Jason K. Moore

Contact Information	Rotterdam, Netherlands moorepants@gmail.com +01-530-601-9791	Personal Website: moorepants.info Lab Website: mechmotum.github.io G-Scholar: tinyurl.com/jkm-gscholar Github: github.com/moorepants Linkedin: tinyurl.com/jkm-link

Citizenship	United States of America
Language	English [US] (mother tongue), Dutch [NL] (beginner), Spanish [GU] (beginner)
Research Interests	Multibody dynamics, bicycle dynamics, human biomechanics, human operator control, gait control identification, exoskeleton control, vehicle handling qualities, vehicle dynamics, control systems, aircraft control, aircraft dynamics, appropriate technology, human powered machines, system identification, software engineering, wind tunnel experimentation, computational reproducibility, open science, optimal control, machine design, computer aided algebra

Academic Positions

Assistant Professor **August 2020 to Present**
BioMechanical Engineering Department, Delft University of Technology
(Chairs: H. E. J. Veeger [2020-2022], A. Schouten [2022-Present])

Assistant Professor of Teaching **September 2015 to June 2020**
Mechanical and Aerospace Engineering Department, University of California, Davis
(Chairs: C. P. van Dam [2015-2016], Stephen K. Robinson [2016-2019], Cristina E. Davis [2019-2020])

Postdoctoral Research Associate **July 2013 to August 2015**
Human Motion and Control Laboratory, Cleveland State University
(PI: Antonie J. van den Bogert)

Visiting NCSRR Scholar **August 2014**
Neuromuscular Biomechanics Laboratory, Stanford University
(PI: Scott L. Delp)

Postdoctoral Research Programmer **January 2013 to June 2013**
Institute for Transportation Studies, University of California, Davis
(PI: Tai Stillwater)

Lecturer (Unit 18) **September 2012 to December 2012**
Mechanical and Aerospace Engineering Department, University of California, Davis
(Chair: C.P. van Dam)

Graduate Student Researcher **September 2009 to August 2012**
Sports Biomechanics Laboratory, University of California, Davis
(PIs: Mont Hubbard, Ronald Hess)

Visiting Fulbright Scholar **August 2008 to August 2009**
Bicycle Dynamics Laboratory, Delft University of Technology
(PI: A.L. Schwab)

Teaching Assistant **March 2006 to June 2007**
Mechanical and Aerospace Engineering Department, University of California, Davis
(Instructors: Jim Schaaf, Rida Farouki)

Education

University of California at Davis, Davis, California USA

Ph.D., Mechanical and Aerospace Engineering, September 14, 2012

- Dissertation: Human Control of A Bicycle
- Dissertation Topic: Bicycle dynamics, control, and handling qualities
- Areas of Study: Multibody dynamics, control systems, biomechanics, and system identification
- Advisors: Mont Hubbard, Ron A. Hess, Arend L. Schwab
- Lab: UCD Sports Biomechanics Lab, TU Delft Bicycle Dynamics Lab

M.Sc., Mechanical and Aeronautical Engineering, June 14, 2007

- Advisor: Mont Hubbard
- Area of Study: Multibody dynamics, control systems, and machine design
- Lab: UCD Sports Biomechanics Lab

Old Dominion University, Norfolk, Virginia USA

B.Sc., Mechanical Engineering, December 2004

- *Magna cum Laude*
- Machine Design Specialization
- Minor in Mathematics
- Minor in Philosophy and Religious Studies

Tunstall High School, Dry Fork, Pittsylvania County, Virginia USA

Advanced Diploma, May 2000

- Graduated with Honors

Professional Accreditation

Passed the Fundamentals of Engineering Exam in Virginia

Research Experience

Delft University of Technology, Delft, The Netherlands

Assistant Professor **August 2020 to Present**

- Principal Investigator of the TU Delft Bicycle Lab
- Project lead of the NWO Perspectief Citius Altius Sanius P9 Project: Fall Prevention in Consumer and Elite Cycling
- Co-Principal Investigator of the "Advancing Biomechanical Modeling by Improving SymPy Code Generation" CZI funded project.
- Principal Investigator of the ClickNL "Bicycle of the Future" project
- Supervisor of 3 postdoctoral researchers
- Co-promotor of 3 PhD candidates
- (Co-)supervisor of 18 MSc students
- Collaborations with Team DSM, ICTech, Royal Dutch Gazelle, Garmin/Tacx, Prinoth, Quantsight, Bosch ebike Systems, SymPy

Fulbright Visiting Scholar and Researcher **August 2008 to August 2009**

- Ph.D. researcher at the Bicycle Dynamics Laboratory.
- Co-developed an instrumented bicycle with video logging and accompanying software.
- Used the instrumented bicycle in various experiments on and off the treadmill resulting in two conference papers.
- Participated in canceled gyro, negative trail bicycle experiments that eventually resulted a Science publication.
- Lead motion capture study on bicycle/rider kinematics resulting in two conference papers and one peer reviewed journal article.
- Developed a systematic method of measuring the physical properties of a bicycle and rider resulting in two conference papers.
- Gave a colloquium talk on the year's research.

- Researched the bicycle transportation system in the Netherlands, kept an informal blog, attended the Velo-City Brussels conference, and gave a talk on the subject at the UCD Institute of Transportation Studies.

University of California at Davis, Davis, California USA

Assistant Professor of Teaching **September 2015 to June 2020**

- Created and led the Laboratorium of Marvelous Mechanical Motum
- Safe ski jump design: mentored one undergraduate in developing methods for designing, measuring, and analyzing ski jumps for minimal impact velocity using interactive web applications and accurate GPS measures, see skijumpdesign.info.
- Smartphone rowing data backed coaching: Worked with local startup and six undergraduates in a data science and dynamics project to predict rowing motions from smartphone data
- Optimal bicycle design: mentored one post-graduate and six undergraduates students in an experimental study on bicycle handling, developed and optimization algorithm to discover optimal handling bicycle designs
- Design of an efficient human powered irrigation pump: mentored one graduate student and two undergraduate students in this research/design effort, partnered with World Bicycle Relief and Buffalo Bikes
- Identification of human standing control: mentored ten undergraduates in the design of a double pendulum balancing robot for balance control studies
- Member of 4 MSc committees
- Mentored 4 graduate students, 20+ undergraduates

Postdoctoral Researcher and Programmer **February 2013 to June 2013**

- Developed a cross platform smart phone/tablet application for real-time automobile driver fuel economy feedback. This application was used to conduct an experiment with 200 drivers in San Francisco on driver behavior: SmartDrive
- Won $2K in the first Phase of the White House's Apps for Vehicles Challenge with simpler version of SmartDrive for consumer use, Drive5
- Designed statistical Kalman filter based fuel economy prediction algorithms based on smart phone sensor data.

Graduate Student Researcher **September 2005 to August 2012**

- Graduate Student Researcher at the Sports Biomechanics Lab.
- Member of UC Davis's Institute for Transportation Studies.
- Co-wrote and co-managed a three year Nation Science Foundation grant.
- Developed a custom instrumented bicycle and performed control experiments to characterize the human control system in the bicycling balancing and tracking task.
- Developed numerous open source software packages.
- Mentored five graduate students during summer internships in experimental, theoretical, and computational dynamics.
- Mentored approximately ten undergraduate student interns in a lab setting.
- Mentored four undergraduates in their senior design project.
- Led multiple tours of the Sport Biomechanics Lab.
- Involved in the graduate student recruitment week.
- Designed and administered the lab website.
- Co-founded Davis Open Science.
- Co-wrote and awarded two Google Summer of Code grants (2011, 2012).
- Organized weekly lab meetings.
- Refereed an article for Vehicle System Dynamics.
- Organized and co-chaired both an invited and special session at the 2012 ASME DSCC conference.
- Featured in "Science of Balancing a Bike" by the UC Office of the President.
- Featured in "Science of Riding a Bicycle" video by KQED Quest.

Biomedical Research Engineer **August 2007 to August 2009**

- Designed and supervised the fabrication of a cell shearing device for the UCD Biomedical Passerini Lab.

Cleveland State University, Cleveland, Ohio USA

Post Doctoral Research Associate **July 2013 to August 2015**

- PI: Ton van den Bogert
- Lab: Human Motion and Control Lab
- Identified control schemes for exoskeletons in human walking using data driven approaches.
- Developed and ran multi-subject gait experiments with a modern gait lab.
- Developed software for gait data analysis and simulation.
- Developed human walking computational models.
- Mentored several undergraduate and graduate students in research projects.
- Mentored undergraduate students in their senior design projects.
- System adminstrator for the lab web site.
- Developed a open data paper for a very large gait dataset.

Postdoctral Researcher Supervision

Delft University of Technology

- Dr. Leila Alizadehsaravi, 2021-present
- Dr. Samuel Brockie, 2022-2023
- Dr. Andrew Dressel, 2022-2023

Graduate Student Advising

Delft University of Technology, PhD, Co-promotor

- Christoph M. Schmidt, expected 2026
- Gabriele Dell'Orto, expected 2025
- Radoslaw Dukalski, expected 2023

Delft University of Technology, MSc, Supervisor

- Sietse Soethout, MSc, expected 2024
- Thomas Habing, MSc, expected 2024
- Kenneth Pasma, MSc, expected 2024
- Marten Haitjema, MSc, expected 2023
- Kirsten Dijkman, MSc, expected 2023
- Timo Stienstra, MSc, 2023
- Jan van der Schot, MSc, 2023
- Floris van Willigen, MSc, 2023
- Julie van Vlerken, MSc, 2023
- Jens Keijser, MSc, 2023
- Jan Heinen, MSc, 2022
- Dorus de Boer, MSc, 2022
- Simonas Draukšas, MSc, 2022
- Daniël Landré, MSc, 2022
- Ajaypal Singh, MSc, 2022
- Francesca Andretta, MSc, 2022 [Co-Supervisor]
- Mirco Hogetoorn, MSc, 2022 [Co-Supervisor]
- Joris Kuiper, MSc, 2021

University of California, Davis, MSc, Advisor

- Scott Kresie, MSc, 2021 [Co-Advisor]
- Abraham McKay, MSc, 2018
- Farhad Ghadamli, MSc, 2017 [Co-Advisor]
- Sui Nam Chan, MSc, 2017 [Co-Advisor]

Graduate Committee Memberships

Delft University of Technology, PhD, External Member

- George Dialynas, PhD, 2020

Politecnico Milano, PhD, PhD, External Member

- Dario Savaresi, PhD, 2021
- Alessandra Duz, PhD, 2021

Delft University of Technology, MSc, External Member

- Luuk Withagen, MSc, 2023
- Gabriele Ansaldo, MSc, 2023
- Skirmantas Pargalgauskas, MSc, 2022
- Levi Keift, MSc, 2022
- Suzanne Rademakers, MSc, 2022
- Jelle den Daas, MSc, 2022
- Noa Leijdesdorff, MSc, 2021
- Robert Rooijmans, MSc, 2021
- Núria Mora Vilaseca, MSc, 2021
- Boyan Klifman, MSc, 2021
- Alex Paulwels, MSc, 2021
- Gert Galis, MSc, 2021
- Alex Paulwels, MSc, 2021
- Jelle Kelbling, MSc, 2020
- Koen Wendel, MSc, 2020

Teaching Experience

Delft University of Technology, Delft, The Netherlands

Assistant Professor **August 2020 to Present**

- Taught "Multibody Dynamics B", Q3/Q4 2022/2023, 160-220 students, MSc core course, 2 junior lecturers, 3 teaching assistants, flipped course design with 20 lecture videos, wrote an interactive textbook, develop set of autograded computational homeworks
- Taught "Special Topics in Sports Engineering", Q4 2021/2022/2023, 25 students, MSc elective course, 1 teaching assistant
- Supported 2 BSc final projects.
- Supervised 18 MSc students and participated in 31 MSc defenses.

University of California at Davis, Davis, California USA

Assistant Professor of Teaching MAE **September 2015 to June 2020**

- Taught "Analysis, Simulation and Design of Mechatronic Systems", Winter/Fall 2019 & Winter 2020, 40-60 students, upper level BSc elective, 1 teaching assistant, developed new simulation guide, integrated active learning problems during class, created Segway control module, redesigned computational lab assignments
- Taught "Vehicle Dynamics", Fall 2018 & Spring 2020, 15-40 students, upper level BSc elective, 1 teaching assistant, integrated new learning objective based assessment for homeworks and enhanced the single track vehicle lectures, developed video lectures and new series of computational labs for COVID adaption
- Taught "Introduction to Mechanical Vibrations", Fall 2016/2017 & Winter 2020, 20-40 students, upper level elective, 1 teaching assistant, redesigned entire course second time teaching it to focus on active learning and computational thinking, developed an interactive open access textbook
- Taught Multibody Dynamics, Fall 2017/2019, 10-20 students, graduate course, custom software, PyDy, developed and used in the course

- Co-taught Mechanical Systems Design Project, Winter/Spring 2016/2017/2018/2019, 140-160 students, 4 teaching assistants, capstone design course, mentored 90+ projects for industry clients, developed exchange program with Meijo University in Japan
- Taught Mechanical and Aerospace Engineering Graduate Seminar, Spring 2017, invited 10 guest speakers for 1 hour seminars
- Taught Mechanical Design, Fall 2015/2016, required upper level course, 20-35 students, introduced new design project, active learning
- Taught modules in the high school summer program COSMOS in the transportation track, Summer 2018/2019
- Participated in the Engineering Education Learning Community
- Mentored 10 teaching assistants.

Lecturer **August 2012 to December 2012**

- Taught "Engineering Graphics in Design", 120 students, 4 Teaching Assistants
- Topics: Design, Sketching, Drawing, Drafting, Solid Modeling, CAD

Graduate Student Researcher **September 2005 to August 2012**

- Mentored five graduate students during summer internships in experimental, theoretical, and computational dynamics.
- Mentored approximately ten undergraduate student interns in a lab setting.
- Mentored four undergraduates in their senior design project.
- Led multiple tours of the Sport Biomechanics Lab.

Machine Shop Supervisor **January 2007 to June 2008**

- Supervised the College of Engineering student machine shop.
- Helped students with machining and fabrication projects.
- Taught the shop safety class.
- Fabricated various doodads and gizmos for the shop.
- Organized the shop.
- Worked on design projects for various campus research groups.

Teaching Assistant **March 2006 to June 2007**

- EME 150B, Mechanical Design (Spring 2006): Worked with student groups during the discussion period on their design projects, graded homework assignments, and held weekly office hours.
- EME 50, Manufacturing Processes (Fall 2006 and Winter 2007): Taught hands-on machining and fabrication during weekly lab sections, graded homework assignments and tests, and organized the end of quarter party.
- ENG 4, Engineering Graphics (Spring 2007): Led lab sections with lectures in sketching and 2D/3D computer aided design with modern CAD software.

Davis Open Science Co-founder **February 2010 to June 2013**

- Co-founded the graduate student group.
- Co-hosted several seminars and panels with prominent speakers in Open Science.
- Worked with various faculty and staff on open science projects.
- Led workshops on open science topics.

Action Research Team Facilitator **March 2007 to December 2007**

- Led group of students in the design and construction of a pedal powered desk laptop charging station.
- Competed in Google and Specialized's Innovate or Die Contest.
- The project was featured in many articles and news broadcasts.
- Featured in the book Human Powered Home by Tamara Dean.

Assistant Action Research Team Facilitator **March 2006 to June 2006**

- Co-led a group of students through the process of starting a mock non-profit group.

Reader **September 2006 to December 2006**

- Graded mechanical design assignments (EME 150B).

Software Carpentry, Everywhere, Planet Earth

Volunteer Instructor **January 2015 to present**

- Lead multiple workshops on computation for scientists and engineers.
- Developed lesson plans.
- Passed the instructor certification.

Cleveland State University, Cleveland, Ohio USA

Post Doctoral Research Associate **July 2013 to December 2014**

- Mentored graduate students.
- Mentored undergraduate students in their senior design projects.
- Led "Open Source Code Nights" workshops with the undergraduate IEEE group.
- Gave tutorials on mutlibody dynamics and control to graduate and undergraduate students.

Delft University of Technology, Delft, Zuid-Holland Netherlands

Fulbright Visiting Scholar and Researcher **August 2008 to August 2009**

- Mentored undergraduate students in their senior design projects.

Grants and Awards

TU Delft Faculty 3mE: Cohesion Grant

- Modeling bicycle behavior from visual stimulus to neuromuscular control ability, 3mE Cohesion Proposal, 2023, CO-PI, €100k.

TU Delft Climate Action Research and Education Seed Call

- Sustainable transportation planning via bicycle-based data collection, 2023, CO-PI, €30k.

TU Delft Faculty 3mE: Cohesion Grant

- Integrated Micro and Macroscopic Methods for Safe and Efficient Traffic of Connected Vulnerable Bicyclists and Automated Vehicles, 2022-2026, CO-PI, €200K.

4TU.NIRICT

- Community Funding Proposal for Making Bikes Smarter, October 2021-December 2021, CO-PI, €15k.

Chan-Zuckerberg Foundation

- SymPy: Improving Foundational Open Source Symbolic Mathematics for Science, Essential Open Source Software for Science, Cycle 4, Chan Zuckerberg Initiative, December 2021-December 2023, CO-PI, $352K.

United States Department of Education

- Expanding the LibreTexts Project into the Next-Generation Hub for Construction, Dissemination, and Usage of Open Educational Resource Textbooks, September 2018-September 2021, CO-PI, $5M.

UC Davis Global Affairs

- Influence of Culture in Mechanical Design , PI, 2018-2019, $24k.

Center for Educational Effectiveness

- Development of an Interactive Textbook Backed by Cloud Infrastructure to Pilot Active Computational Learning in an Upper Level Mechanical Vibrations Engineering Course , PI, 2017-2018, $22k.

National Center of Simulation in Rehabilitation Research, Stanford University
- 2014 NCSRR Visiting Scholarship, $8k.

SAGE Publishing
- 2013 Best Paper Award, Journal of Multibody Dynamics, $400.

U.S. General Services Administration
- White House Apps for Vehicles Challenge: Phase 1, 2013, $2k.

2012 Dynamic Systems and Control Conference
- Best paper in the Single Track Vehicle Dynamics and Control Session, 2012.

National Science Foundation
- NSF Standard Grant: Human Control of Bicycle Dynamics with Experimental Validation and Implications for Bike Handling and Design, Co-Author, 2009-2012, $300k.

U.S. Department of State
- Fulbright Grant to the Netherlands, 2008-2009, $10k.

University of California, Davis
- Summer Graduate Student Researcher Award, 2010
- Campus Sustainability Grant (Human Powered Utility Vehicle Pilot Program), 2008, $2145
- Campus Sustainability Grant (Davis Bike Church Physical Space Renovation), 2008
- Graduate Student Association Travel Award, 2008
- Institute for Transportation Studies Travel Award, 2008
- Campus Sustainability Grant (Pedal Powered Charging Table), 2007
- Joseph Beggs Fellowship for Kinematics, 2006–2007, $1700
- MAE Department Fellowship, UC Davis, 2005–2006

Old Dominion University
- Governor's Technology Scholarship, Full Tuition, $16k, 2000–2004.

Proposals Under Review

None

Rejected Proposals

- Bicycling through the labyrinth: unraveling balance control in human-machine interfaces, Nederlandse Organisatie voor Wetenschappelijk Onderzoek, Open Competition XS, 2022, CO-PI, €70k.
- NeuroLabNL Kleine, Small Projects for NWA routes 21/22, "Cycling through the labyrinth: identifying independent and parallel control mechanisms for bicycle balance", CO-PI, €100k
- Cycling through the labyrinth: independent and parallel control mechanisms for bicycle balance, Nederlandse Organisatie voor Wetenschappelijk Onderzoek, Open Competition XS, 2021, €70k.
- Sustaining and Growing Engineering Preprints with engrXiv, Nederlandse Organisatie voor Wetenschappelijk Onderzoek, €26k.
- YottaBike: Single-Track Vehicle and Rider Data Harmonization to Maximize Interoperability and Reusability, Nederlandse Organisatie voor Wetenschappelijk Onderzoek, €45k.
- Bicycle Dynamics Analysis App, TU Delft Digital Competence Center Support, PI, 2021, around €5K.
- Learning to Bicycle with Robotic Assistance, TU Delft 3mE Cohesion Proposals, CO-PI, 2021, €66K.
- Collaborative Research: Dissemination of the LibreTexts Libraries through Expansion and Training in Digital Interfaces to Enhance Science Education across

the Nation, National Science Foundation, CO-PI, 2018-2022, $3M. National Science Foundation

- Collaborative Research: SI2-SSI: Infrastructure for Cross-Disciplinary Scientific Computation Through Optimized Symbolic Code Generation with SymPy, National Science Foundation, CO-PI, 2017-2019, $3M. National Science Foundation

Industry Collaborations

- Prinoth, 2022-2023
- Quantsight, 2021-present
- Garmin/Tacx, 2022-2023
- Royal Dutch Gazelle, 2020-present
- Bosch E-Bike Systems, 2020-present
- SWOV, 2020-present
- Team DSM, 2020-present
- Hegemony Technologies LLC, 2018-2020
- Buffalo Bikes
- Wetlands Work!
- Plotly Inc.
- SymPy, 2009-present

Journal Publications

[1] Radoslaw Dukalski, Jason K. Moore, Peter Beek, and Frances Brazier. "Towards Smarter Bicycle Race Glasses: User-Interface Design Guidelines for Augmented Reality in a Dynamic Motion Situation". In: *Human-Computer Interaction (In Preparation)* (2023).

[2] Christoph M. Schmidt, Azita Dabiri, Frederik Schulte, Jason K Moore, and Riender Happee. "Requirements to Cycling Safety Assessment in Microscopic Traffic Simulation: A Review and Methodological Framework". In: *Transport Reviews (In Preparation)* (2023).

[3] Jan Heinen, Samuel Brockie, Raymund ten Broek, Eline van der Kruk, and Jason K. Moore. "Maximizing Ollie Height by Optimizing Control Strategy and Skateboard Geometry Using Direct Collocation". In: *Sports Engineering (Under Review)* (2023).

[4] Gabriele Dell'Orto, Gianpiero Mastinu, Riender Happee, and Jason K. Moore. "Measurement of Lateral Characteristics and Identification of Magic Formula Parameters of City and Cargo Bicycle Tyres". In: *Vehicle System Dynamics (Under Review)* (2023).

[5] Ajaypal Singh, Hans Vreman, Andrew Dressel, and Jason K. Moore. "Bicycle Disc Brake Noise Analysis and Mitigation". In: *Journal of Vibration and Control (Under Review)* (2023).

[6] Leila Alizadehsaravi and Jason K. Moore. "Bicycle Balance Assist System Reduces Roll and Steering Motion for Young and Older Bicyclists during Real-Life Safety Challenges". In: *PeerJ* 11 (Oct. 2023), e16206. ISSN: 2167-8359. DOI: 10.7717/peerj.16206.

[7] Xiaodong Qian, Jason K. Moore, and Deb Niemeier. "Predicting Bicycle Pavement Ride Quality: Sensor-based Statistical Model". In: *Journal of Infrastructure Systems* 26.3 (2020), p. 04020033. DOI: 10.1061/(ASCE)IS.1943-555X.0000571.

[8] Bryn Cloud, Britt Tarien, Ada Liu, Thomas Shedd, Xinfan Lin, Mont Hubbard, R. Paul Crawford, and Jason K. Moore. "Adaptive Smartphone-Based Sensor Fusion for Estimating Competitive Rowing Kinematic Metrics". In: *PLOS ONE* 14.12 (Dec. 2019), e0225690. ISSN: 1932-6203. DOI: 10.1371/journal.pone.0225690.

[9] Jason K. Moore and Mont Hubbard. "Skijumpdesign: A Ski Jump Design Tool for Specified Equivalent Fall Height". In: *The Journal of Open Source Software* 3.28 (Aug. 2018), p. 818. DOI: 10.21105/joss.00818.

[10] Jason K. Moore and Antonie van den Bogert. "Opty: Software for Trajectory Optimization and Parameter Identification Using Direct Collocation". In: *Journal of Open Source Software* 3.21 (Jan. 2018), p. 300. DOI: 10.21105/joss.00300.

[11] Aaron Meurer et al. "SymPy: Symbolic Computing in Python". In: *PeerJ Computer Science* 3.e103 (Jan. 2017). ISSN: 2376-5992. DOI: 10.7717/peerj-cs.103.

[12] Jason K. Moore, Sandra K. Hnat, and Antonie J. van den Bogert. "An Elaborate Data Set on Human Gait and the Effect of Mechanical Perturbations". In: *PeerJ* 3.e918 (Apr. 2015). ISSN: 2167-8359. DOI: 10.7717/peerj.918.

[13] Chris Dembia, Jason K. Moore, and Mont Hubbard. "An Object Oriented Implementation of the Yeadon Human Inertia Model". In: *F1000Research* 3.233 (Apr. 2015). DOI: 10.12688/f1000research.5292.2.

[14] A. L. Schwab, P. D. L. de Lange, R. Happee, and Jason K. Moore. "Rider Control Identification in Bicycling Using Lateral Force Perturbation Tests". In: *Proceedings of the Institution of Mechanical Engineers, Part K: Journal of Multi-body Dynamics* 227.4 (Aug. 2013), pp. 390–406. ISSN: 1464-4193, 2041-3068. DOI: 10.1177/1464419313492317.

[15] Ronald Hess, Jason K. Moore, and Mont Hubbard. "Modeling the Manually Controlled Bicycle". In: *IEEE Transactions on Systems, Man, and Cybernetics - Part A: Systems and Humans* 42.3 (Feb. 2012), pp. 545–557. ISSN: 1083-4427, 1558-2426. DOI: 10.1109/TSMCA.2011.2164244.

[16] Jason K. Moore, J. D. G. Kooijman, A. L. Schwab, and Mont Hubbard. "Rider Motion Identification during Normal Bicycling by Means of Principal Component Analysis". In: *Multibody System Dynamics* 25.2 (Feb. 2011), pp. 225–244. ISSN: 1384-5640, 1573-272X. DOI: 10.1007/s11044-010-9225-8.

Books & Theses

[1] Jason K. Moore. *Learn Multibody Dynamics*. Version 0.1. Aug. 2022. URL: https://moorepants.github.io/learn-multibody-dynamics/.

[2] Lorena A. Barba et al. *Teaching and Learning with Jupyter*. Nov. 2018. URL: https://jupyter4edu.github.io/jupyter-edu-book/.

[3] Jason K. Moore and Kenneth Lyons. *Resonance: Learning Mechanical Vibration Enginering Through Computation – Draft*. Dec. 2017. URL: https://moorepants.github.io/resonance/.

[4] Jason K. Moore. "Human Control of a Bicycle". Doctor of Philosophy. Davis, CA: University of California, Aug. 2012. URL: http://moorepants.github.io/dissertation.

Conference Papers

[1] Radoslaw Dukalski, Jason K. Moore, Peter J. Beek, and Frances Brazier. "Getting a Grip on Augmented Road Cycling: Discovering Cyclists' Real-Time Information Needs Using Immersive Multi-Modal Simulation". In: *IEEE Virtual Reality 2024 (Submitted)*. Orlando, Florida, USA, Oct. 2023.

[2] Andrew Dressel and Jason K. Moore. "Adapting a Variable Stability Mechanism for a Tilting Tricycle from the Delta to the Tadpole Wheel Configuration". In: *Bicycle and Motorcycle Dynamics 2023*. Delft, The Netherlands: TU Delft OPEN Publishing, 2023. DOI: 10.59490/650479434cc364571baa0cfc.

[3] Timótheüs J. Stienstra, Samuel G. Brockie, and Jason K. Moore. "BRiM: A Modular Bicycle-Rider Modeling Framework". In: *Bicycle and Motorcycle Dynamics 2023*. Delft, The Netherlands: TU Delft OPEN Publishing, Oct. 2023. DOI: 10.59490/6504c5a765e8118fc7b106c3.

[4] Christoph M. Schmidt, Azita Dabiri, Frederik Schulte, Riender Happee, and Jason Moore. "Essential Bicycle Dynamics for Microscopic Traffic Simulation: An Example Using the Social Force Model". In: *Bicycle and Motorcycle Dynamics 2023*. Delft, The Netherlands: TU Delft OPEN Publishing, 2023. DOI: 10.59490/65037d08763775ba4854da53.

[5] Jason K Moore and Mont Hubbard. "Expanded Optimization for Discovering Optimal Lateral Handling Bicycles". In: *Bicycle and Motorcycle Dynamics 2019: Symposium for Dynamics and Control of Single Track Vehicles*. Padua, Italy: Figshare, 2019, p. 12. DOI: 10.6084/m9.figshare.9942938.v1.

[6] Trevor Z. Metz and Jason K. Moore. "Design of an Electric Bicycle Speed Controller". In: *Bicycle and Motorcycle Dynamics 2019: Symposium on the Dynamics and Control of Single Track Vehicles*. Padua, Italy: Figshare, 2019. DOI: 10.6084/m9.figshare.9937091.v1.

[7] Roy Gilboa, Anastasia Kubicki, Anthony Toribio, Mont Hubbard, and Jason K Moore. "Practical Realization of a Theoretical Optimal-Handling Bicycle". In: *Bicycle and Motorcycle Dynamics: Symposium on Dynamics and Control of Single Track Vehicles*. 2019, p. 11. DOI: 10.6084/m9.figshare.9883328.v1.

[8] Jason K. Moore, Mont Hubbard, and Ronald A. Hess. "An Optimal Handling Bicycle". In: *Proceedings of the 2016 Bicycle and Motorcycle Dynamics Conference*. Figshare, Sept. 2016. DOI: 10.6084/m9.figshare.c.3460590.v11.

[9] Jason K. Moore and Mont Hubbard. "Identification of Open Loop Dynamics of a Manually Controlled Bicycle-Rider System". In: *Proceedings of Bicycle and Motorcycle Dynamics: Symposium on the Dynamics and Control of Single Track Vehicles*. Narashino, Chiba, Japan, Nov. 2013. URL: https://github.com/moorepants/BMD2013.

[10] Jason K. Moore and Mont Hubbard. "Methods for Elimination of Crosstalk and Inertial Effects in Bicycle and Motorcycle Steer Torque Estimation". In: *Proceedings of Bicycle and Motorcycle Dynamics: Symposium on the Dynamics and Control of Single Track Vehicles*. Narashino, Chiba, Japan, Nov. 2013. URL: https://github.com/moorepants/BMD2013.

[11] Gilbert Gede, Dale L. Peterson, Angadh S. Nanjangud, Jason K. Moore, and Mont Hubbard. "Constrained Multibody Dynamics With Python: From Symbolic Equation Generation to Publication". In: *Volume 7B: 9th International Conference on Multibody Systems, Nonlinear Dynamics, and Control*. Portland, Oregeon, USA, Aug. 2013. ISBN: 978-0-7918-5597-3. DOI: 10.1115/DETC2013-13470.

[12] Ronald A. Hess and Jason K. Moore. "Estimating Parameters of the Structural Pilot Model Using Simulation Tracking Data". In: *AIAA Guidance, Navigation, and Control Conference*. Aug. 2013.

[13] A. L. Schwab, P. D. L. de Lange, R. Happee, and Jason K. Moore. "Rider Control Identification in Bicycling, Parameter Estimation of a Linear Model Using Lateral Force Perturbation Tests". In: *Proceedings of the IMSD2012 - The 2nd Joint International Conference on Multibody System Dynamics*. Stuttgart, Germany., May 2012.

[14] Arend Schwab, Peter de Lange, and Jason K. Moore. "Rider Optimal Control Identification in Bicycling". In: *Proceedings of the 5th Annual Dynamic Systems and Control Conference and 11th Annual Motion and Vibration Conference*. Fort Lauderdale, Florida, USA: ASME, Oct. 2012. URL: http://bicycle.tudelft.nl/schwab/Publications/schwab2012riderB.pdf.

[15] Jason K. Moore, Mont Hubbard, Dale L. Peterson, A. L. Schwab, and J. D. G. Kooijman. "An Accurate Method of Measuring and Comparing a Bicycle's Physical Parameters". In: *Proceedings of Bicycle and Motorcycle Dynamics: Symposium on the Dynamics and Control of Single Track Vehicles*. Delft, Netherlands, Oct. 2010.

[16] Jason K. Moore, Mont Hubbard, A. L. Schwab, J. D. G. Kooijman, and Dale L. Peterson. "Statistics of Bicycle Rider Motion". In: *The Engineering of Sport 8 - Engineering Emotion*. Vol. 2. July 2010, pp. 2937–2942. DOI: 10.1016/j.proeng.2010.04.091.

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[18] J. K. Moore, J. D. G. Kooijman, and A. L. Schwab. "Rider Motion Identification during Normal Bicycling by Means of Principal Component Analysis". In: *Proceedings of Multibody Dynamics 2009, ECCOMAS Thematic Conference*. Ed. by K. Arczewski, J. Frączek, and M. Wojtyra. Warsaw, Poland, June 2009.

[19] Jason K. Moore, J. D. G. Kooijman, Mont Hubbard, and A. L. Schwab. "A Method for Estimating Physical Properties of a Combined Bicycle and Rider". In: *Proceedings of the ASME 2009 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference, IDETC/CIE 2009*. San Diego, CA, USA: ASME, Aug. 2009. DOI: 10.1115/DETC2009-86947.

[20] J. D. G. Kooijman, A. L. Schwab, and Jason K. Moore. "Some Observations on Human Control of a Bicycle". In: *Proceedings of the ASME 2009 International Design and Engineering Technical Conferences & Computers and Information in Engineering Conference*. ASME, Aug. 2009. DOI: 10.1115/DETC2009-86959.

[21] Jason Moore and Mont Hubbard. "Parametric Study of Bicycle Stability". In: *The Engineering of Sport 7*. Ed. by Margaret Estivalet and Pierre Brisson. Vol. 2. Springer, 2008. DOI: 10.1007/978-2-287-99056-4_39.

Preprints

[1] Jan Heinen, Samuel Brockie, Raymund ten Broek, Eline van der Kruk, and Jason K. Moore. *Maximizing Ollie Height by Optimizing Control Strategy and Skateboard Geometry Using Direct Collocation*. Aug. 2023. DOI: 10.31224/3171.

[2] Leila Alizadehsaravi and Jason K. Moore. *Bicycle Balance Assist System Reduces Roll Motion for Young and Old Bicyclists during Real-Life Safety Challenges*. Feb. 2023. DOI: 10.31224/2825.

[3] Simonas Draukšas, Leila Alizadehsaravi, Jason K. Moore, Riender Happee, and Laura Marchal-Crespo. *Model Predictive Control-based Haptic Steering Assistance to Enhance Motor Learning of a Bicycling Task: A Pilot Study*. Feb. 2023. DOI: 10.31224/2811.

[4] Jason K. Moore, Bryn Cloud, Mont Hubbard, and Christopher A. Brown. *Safety-Conscious Design of Terrain Park Jumps: Ethical Issues and Online Software*. Mar. 2021. DOI: 10.31224/osf.io/sq7u9.

[5] Bryn Cloud, Britt Tarien, Ada Liu, Thomas Shedd, Xinfan Lin, Mont Hubbard, R. Paul Crawford, and Jason K. Moore. *Adaptive Smartphone-Based Sensor Fusion for Estimating Competitive Rowing Kinematic Metrics*. Dec. 2018. DOI: 10.31224/osf.io/nykuh.

[6] Aaron Meurer et al. *SymPy: Symbolic Computing in Python*. June 2016. DOI: 10.7287/peerj.preprints.2083v3. PeerJ Inc. e2083v3.

[7] Jason K Moore, Sandra K. Hnat, and Antonie J. van den Bogert. *An Elaborate Data Set on Human Gait and the Effect of Mechanical Perturbations*. Apr. 2015. DOI: 10.7287/peerj.preprints.700v2.

Conference Presentations

[1] Christoph M. Schmidt. *Connected Traffic of Vulnerable Bicyclists and Automated Vehicles*. Poster. SUMO User Conference: Berlin, Germany, May 2023.

[2] Timo J. Stienstra, Samuel G. Brockie, and Jason K. Moore. *BRiM: A Modular and Extensible Open-Source Framework for Creating Bicycle-Rider Models*. Oral. Bicycle and Motorcycle Dynamics 2023: Delft, The Netherlands, May 2023.

[3] Christoph M. Schmidt, Azita Dabiri, Frederik Schulte, Riender Happee, and Jason K. Moore. *Essential Bicycle Dynamics for Microscopic Traffic Simulation: An Example Using the Social Force Model*. Bicycle and Motorcycle Dynamics 2023: Delft, The Netherlands, May 2023.

[4] Jason K. Moore, Jeswin Koshy Cherian, Björn Andersson, Oliver Lee, and Anders Ranheim. *Modeling and Implementation of a Reaction Wheel Stabilization System for Low Speed Balance of a Cargo Bicycle*. Poster. Bicycle and Motorcycle Dynamics 2023: Delft, The Netherlands, May 2023. URL: https://doi.org/10.24404/63ff23b478f53b9c419075b9.

[5] Andrew Dressel. *Using a Scanning Laser Doppler Vibrometer to Investigate Causes and Possible Mitigations of Bicycle Disc Brake Noise*. Oral. Measuring By Light: International Meeting on Optical Measurement Techniques and Industrial Applications: Delft, The Netherlands, Mar. 2023.

[6] Andrew Dressel and Jason K. Moore. *Adapting a Variable Stability Mechanism for a Tilting Tricycle from the Delta to the Tadpole Wheel Configuration*. Bicycle and Motorcycle Dynamics 2023: Delft, The Netherlands, May 2023.

[7] Andrew Dressel, Floris van Willigen, and Jason K. Moore. *Evaluating the Handling of a Tilting Tricycle with Variable Stability*. Bicycle and Motorcycle Dynamics 2023: Delft, The Netherlands, May 2023.

[8] Jan Heinen. *Optimal Skateboard Geometry For Maximizing Ollie Height*. Poster. Dutch Biomedical Engineering Conference: Egmond an Zee, The Netherlands, Jan. 2023.

[9] Leila Alizadehsaravi and Jason K. Moore. *The Effects of a Steer Assist System on Bicycle Postural Control in Real-Like Safety Challenges*. Poster. Dutch Biomedical Engineering Conference: Egmond an Zee, Jan. 2023.

[10] Andrew Dressel. *Measuring the Mechanical Properties of Bicycle Tyres to Help Predict and Minimize Wobble for Enhanced Safety*. Poster. International Cycling Safety Conference: Dresden, Germany, Nov. 2022.

[11] Andrew Dressel. *A Tilting Trike with Rider Tuneable Stability and Handling for Improved Safety*. Oral. International Cycling Safety Conference: Dresden, Germany, Nov. 2022.

[12] Leila Alizadehsaravi and Jason K. Moore. *The Effects of a Steer Assist System on Bicycle Postural Control in Real-Life Safety Challenges*. Poster. International Cycling Safety Conference: Dresden, Germany, Nov. 2022.

[13] Celine Liang, Xin Luigi Chen, Tannavee Kumar, Hao Huang, and Jason K. Moore. *What to Do When Chicks Go Bad in Your Flock: JupyterHub on Bare Metal with Kubernetes*. Oral. SacPy: Sacramento, CA, USA, Nov. 2019. URL: https://tinyurl.com/sacpy-jupy.

[14] Bryn Cloud, Britt Tarien, Jason K. Moore, and Mont Hubbard. *Accessible, Open-source Computational Analysis and Design of Terrain Park Ski Jumps*. 23rd International Congress on Snow Sports Trauma and Safety: Squaw Valley, California, USA, Apr. 2019.

[15] Allen Downey and Jason K. Moore. *Eight Ways to Use Computation to Teach Everything Else*. Workshop. KEEN National Conference: Dallas, TX, USA, Jan. 2019. URL: https://tinyurl.com/keen-comp19.

[16] Jason K Moore, Mont Hubbard, and Ronald A Hess. *Expanded Optimization for Discovering Optimal Lateral Handling Bicycles*. Oral. Bicycle and Motorcycle Dynamics 2019: Padua, Italy, 2019.

[17] Trevor Metz and Jason K Moore. *Design of an Electric Bicycle Speed Controller*. Bicycle and Motorcycle Dynamics 2019: Padova, Italy, 2019.

[18] Roy Gilboa, Jason K Moore, Mont Hubbard, and Ronald A Hess. *Practical Realization of a Theoretical Optimal-Handling Bicycle*. Bicycle and Motorcycle Dynamics 2019: Padua, Italy, 2019.

[19] Jordi Cuadros, Robert E. Belford, Kim Sunghwan, Ehren Bucholtz, Andrew P. Cornell, Delmar Larsen, Jason K. Moore, Kristen Fulfer, and Dean Johnston. *OLCC 2019 Cheminformatics. Innovacions En l'ensenyament de La Química: Nous Continguts, Nous Formats i Noves Eines*. Poster. 8es Jornades sobre l'Ensenyament de la Química a Catalunya: Barcelona, Spain, 2019.

[20] Kenneth Lyons. *Resonance: Learning Mechanical Vibrations Through Computational Thinking*. Oral. SciPy 2018: Austin, Texas, USA, July 2018. URL: https://youtu.be/3QWKDGe528c.

[21] Jason K. Moore, Mont Hubbard, and Ronald A. Hess. *Optimal Bicycle Design to Maximize Handling and Safety*. 6th Annual International Cycling Safety Conference: Davis, CA, USA, Sept. 2017. DOI: 10.6084/m9.figshare.5405242.v1.

[22] Scott W. Kresie, Jason K. Moore, Mont Hubbard, and Ronald A. Hess. *Experimental Validation of Bicycle Handling Prediction*. 6th Annual International Cycling Safety Conference: Davis, CA, USA, Sept. 2017. DOI: 10.6084/m9.figshare.5405233.v1.

[23] Jason K. Moore and Antonie J. van den Bogert. *Quiet Standing Control Parameter Identification with Direct Collocation*. XV International Symposium on Computer Simulation in Biomechanics: Edinburgh, UK, July 2015. URL: https://github.com/csu-hmc/ISBTGCS2015.

[24] Jason K. Moore, Sandra K. Hnat, and Antonie J. van den Bogert. *Identification of Human Control during Perturbed Walking*. Dynamic Walking: Zurich, Switzerland, June 2014. URL: https://github.com/moorepants/DW2014.

[25] Jason K. Moore, Sandra K. Hnat, and Antonie J. van den Bogert. *Identification of Human Control during Perturbed Walking*. Midwest American Society of Biomechanics Regional Meeting: Akron, Ohio, USA, Mar. 2014. URL: https://github.com/moorepants/MASB2014.

[26] Theodore Buehler and Jason K. Moore. *Time and Energy Penalties of Squiggly Bike Routes*. Oral. Velo-city Global 2012: Vancouver, Canada, June 2012.

[27] Mont Hubbard, Ronald A. Hess, Jason K. Moore, and Dale L. Peterson. *Human Control of Bicycle Dynamics with Experimental Validation and Implications for Bike Handling and Design*. Proceedings of 2011 NSF Engineering Research and Innovation Conference: Washington D.C., USA, Jan. 2011.

[28] Jason K. Moore, Dale L. Peterson, and Mont Hubbard. *Influence of Rider Dynamics on the Whipple Bicycle Model*. 11th International Symposium on Computer Simulation in Biomechanics: Tainan, Taiwan, June 2007. URL: https://www.researchgate.net/publication/216750976_Influence_of_rider_dynamics_on_the_Whipple_bicycle_model.

Blog Posts

[1] Jason K. Moore and Kenneth Lyons. *Using Computational Thinking to Teach Mechanical Vibrations*. Apr. 2018. URL: http://engineering.ucdavis.edu/eelc/using-computational-thinking-to-teach-mechanical-vibrations/.

[2] Jason K. Moore. *Learning Mechanical Design Through Lightweight Prototyping*. Feb. 2017. URL: http://engineering.ucdavis.edu/eelc/learning-mechanical-design-through-lightweight-prototyping/.

Software

[1] Jason K. Moore, Mont Hubbard, and Bryn Cloud. *Skijumpdesign: A Ski Jump Design Tool for Equivalent Fall Height*. University of California, Davis. Dec. 2017. URL: https://gitlab.com/moorepants/skijumpdesign.

[2] Jason K. Moore and Kenneth Lyons. *Resonance: A Python Package for Mechanical Vibration Analysis*. University of California, Davis. July 2017. URL: https://github.com/moorepants/resonance/.

[3] Ian Kyle, Jason K. Moore, and Maegen Simmonds. *Agricultural Field Statistics Package*. University of California, Davis. 2016. URL: https://github.com/ucd-ipo/agroft.

[4] Jason K. Moore and Antonie J. van den Bogert. *Opty: A Library for Using Direct Collocation in the Optimization and Identification of Dynamic Systems*. Cleveland State University. May 2014. URL: https://github.com/csu-hmc/opty.

[5] Jason K. Moore, Sandra K. Hnat, Obinna Nwanna, Michael Overmeyer, and Antonie J. van den Bogert. *GaitAnalysisToolKit: A Python Library for Gait Analysis*. Cleveland State University, Dec. 2013. URL: https://github.com/csu-hmc/GaitAnalysisToolKit.

[6] Jason K. Moore et al. *PyDy: A Multi-Body Dynamics Analysis Package Written in Python*. Cleveland State University. Oct. 2011. URL: http://pydy.org.

[7] Jason K. Moore, Chris Dembia, and Oliver Lee. *BicycleParameters: A Python Library for Bicycle Parameter Estimation and Analysis*. University of California, Davis. Apr. 2011. URL: https://github.com/moorepants/BicycleParameters.

[8] Christopher Dembia, Jason K. Moore, Stefen Yin, and Oliver Lee. *Yeadon: A Python Library For Human Inertia Estimation*. June 2011. URL: https://github.com/chrisdembia/yeadon.

[9] Jason K. Moore. *HumanControl: Software for Evaluating Human Control and Handling Qualities of Bicycles*. University of California, Davis. May 2011. URL: https://github.com/moorepants/HumanControl.

[10] Jason K. Moore, P. D. L. de Lange, and Stefen Yin. *BicycleDataProcessor: Data Storage and Processing Library for an Instrumented Bicycle*. University of California, Davis. Feb. 2011. URL: https://github.com/moorepants/BicycleDataProcessor.

[11] Jason K. Moore, Chris Dembia, and Oliver Lee. *DynamicistToolKit: A Python Library for Dynamcis and Controls*. University of California, Davis. June 2011. URL: https://github.com/moorepants/DynamicistToolKit.

[12] Amit Aides. *Cyipopt: Cython Interface for the Interior Point Optimzer IPOPT*. 2011. URL: https://github.com/mechmotum/cyipopt.

[13] Jason K. Moore, P. D. L. de Lange, and Yumiko Henneberry. *BicycleDAQ: Data Aquisition Application for an Instrumented Bicycle*. University of California, Davis. Oct. 2010. URL: http://github.com/moorepants/BicycleDAQ.

[14] SymPy Development Team. *SymPy: Python Library for Symbolic Mathematics*. 2006. URL: http://www.sympy.org.

Academic Service

- BMechE Recess College Transparency Workgroup (2023)
- BMechE Department midterm external assessment report committee (2023)
- TU Delft Anaconda Digital Exam Environment preparation lead (July 2023-present)
- Organizing chair of the Bicycle and Motorcycle Dynamics 2023 conference.
- TU Delft 3mE OCME Committee: (2021-11 to Present)
- Board Member of the Engrxiv: Preprint Server (April 2019-present)
- Co-Editor of the Journal of Open Source Education
- Co-Editor of the Journal of Open Engineering
- UCD MAE Undergraduate Committee (January 2017-June 2020)
- UCD MAE Website Committee (2017-2019)
- Lead organizer of the 6th Annual International Cycling Safety Conference in Davis, CA, USA, September 20-23, 2017. (January 2016-September 2017)
- Served on the organizing committees, publishing chair, for the 2016 Bicycle and Motorcycle Dynamics Conference in Milwaukee, Wisconsin.
- Served on the scientific committee for the 2013, 2016, and 2019 Bicycle and Motorcycle Dynamics Conferences.
- Volunteer instructor for Software Carpentry.
- Co-organizer of Cleveland's "North Coast Biomechanics and Brew" group (2014).
- Organized and mentored for Google Summer of Code under the Python Software Foundation, SymPy, and PyDy (2009-2022)
- Organized and co-chaired both an invited and special session on single track vehicle dynamics at the 2012 ASME DSCC conference.

Article and Abstract Reviews

- Reviewed "Effects of cycling on spine morphology: a pilot study using a 3D scanning method", PeerJ, 2023.
- Reviewed "A Double Gyroscope Concept Approach for A 2-Wheel Vehicle" for Vehicle System Dynamics, 2020-09.
- Reviewed "gym-electric-motor (GEM): A Python toolbox for the simulation of electric drive systems" for the Journal of Open Source Software, 2020-08, https://github.com/openjournals/joss-reviews/issues/2498.
- Reviewed 54 abstracts for the 2019 Bicycle and Motorcycle Dynamics Conference.
- Reviewed SciPy 2018 tutorial proposals.
- Reviewed 10 SciPy 2017 tutorial proposals.
- Reviewed "A data set with kinematic and ground reaction forces of human balance" for PeerJ, 2017, https://peerj.com/articles/3626/.
- Reviewed "Motion analysis of a device including a disk and two slender bars with a design change for full disk revolution" for The Journal of Open Engineering, 2017, https://doi.org/10.21428/572e5da9.
- Reviewed "Optlang: A Python interface to common mathematical optimization solvers" for the Journal of Open Source Software, 2016-12. http://dx.doi.org/10.21105/joss.00139
- Reviewed "The Loop Closure Equation for the Pitch Angle in Bicycle Kinematics" for Vehicle System Dynamics, 2015-06.
- Reviewed "The effect of tyre and rider properties on the stability of a bicycle" by Bulsink, Vera, et. al, for Advances in Mechanical Engineering, 2015, https://doi.org/10.1177/1687814015622596.
- Reviewed "Changing the bicycle seat height: Effects on rider control." for the European Journal of Sports Sciences, 2015.
- Reviewed "Gyro device for bicycle handling assessment: A reliability study" by Fonda, Borut, et. al for the Journal of Applied Biomechanics, 2015.
- Reviewed "Self-driving Lego Mindstorms Robot" for SciPy 2014 Proceedings, 2014, https://github.com/scipy-conference/scipy_proceedings_2012/issues/12.
- Reviewed "On the influence of tyre and rider properties on the stability of a bicycle." by Vera Bulsink, et. al, for Vehicle System Dynamics, 2014.

- Reviewed "Are subject-specific musculoskeletal models robust to the uncertainties in parameter identification?" by Giordano Valente, et. al for PLoS One, 2014.
- Reviewed four papers for the Bicycle and Motorcycle Dynamics Conference 2013 proceedings, July 2013.
- Reviewed "Experimental and Numerical Analysis of Rider Motion in Weave Conditions" Doria, Alberto, et. al for Vehicle System Dynamics, 2011, https://doi.org/10.1080/00423114.2011.621542.

Invited Talks

University of Wisconsin-Stout, Menomonie, WI, USA

Estimating Rowing Kinematic Metrics: An Undergraduate Sports Biomechanics Research Project **April 12, 2019**

JupyterCon, New York, NY

The Future of Jupyter in Education Panel **August 23, 2018**

Meijo University, Nagoya, Japan

The Trail Towards An Optimally Handling Bicycle **June 21, 2018**

UC Davis Education Graduate Group, Davis, CA

Computational Thinking in the Engineering Curriculum: A Case Study in Mechanical Vibrations **March 11, 2018**

TU Delft, Delft, Netherlands

Identification of human control during walking **June 6, 2014**

U.S. Bicycling Hall of Fame, Davis, CA

How We Ride Bikes with Luke Peterson, Mont Hubbard, and Ron Hess **October 19, 2011**

UCD Tahoe Environmental Research Center, Lake Tahoe, NV

How We Ride Bikes with Luke Peterson and Mont Hubbard **May 12, 2011**

Fulbright FAST Conference, San Francisco, CA

Bicycling in the Netherlands and Europe, policies and practices: What can America learn from them. **March 12, 2010**

UC Davis D-Lab, Davis, CA

Use of Human Power in the Developing World **January 31, 2013, January 31, 2012, January 25, 2011, January 26, 2010**

TU Delft Mechanics Colloquium, Delft, Netherlands

A First Look at Rider Biomechanics while Controlling a Bicycle **June 4, 2009**

Tutorials and Workshops

KEEN National Conference 2019, Dallas, TX, USA

Eight Ways to Use Computation to Teach Everything Else (with Allen Downey) **January 5, 2019**

COSMOS 2018, Davis, CA, USA

Squiggly Bicycle Routes: Physics Based Design Evaluation **July 10, 2017**

UCD CEE and DSI, Davis, CA, USA

Computational Thinking in the Engineering Curriculum (123 views) **January 10, 2017**

SCIPY 2017, Austin, Texas, USA

Automatic Code Generation With SymPy (7,500 views) **July 10, 2017**

Delta Stewardship Council Sacramento, California, USA

Software Carpentry Workshop **May 18–19, 2017**

UCD Center for Education Excellence Davis, California, USA

Software Carpentry Workshop **August 25, 2016**

iHub Nairobi, Kenya

Software Carpentry Workshop **June 17–18, 2016**

UCI Data Science Initiative Irvine, California, USA

Software Carpentry Workshop **February 21–22, 2015**

SCIPY 2016, Austin, Texas, USA

Simulating Robot, Vehicle, Spacecraft, and Animal Motion (9,051 views) **July 14, 2016**

SCIPY 2015, Austin, Texas, USA

Multibody Dynamics and Control with Python (6,902 views) **July 18, 2015**

SCIPY 2014, Austin, Texas, USA

Multibody Dynamics and Control with Python (4,809 views) **July 6, 2014**

PYCON 2014, Montreal, Quebec, Canada

Dynamics and Control with Python (2,918 views) **April 9, 2014**

MASB 2014, Akron, Ohio, USA

Simulation and Control of Biomechanical Systems with Python **March 9, 2014**

Talks

SacPy, Sacramento, California, USA

What to do when chicks go bad in your flock: JupyterHub on Bare Metal with Kubernetes **November 14, 2019**

First Year Bicycle Engineering Seminar Guest Lecture, Davis, California, USA

What the Bicycle Can Tell Us About Human Control **2018**

UCD CoE Decision Day, Davis, California, USA

Introduction to UCD Mechanical and Aerospace Engineering **2018,2019**

SCIPY 2018, Austin, Texas, USA

Resonance: Learning Mechanical Vibrations Through Computational Thinking Prepared by me, presented by Kenneth Lyons (414 views) **July 10, 2017**

EME 1 Guest Lecture, Davis, California, USA

What the Bicycle Can Tell Us About Human Control **2018**

SacPy, Sacramento, California, USA

Resonance: An Interactive Textbook and Software Library for Learning About Mechanical Vibrations **November 9, 2017**

EME 1 Guest Lecture, Davis, California, USA

What the Bicycle Can Tell Us About Human Control **November 28, 2016**

BMD 2016, Milwaukee, Wisconsin, USA

An Optimal Handling Bicycle **September 21, 2016**

SciPy 2015, Austin, Texas, USA

Optimal Control and Parameter Identification of Dynamical Systems with Direct Collocation using SymPy (1,279 views) **July 8, 2015**

Cleveland State University Human Motion and Control Seminar, Cleveland, Ohio, USA

Reproducible Scientific Computing with Open Software and Open Data **September 17, 2014**

2014 NCSSR Visiting Scholar Kickoff, Stanford, California, USA

Indirect identification of human control during walking **July 15, 2014**

Dynamic Walking 2014, Zurich, Switzerland

Identification of human control during walking **June 10, 2014**

MASB 2014, Akron, Ohio, USA

Identification of human control during walking **November 13, 2013**

BMD 2013, Narashino, Chiba, Japan

Methods for Elimination of Crosstalk and Inertial Efects in Bicycle and Motorcycle Steer Torque Estimation **November 13, 2013**

BMD 2013, Narashino, Chiba, Japan

Identification of Open Loop Dynamics of a Manually Controlled Bicycle-Rider System **November 11, 2013**

SciPy 2013, Austin, Texas, USA

Estimating and Visualizing the Inertia of the Human Body with Python (2,438 views) **June 27, 2013**

SciPy 2013, Austin, Texas, USA

Dynamics with SymPy Mechanics **June 27, 2013**

ASME DSCC 2012, Fort Lauderdale, Florida, USA

The Future of Bicycle and Motorcycle Dynamics **October 18, 2012**

Velo-city Global 2012, Vancouver, British Columbia, Canada

Time and Energy Penalties of Squiggly Bike Routes with Ted Buehler **June 28, 2012**

MAE Exit Seminar, Davis, CA, USA

Human Control of a Bicycle **May 15, 2012**

UCD ITS Seminar, Davis, CA

Bicycling in the Netherlands and Europe, policies and practices: What can America learn from them. with Eva Heinen **October 23, 2009**

UCD MAE Seminar, Davis, CA

A First Look at Rider Biomechanics while Controlling a Bicycle **October 29, 2009**

UCD MAE Qualifying Exam, Davis, CA

Human Control of a Bicycle **October 9, 2009**

ASME IDETC/CIE 2009, San Diego, CA

A Method for Estimating the Physical Properties of a Combinded Bicycle and Rider **August 31, 2009**

Mulitbody Dynamics 2009, Warsaw, Poland

Rider Motion Identification During Normal Bicycling By Means of Principal Component Analysis **July 1, 2009**

Fulbright Mid Year Presentation, Amsterdam, Netherlands

Jason Moore, In The Netherlands... **February 5, 2009**

ISEA 2008, Biarritz, France

Parametric Study of Bicycle Stability **June 6, 2008**

Professional Experience

UC Davis, Davis, CA, USA USA

Consultant **June-August 2015**

- Co-developed a R Shiny web application for Agricultural Field Trial Statistics (Agroft). github.com/ucd-ipo/agroft

Plotly, Montreal, Quebec, Canada USA

Consultant **July 2015**

- Developed a Jupyter notebook demonstrating the use of Plotly tools in control engineering.

Old Dominion University, Norfolk, Virginia USA

Langley Full Scale Tunnel Design Engineer **June 2004 to August 2005**

- Extensive design, modeling and drafting with Autodesk Inventor.
- Designed a portable floor system for a car balance.
- Designed a six degree of freedom full scale car balance.
- Wrote stress analysis reports for NASA specifications.
- Test-model design, fabrication and repair.
- Support in daily activities (test preparation, taking data, etc.).

Maglev Tram Design Engineer **May 2004 to January 2005**

- Created a reference CAD model of a full-scale magnetic levitation train car using AutoCAD Mechanical Desktop.

ODU HPV Team Project Lead **September 2003 to January 2005**

- Lead and managed a mechanical engineering senior design project.
- Designed and constructed a human powered land vehicle.
- Focused on bicycle frame, controls, stability, and drive train design
- Received 6th place out of 20 as a rookie team at the ASME Human Powered Vehicle Challenge.
- Website designer and maintainer.

ODU SAE Formula Team Design Engineer **2001 to 2002**

- Helped design and fabricate a scaled formula race car.
- Extensive design, modeling and drafting with AutoCAD Mechanical Desktop.
- Designed and fabricated the drive train and composite body.
- Website designer.

Bauer Compressors, Norfolk, Virginia USA

Mechanical Design Engineer Intern **June 2003 to December 2003**

- Extensive 3D modeling with Autodesk Inventor: modeled complex air compressor systems.
- Sheet metal design and fabrication.
- V-belt drive designs.
- Oil filtration system design.
- Designed parts and prepared drawings for fabrication.

Area Access, Norfolk, Virginia USA

Elevator Mechanic Assistant **May 2002 to August 2002**

- Installed and repaired elevators and various accessibility machines.
- Exposed to various electrical and mechanical systems.
- Forced to listen to Rush Limbaugh every morning during the truck ride.

Danville Community College, Danville, Virginia USA

CNC Mill Operator **June 2001 to August 2001**

- Learned G-code/Manual Programming.
- Learned FeatureCam 3D CAD/CAM software.
- Programmed and operated a HAAS 3-axis mill.

Mark D. Moore Construction Company, Danville, Virginia USA

Carpenter **1995 to 2001**

- Residential house construction and remodeling
- Framing, finishing, painting, drywall, hardwood floors, masonry

Volunteer Service

Across the Causeway Transit Collective, Davis & Sacramento, CA, USA

Member, Organizer, and Facilitator **July 2019 to June 2020**

- Transit advocacy for a better city-to-city commuter route.

Davis Bike Collective, Davis, CA USA

Bicycle Mechanic, Teacher and Organizer **September 2005 to June 2013**

- Volunteered bi-weekly as a teaching mechanic.
- Co-founded a consensus based non-profit.
- Co-wrote bylaws and setup the legal non-profit.
- Raised thousands of dollars in donations and grants.
- Organized conferences, parties, fundraisers, bike rides, work parties, outreach events.
- Organized two 1500+ attendee beer tasting and movie events with New Belgium Brewery.
- Web site maintenance, shift scheduling, handled distributor orders, managed email listservs.
- Lead the workshop series "Open Bike Night" for one year.

Davis Bicycles!, Davis, CA USA

Volunteer **September 2009 to June 2013**

- Administer the organization's websites [1] and [2].
- Lobby city council for bicycle amenities.
- Worked directly with city staff on various projects.

Maya Pedal, San Andres Itzapa, Guatemala

Volunteer Engineer **Summer 2007**

- Constructed pedal powered machines (i.e. blender, corn dekerneler/grinder, etc).
- Design work on a macadamia nut sheller.
- Repaired bicycles.
- Shop organization: tool boards, bike graveyard.

Whirlwind Wheelchair International, Lusaka, Zambia

Volunteer Engineer **Summer 2006**

- Worked at the Disacare Wheelchair Center.
- Worked on the design and fabrication team for a bicycle ambulance trailer.
- Fixture design and training.

Virginia Beach Public Schools, Virginia Beach, VA

Volunteer Mentor **2004**

- Assisted high schools students with an engineering design competition.

UC Davis Institute for Transportation Engineers, Davis, CA

Tour Leader **December 2006**

- Organized a group bicycle ride and museum tour.

ODU College of Engineering, Norfolk, VA

Tour Guide **February 2004**

- Led open house tours for middle school children.

Davis Bicycle Commission, Davis, CA

Bicycle Counter

- Participated in bicycle usage data collection.

Fabrication Skills

Extensive machining and fabrication experience: milling, turning, welding (MIG, TIG, ARC, Torch, Brazing), wood working, sheet metal work

Software Proficiencies

Extensive drafting, solid modeling, CAD, CAM, and FEA experience. Proficient in: CADKEY, AutoCAD, AutoCAD Mechanical Desktop, Autodesk Inventor, FeatureCAM 3D, IntelliCAD, PATRAN/NASTRAN, PRO-Engineer/PRO-Mechanica, GMAX, CNC/G-code, OnShape

Programming Languages (in approximate order of proficiency): Python, MATLAB, R, BASH, C, Javascript, C++, Lua

Web development: HTML, CSS, Javascript, Pelican, Hyde, Sphinx, Flask, Amazon Web Services, Ubuntu Server, Apache, NGinx, Plone, Wordpress, Joomla, Homesite, Microsoft Front Page, Macromedia Dreamweaver

Websites that I currently administer: moorepants.info [Hyde], Sports Biomechanics Lab [Plone 3], moorepants [HTML]. 2017 ICSC [Wordpress], PyDy [Sphinx]

Websites that I developed but no longer adminster: hmc.csuohio.edu [Plone 4], N Street Cohousing [Plone 4], Davis Bike Collective [Joomla & Wordpress], BikeDavis.info [Wordpress], smartdrive.ucdavis.edu, drive5.us [Flask], clevelandwiki.org [Django], ODU HPV [HTML],

Dynamics and Simulation: SymPy Mechanics, SciPy, MATLAB/Simulink, Working Model, Autolev, Axl/CampG, Opensim, Simbody

Computational: SciPy, NumPy, Uncertainties, Pandas, Cython, IPOPT, CMA-ES, SymPy, MATLAB, MathCAD

Instrumentation: National Instruments products including LabVIEW, MatLab DAQ Toolbox, Serial Protocols

Data: HDF5, PyTables, MySQL, MariaDB, SQLite, MongoDB

Graphics: Matplotlib, R, MATLAB, GIMP, Inkscape, Paint Shop Pro, Macromedia Fireworks, Blender, GMAX

Operating Systems: Linux (Ubuntu 8.04-17.10 and other distros), Microsoft Windows (3.1-7), DOS

Utilities: FTP, Version Control (Git/Mercurial/Subversion), SSH, BASH

Reference management: BibTeX, JabRef, Zotero, Mendeley, Endnote

Word processing: Vim, LaTeX, Google Docs, LibreOffice Writer, TeXnic Center, Microsoft Word

References

Academic Research

- Dr. Mont Hubbard, *MSc and PhD advisor*, Professor, University of California, Davis, Mechanical and Aerospace Engineering Department, One Shields Avenue, Davis, CA 95616, +01-530-752-6450, mhubbard@ucdavis.edu
- Dr. Arend Schwab, *Fulbright and PhD advisor*, Professor, Delft University of Technology, Mekelweg 2, NL 2628 CD Delft, The Netherlands, +31 15 27 82701, a.l.schwab@tudelft.nl

- Dr. Antonie J. van den Bogert *Post Doctoral Supervisor* Professor, Cleveland State University, Mechanical Engineering Department, 1960 E. 24th St., SH 232 Cleveland, Ohio 44115, +01-216-687-5329, a.vandenbogert@csuohio.edu
- Dr. Ronald Hess, *PhD advisor*, Professor, University of California, Davis, Mechanical and Aerospace Engineering Department, One Shields Avenue, Davis, CA 95616, +01-530-752-1513, rahess@ucdavis.edu
- Dr. Xinfan Lin, *Research Collaborator*, Assitant Professor, University of California, Davis, Mechanical and Aerospace Engineering Department, One Shields Avenue, Davis, CA 95616, lxflin@ucdavis.edu
- Dr. R. Paul Crawford, *Research Collaborator*, CEO, Hegemony Technologies, Davis, CA, paul.crawford@hegemonytechnologies.com
- Dr. Luke Peterson, *Collaborator at UCD*, dlpeterson@ucdavis.edu
- Dr. Jodi Kooijman, *Collaborator at TU Delft*, jodikooijman@gmail.com

Teaching and Education

- Dr. Petros Abraha *Educational Collaborator*, Professor, Meijo University, Department of Mechanical Engineering, 1-501 Shiogamaguchi Tenpaku-ku Nagoya 468-8502 Japan, petros@meijo-u.ac.jp
- Dr. Allen Downey *Educational Collaborator*, Professor, Olin College, Needham, MA, USA, Allen.Downey@olin.edu
- Dr. Steven Velinsky *Capstone Design Co-Instructor*, Distinguished Professor, University of California, Davis, Mechanical and Aerospace Engineering Department, One Shields Avenue, Davis, CA 95616,
- Dr. Susan Handy, *COSMOS Lead Instructor*, Professor, University of California, Davis, Davis, CA, slhandy@ucdavis.edu
- Dr. Jim Schaaf, *TA and Lecturer supervisor*, Continuing Lecturer, University of California, Davis, Mechanical and Aerospace Engineering Department, One Shields Avenue, Davis, CA 95616, +01-530-752-5548, jas@ucdavis.edu
- Dr. Rida Farouki, *TA supervisor*, Professor, University of California, Davis, Mechanical and Aerospace Engineering Department, One Shields Avenue, Davis, CA 95616, +01-530-752-1779, farouki@ucdavis.edu

Engineering

- Dr. Tai Stillwater, *SmartDrive and Pedal Desk*, Postdoctoral Researcher, Institute of Transportation Studies, University of California, Davis, 2028 Academic Surge, One Shields Avenue, Davis, CA, 95616, tstillwater@ucdavis.edu
- Matthew Seitzler, P.E. *Colleague*, Professional Engineer, at Davis Energy Group, Davis, CA, matt@sre-engineering.com
- Dr. Drew Landman, *LFST supervisor and undergraduate mentor*, Professor, Old Dominion University, Mechanical and Aerospace Engineering, 1311 Engr and Comp Sci Bldg, Norfolk, VA 23529, +01-757-683-6008, dlandman@odu.edu
- Dr. Anthony Passerini, *Cell shearing project supervisor*, Assistant Professor, University of California, Davis, Biomedical Engineering Department, One Shields Avenue, Davis, CA 95616, +01-530-754-6715, agpasserini@ucdavis.edu
- John Dwyer, *Bauer Compressors supervisor*, Engineer Department Manager, john.dwyer@bauercomp.com

Academic and Community Service

- Dr. Debbie Niemeier, *ICSC 2017 Co-Organizer*, Professor, University of California, Davis, National Academy of Engineering, Davis, CA, dniemeier@ucdavis.edu
- Dr. Robb Davis, *Past Mayor of Davis, CA*, Davis, CA, rdavis@cityofdavis.org
- Dr. Sarah McCullough, *Colleague at the Davis Bike Collective*, UC San Diego, smcc@ucdavis.edu
- Dr. Susan Handy, *ICSC 2017 Co-Organizer*, Professor, University of California, Davis, Davis, CA, slhandy@ucdavis.edu