cedar Park Technology Center *Cedar Park, TX*

- Analyzed test data and standardized data analysis formats using Matlab and Excel
- Implemented a workflow management system to improve inter-departmental communication, data storage, data analysis, and process control

Engineering Inter / Metrology Apprentice Dec 2019-Mar 2011, Apr 2013-Dec 2014
Fallbrook Technologies *Cedar Park, TX*

- Created project forecasting tool to improve project communication and resource efficiency
- Developed tools that reduced metrology reporting time by 50%
- Received training and certification on a Carl Zeiss CMM and GD&T ASME Y14.5-2009
- Managed the implementation of 5S, increasing professionalism, efficiency, and reducing waste

Support Intern Jun 2019-Aug 2010
RailPros. Inc. *Irvine, CA*

- Complied documentation and manuals to standardize expectations for company technicians
- Researched buying options for various products to save the company money

Engineering Intern LifeModeler Inc
Summers 2008-2009 *San Clemente, CA*

- Researched the effects of various baseball pitches on ligaments in adolescent pitchers using biomechanical computer simulation
- Beta-tested new engineering software and wrote training documentation

AWARDS AND HONORS

NSF Graduate Research Fellowship (2018)
Stanford Graduate Fellowship (2017)
Tau Beta Pi Engineering Honors Society Academic Scholarship (2015)
Tau Beta Pi Engineering Honors Society Member
Brigham Young University Academic Scholarship (2013-2017)

SERVICE

American Red Cross Jun 2016-Apr 2017
Curriculum Intern *Provo, UT*

- Member of the leadership for Latino Outreach
- Managed the curriculum for classes in disaster preparedness, first aid, and CPR and Spanish
- Taught weekly classes to groups of volunteers in Spanish

Utah Underwater Robotics Aug 2015-Apr 2016
Volunteer *Salem, UT*

- Coached middle-school children in applying engineering design process to build an underwater ROV

The Church of Jesus Christ of Latter-day Saints Mar 2011-Apr 2013
Volunteer Representative *Puebla, Mexico*

- Mission Executive Secretary: Coordinated visas, bilingual communication, and travel
- Branch President: Provided leadership and training to a church congregation of 80 members

PUBLICATIONS

Journal Articles

[4] B. E. Jackson, T. A. Howell, K. Shah, M. Schwager, and Z. Manchester, "Scalable Cooperative Transport of Cable-Suspended Loads with UAVs using Distributed Trajectory Optimization," en, *IEEE Robotics and Automation Letters*, vol. 5, no. 2, pp. 3368–3374, 2020.

[9] B. E. Dunlap, T. J. Ruggles, D. T. Fullwood, B. Jackson, and M. A. Crimp, "Comparison of dislocation characterization by electron channeling contrast imaging and cross-correlation electron backscattered diffraction," en, *Ultramicroscopy*, vol. 184, pp. 125–133, Jan. 2018.
[10] B. Jackson, D. Fullwood, J. Christensen, and S. Wright, "Resolving pseudosymmetry in γ-TiAl using cross-correlation electron backscatter diffraction with dynamically simulated reference patterns," en, *Journal of Applied Crystallography*, vol. 51, no. 3, pp. 655–669, Jun. 2018.
[11] L. T. Hansen, B. E. Jackson, D. T. Fullwood, S. I. Wright, M. De Graef, E. R. Homer, and R. H. Wagoner, "Influence of Noise-Generating Factors on Cross-Correlation Electron Backscatter Diffraction (EBSD) Measurement of Geometrically Necessary Dislocations (GNDs)," en, *Microscopy and Microanalysis*, vol. 23, no. 3, pp. 460–471, Jun. 2017.
[12] B. E. Jackson, J. J. Christensen, S. Singh, M. D. Graef, D. T. Fullwood, E. R. Homer, and R. H. Wagoner, "Performance of Dynamically Simulated Reference Patterns for Cross-Correlation Electron Backscatter Diffraction," en, *Microscopy and Microanalysis*, vol. 22, no. 4, pp. 789–802, Aug. 2016.

Conference Proceedings

[1] B. E. Jackson, T. Punnoose, D. Neamati, K. Tracy, R. Jitosho, and Z. Manchester, "ALTRO-C: A fast solver for conic model-predictive control," en, in *International Conference on Robotics and Automation ICRA*, In Review, Virtual, May 2021.
[2] B. E. Jackson, K. Tracy, and Z. Manchester, "Planning with Attitude," en, in *International Conference on Robotics and Automation ICRA*, In Review, Virtual, May 2021.
[5] B. E. Jackson, T. A. Howell, K. Shah, M. Schwager, and Z. Manchester, "Scalable Cooperative Transport of Cable-Suspended Loads with UAVs using Distributed Trajectory Optimization," en, in *International Conference on Robotics and Automation (ICRA)*, Paris, France, 2020.
[6] T. A. Howell, B. E. Jackson, and Z. Manchester, "ALTRO: A Fast Solver for Constrained Trajectory Optimization," en, in *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Macau, China, Nov. 2019.

Talks and Presentations

[3] B. E. Jackson, *Adventures in Avoiding Allocations*, JuliaCon 2020, Virtual, Jul. 2020.
[7] ——, *Fast Trajectory Optimization: A Step towards Online Motion Planning for Underactuated Robots*, The Industrial Affiliates of Stanford University in Aeronautics and Astronautics, Stanford University, Apr. 2019.
[8] B. E. Jackson, *TrajectoryOptimization.jl: A Testbed for Optimization-Based Robotic Motion Planning*, JuliaCon 2019, Baltimore, MD, Jul. 2019.