

Christopher S. Mabey

PHD CANDIDATE · MECHANICAL ENGINEERING

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Research Interests

Engineering for Global Development, Mechanical Design, Product Development, Predictive Modeling, Human-Centered Design, Systems Engineering

Education

PhD Mechanical Engineering

BRIGHAM YOUNG UNIVERSITY

- Advisor: Dr. Christopher Mattson

Provo, Utah

Expected 2023

BS Mechanical Engineering

BRIGHAM YOUNG UNIVERSITY

- Advisor: Dr. Tadd Truscott

Provo, Utah

2014

Work Experience

PhD Candidate

BRIGHAM YOUNG UNIVERSITY

- Create predictive models to increase the potential for positive social impact of engineered products
- Extend the usefulness of agent-based models to include the impact of products
- Extract large data sets from databases for statistical analysis and machine learning algorithms
- Improve public relations efforts of research groups through development of the BYU Global Development Initiative and the Design Exploration Research Group websites

Provo, Utah

2019 - Present

Adjunct Faculty

BRIGHAM YOUNG UNIVERSITY

- Courses: ME EN 475 & ME EN 476 Product Development
- Taught students the product development process through experiential learning
- Mentored engineering students on their senior product development project
- Assessed and provided feedback on the students' work
- Served as a liaison between project sponsor and design team
- Managed expectations for project with the sponsor
- Coordinated curriculum between students and the Mechanical Engineering Capstone Group

Provo, Utah

2015 - 2020

Marketing and Project Manager

FEZZARI BICYCLES

- Created test plans for new products
- Created and implemented strategies for the launch of new products
- Implemented project management system to ensure better communication of current project status and future milestones
- Designed strategies to streamline the on-boarding process of new employees
- Created marketing strategy through various channels
- Implemented new systems to automate and streamline tasks in the organization
- Managed relationships with media outlets

Lindon, Utah

2014 - 2016

Co-founder & Director of Product Development

CAPTURE BEYOND LIMITS LLC.

- Generated over \$100k in revenue with products sold to 31 different countries
- Developed innovative photography and video equipment for outdoor photographers.
- Created prototypes using 3D printing, machining and other methods
- Established product requirements from market research
- Developed road map of future products and future development strategy
- Established relationships with suppliers and manufacturers
- Coordinated manufacturing and supply chain of products

Provo, Utah

2014-2016

Founder

CHRIS MABEY PHOTOGRAPHY

- Created visual stories
- Work was featured by brands such as the BBC, The North Face, REI, Montbell and Pearl Izumi
- Worked on assignment with the National Parks Conservation Association to document government shutdown's effects on National Parks and surrounding communities
- Managed project deliverables and schedules

Provo, Utah

2013 - 2016

Undergraduate Research Assistant

BRIGHAM YOUNG UNIVERSITY

- Directed efforts in high speed photography
- Implemented sensors for precise timing of photographic experiments
- Created test apparatus for photography experiments

Provo, Utah

2013 - 2014

Honors & Awards

3rd Place, OMEGA Research Poster Presentation, Brigham Young University Department of Mechanical Engineering, November, 2020.

Milton Van Dyke Award, Annual Meeting American Physical Society Division of Fluid Dynamics, November, 2014.

Most Innovative Design, University Rover Challenge, Mars Society, June, 2014.

Finalist, International Science Visualization Challenge (Vizzy), 2013.

Research

JOURNAL PUBLICATIONS

Mabey, C., Armstrong, A., Mattson, C., Salmon, J., & Hatch, N., "A Computational Simulation-Based Framework for Predicting Potential Product Impact During Product Design," *Design Science*, **In Review**

Mabey C., Mattson C., Dahlin E., "Assessing Global Needs When Identifying Potential Engineering for Global Development Projects," *ASME Journal of Mechanical Design*, **In Press**

Hurd, R., Fanning, T., Pan, Z., **Mabey, C.**, Bodily, K., Hacking, K., Speirs, N., & Truscott, T. (2015). Matryoshka cavity. *Physics of Fluids*, 27(9), 91104. <https://doi.org/10.1063/1.4930902>

PEER-REVIEWED CONFERENCE PROCEEDINGS

Mabey, C., Armstrong, A., Mattson, C., Salmon, J., & Hatch, N., "Framework for Predicting Potential Product Impact During Product Design," *Design Society International Conference on Engineering Design*, **In Review**

Mabey, CS, Mattson, CA, & Dahlin, EC. "Assessing Global Needs When Identifying Potential Engineering for Global Development Projects." *Proceedings of the ASME 2020 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*. Volume 11B: 46th Design Automation Conference (DAC). Virtual, Online. August 17–19, 2020. V11BT11A001. ASME. <https://doi.org/10.1115/DETC2020-22062>

Technical Presentations

OMEGA Research Poster Presentation, "A Framework for Maximizing the Potential Positive Impact of a Product Through Iterative Modeling of Product Parameters." Brigham Young University Department of Mechanical Engineering, November, 2020.

ASME 2020 International Design, Engineering, and Technical Conferences and Computers and Information in Engineering Conference "Assessing Global Needs When Identifying Potential Engineering for Global Development Projects," Virtual Conference, August 16-19, 2020.

Professional Service

JOURNAL AND CONFERENCE REVIEWS

Journal of Mechanical Design, Trans. ASME.

Proceedings of the ASME International Design Engineering Technical Conferences.

MEMBERSHIPS

Member, American Society of Mechanical Engineers (ASME).

Member, The Design Society.

Member, Engineering for Change.

Community Service and Outreach

Editor and Contributor, "The BYU Design Review," Review articles, develop strategy for community outreach through design articles and author articles, Brigham Young University, Provo, UT, <https://designreview.byu.edu>. August 2020 - Present.

Virtual Hour of Code Event, Code.org, Taught elementary students basic programming, Cape Elizabeth, ME, December 2020.

Bicycle Maintenance Workshop, Taught bicycle maintenance skills to a community youth group, Bountiful, UT, July 2017.

Science Sprouts, Taught elementary school students about science through weekly activities, University of Utah, Salt Lake City, UT, October 2016-February 2017.

Lab-o-Ween, Hosted high school and undergraduate students to educate them about research in engineering, Brigham Young University, Provo, UT, October 2013, 2019.

Utah Underwater Robotics, Taught middle school students about engineering through an ROV competition, Brigham Young University, Provo, UT, March 2012, 2013.

Ironman St. George Triathlon, Volunteer lifeguard at triathlon with 2000 participants, St. George, UT, May 2011.

Missionary Volunteer, Managed travel for volunteers across Micronesia region, Micronesia Guam Mission, Guam, USA, June 2008-June 2010