Conor M. Marr

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Education

Bachelor of Science, with Honors in Aerospace Engineering concurrent with

Masters of Science in Aerospace Engineering

The Pennsylvania State University, University Park, PA 16802

Schreyer Honors College

Cumulative GPA: 3.85 Major GPA: 3.96

Graduation: December 2007

Ph.D. in Aerospace Engineering

The Pennsylvania State University, University Park, PA 16802

Research focus in Rotorcraft Dynamics, CFD, Modeling, and Optimization

"Conceptualization, Modeling, and Characterization of a CF Driven Multi-State Lead-lag Bypass Damper"

Graduate GPA: 3.91

Graduation: May 2012

Industry Experience

Supervisor, Rotary Wing Design Engineering – Parker Lord Corp. April 2023 – March 2025

- Led team of 6 tasked with developing, designing, and delivering new products to support OEM Rotary Wing customers
- Engaged with helicopter OEMs to develop deep technical relationships and identify new technology development opportunities
- Supported market oriented technology roadmap refresh using key technology brick structure with TRL and MRL maturity development
- Focus on team engagement and career development, with targeted use of Situational Leadership
- Led Rotary Wing Team chartering effort and Team Improvement Board implementation
- Maintained design leadership on two Fluidlastic Damper products and one High Capacity Laminate (HCL) bearing product in various stages of development

Staff Design Engineer, RW Design Engineering – Parker LORD Corp. May 2020 – April 2023

- Lead design engineer on two Fluidlastic Damper and one HCL bearing products at various stages of development including initial design, analysis, and test support
- Support design engineer on two other damper products
- Advanced Fluidlastic modeling and prediction capabilities and design tool development
- Investigated next generation elastomeric fatigue prediction, including assistance in revamping elastomeric bearing performance and fatigue design codes
- Created framework for improved HCL and Fluidlastic design guides and documentation

Mngr, Product Support and Aftermarket Engineering – LORD Corp. Oct. 2019 – May 2020

- Led team of 7, emphasizing process improvement, skill development, scope management, and cross functional coordination
- Conducted major rework of aftermarket reverse engineering and design procedures, with a focus on robustness, repeatability, and data management

Manager, Sustaining and Aftermarket Engineering – LORD Corp. Oct. 2017 – Oct. 2019

- Led 8 direct reports from new hires to 25+ year veterans, with a focus on applied Situational Leadership and Clifton Strength methodology to drive engagement and develop team effectiveness
- Coordinated with aftermarket sales team and aircraft operators to develop aftermarket portfolio, including a $1.3+ million sales to date reverse engineered main rotor bearing
- Additional focus on cost out opportunities and process improvements in production environment

Manager, MTD & PIE – LORD Corporation March 2017 – October 2017

- Led team of 6, leveraging advanced technology to break into new markets, including the customer driven $800,000+ NRE IHSMS Smart Bearing
- Generated Technology Roadmaps for aerospace and defense teams with Product Managers and coordinated technology development and design tool strategy
- Assisted in intellectual property strategy development and deployment across A&D products

Manager, MTD– LORD Corporation July 2015 – March 2017

- Led team of 3 concentrated on rapid TRL advancement and design tool development, with emphasis on embedded sensing and elastomer fatigue
- Led advanced elastomer fatigue prediction efforts
- Supported teams across industry groups to advance CFD capabilities
- Generated updated Skills matrix and GUI to track engineering team capabilities
- Advanced elastomer mold fill modeling capabilities through CFD modeling

Senior Engineer, MTD – LORD Corporation Summer 2012 – Summer 2015

- Brought advanced CFD capabilities to the company, focused on Lead-Lag damper dynamic modeling, erosion studies, heat flow and removal, and embedded systems

- Developed Fluidlastic damper design tool and GUI using CFD, experimental data, and company best practices
- Advanced multi-state damper capabilities, including a CF activated damper
- Supported teams across many industry groups with fluid design and modeling

Engineering Intern at LORD Corporation June 2006 – May 2012, Intermittently

- Collaborated on multi-state damper project, designing and constructing prototype on site
- Developed new CFD tools to assist in design of next generation damping devices
- Researched aircraft damping methods, specifically helicopter lead-lag dampers
- Worked with leaders in damper modeling and design

Research Assistant at PSU Rotorcraft Center of Excellence Summer 2005 – May 2012

- Research focused on vibration, dynamics, rotorcraft dynamics and lead-lag dampers
- Assisted on SBIR to implement damper codes into comprehensive rotorcraft analysis code RCAS, learned the basics of running and analyzing RCAS simulations
- Designed, analyzed, implemented and tested passive multistate damper design
- Extensive CFD modeling of dynamic conditions in damper devices
- Detailed work on modeling Fluidlastic helicopter lead-lag dampers and incorporating damper models into rotorcraft prediction codes
- Assisted in innovative damping projects and proposals including embedded dampers, and drag brake concepts.
- Frequent coordination with industry representatives on modeling/prototyping progress
- Detailed use of MATLAB, ANSYS, Autodesk Inventor, Fluent, and Simulink in modeling and optimization
- Analyzed, updated and routinely maintain the Penn State Ground Resonance Test Stand

NASA Ames Internship – NASA Ames Summer 2008

- Worked in the Aeromechanics Branch on damper related projects
- Assisted in SBIR reviews for various rotorcraft dynamics projects
- Featured on NASA website for a 'Model Internship'

University Experience

Assistant Professor, Mechanical Engineering August 2025 – Present

- Research Focus: Vibration Control, Motion Capability, CFD, Engineering Leadership, and Career Readiness in the Classroom, with a focus on co-op and intern programs
- Teaching Areas: Thermodynamics, Fluids, Design, Dynamics, Systems, Career Readiness
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System Dynamics Adjunct Professor – Penn State Behrend August 2023 – December 2023

- Taught a 12 student class with emphasis on application of system dynamics skills
- Incorporated industry examples and end use methodology into lecture
- Emphasized importance of understanding engineering assumptions
- Developed F-18 simple systems lab to engage students in the course content

PSU Leonhard Advisory Board Fall 2015 – Present

- Advisory board chair starting in FY24
- Advised PSU College of Engineering on subjects related to educational advancement including career readiness, student engagement, and the support of novel teaching initiatives
- Helped advise path of update to Engineering Masters programs
- Championed increase in industry involvement and industry targeted courses in both Masters and Bachelors programs.
- Featured speaker in Leonhard Center promotional video

Co-op and Intern Engagement HPT – Parker Lord 2020 – 2025

- Created co-op/intern strategy for NVH Division as well as other Parker Erie Divisions
- Led target university engagement, including in-class room presence, partnership with departments, clubs, and career services, and participation in university events
- Developed and led co-op/intern programing including a mentor program, lunch and learns, career development, conversion activities, and engagement events
- Lead for overall Parker LORD Penn State University Park interaction
- Co-lead for overall Parker LORD Penn State Behrend interaction.

Senior Design Project Sponsor and Organizer – Parker Lord 2016 – 2025

- Coordinated senior design project sponsorship within the NVH division
- Partnered with Penn State University, Penn State Behrend, and Gannon University
- Coordinated a portfolio of 2-6 projects per year
- Individually advised 1-2 projects each year
- Emphasized realism in the sponsorship by creating teaching moments that relate the students' projects to actual industry best practices and experiences

Graduate Student Research Sponsorship – Parker Lord 2014 – 2025

- Coordinated research with partner universities, including co-advising 2 Ph.D. students
- Awarded Pennsylvania Manufacturing Grant in 2024 partnering with Gannon University on 3D Printed Composite Vibration Isolation for eVTOLs
- Supported STEP-A NASA University Leadership Initiative Grant in 2024 with Penn State University on Efficient and Affordable NVH Suppression and Full Spectrum Crashworthiness for eVTOL and heVTOL Air Mobility Vehicles

Penn State University Aerospace Engineering IPAC 2024-Present

Career Readiness Panelist, Future Leaders in Aerospace Symposium May 14-16, 2025

Penn State Behrend Mechanical Engineering Technology IPAC 2020-2025

Gannon University Biomedical Engineering Advisory Board 2022-2025

Patents

"Motion controlled helicopter and rotation rate switched fluid lead lag damper," USPTO Application #: #20150093245

"Integrated Smart Sensing Systems and Methods," Patent Application, PCT/US2017/059316, Filed October 31, 2017

"Centralizer," Patent Application, PCT/US20/20883, Filed 03/04/2020

Publications

Arzalluz, I., Ji, X., Piovesan, D., Marr, C. (2025) Additive Manufacturing Design of a Vibration Isolator for Rotorcraft Simulator Seats. In *Proceedings of the 81st Vertical Flight Society Forum*, Virginia Beach, VA, May 20-22, 2025.

Rai, G., Rahn, C., Smith, E., & Marr, C. (2023). 3D printed circular nodal plate stacks for broadband vibration isolation. *Journal of Sound and Vibration*, *554*, 117647.

Rai, G., Rahn, C. D., Smith, E., & Marr, C. (2023). Dynamic Antiresonant Vibration Isolators with Flexible Levers and Elastic Boundary Conditions. In *AIAA SCITECH 2023 Forum* (p. 2408).

Rai, G., Rahn, C., Smith, E., & Marr, C. (2022). Nodal beam stack vibration isolators. *Mechanical Systems and Signal Processing*, *179*, 109324.

Rai, G., Rahn, C. D., Smith, E., & Marr, C. (2021, November). Vibration isolation in continuous beam networks. In *ASME International Mechanical Engineering Congress and Exposition* (Vol. 85628, p. V07BT07A062). American Society of Mechanical Engineers.

Rai, G., Rahn, C. D., Smith, E., & Marr, C. (2020, November). Vibration isolation using continuous beams. In *ASME International Mechanical Engineering Congress and Exposition* (Vol. 84553, p. V07BT07A046). American Society of Mechanical Engineers.

Treacy, S. M., Rahn, C. D., Smith, E. C., & Marr, C. (2017). Experimental validation of a fluidic pitch link model. In *43rd European Rotorcraft Forum, ERF 2017* (pp. 1455-1468). (43rd European Rotorcraft Forum, ERF 2017; Vol. 2). Associazione Italiana di Aeronautica e Astronautica (AIDAA).

LeVevre, B., Davis, M., Marr, C., Rusk, D, Johnson, C. "Integrated Hybrid Structural Management System (IHSMS) – Usage and Loads Monitoring," In *Proceedings of the 73rd American Helicopter Society Forum*, Fort Worth, Texas, May 9-11, 2017.

Treacy, S. M., Rahn, C. D., Smith, E. C., & Marr, C. (2016). Pitch-flap stability of an articulated rotor with fluidic pitch links. In *AHS Specialists' Conference on Aeromechanics Design for Vertical Lift 2016* (pp. 136-144). American Helicopter Society International.

Marr, C., & Halilovic, H. (2013) Development of a Multi-State Fluidlastic Lead-Lag Damper. In *Proceedings of the 39th European Rotorcraft Forum*, Moscow, Russia.

Marr, C., Fuhrer, Z., Lesieutre, G. A., & Smith, E. (2011, July). Multi-state lead-lag damper development and validation. In *67th American Helicopter Society International Annual Forum 2011* (pp. 3024-3038).

Marr, C., Lesieutre, G. A., & Smith, E. C. (2008). Nonlinear, temperature-dependent, fluidlastic lead-lag damper modeling. In *Annual Forum Proceedings-AHS International* (Vol. 3, pp. 2370-2381). American Helicopter Society.

Smith, E. C., Lesieutre, G. A., Szefi, J. T., & Marr, C. (2006). Time domain fluidlastic® lag damper modeling. In *62nd American Helicopter Society International Annual Forum 2006* (pp. 1955-1964).

Szefi, J., Smith, E. C., Marr, C. (2005) Recent Advances in Rotor Blade Lag Damping Devices: Embedded Damper Prototype Testing and FluidLastic DamperModeling. In *Eleventh International Workshop on Rotorcraft Dynamics and Aeroelasticity.* October 12 – 14, 2005, Hilton, Deerfield Beach, Florida

Mentorship, Career Readiness, and Engagement Activities

Peer W Mentoring Circles High Performance Team – Parker Lord 2021 – 2025

- Co-lead of business resource group with focus to attract, develop, and retain women in the engineering workforce, serving over 630 members during FY24
- Awarded Ally of the year for support of and engagement in the program in FY22
- Canvassed mentor for the topics of Communication and Building Confidence
- Supported Ally, Events, and Canvassed Mentoring subteams
- Developed automated canvassed mentoring scheduling app using MS Power Automate, MS Power Apps, and MS Flows

Employee Engagement STARPOINT Team – Parker Lord 2021 – 2025

- Trained, coordinated, and led focus group sessions to dissect the feedback from the employee engagement survey
- Active participant in team focused on improving employee engagement within the workplace
- Led the SharePoint team and member of the Community Outreach and Working Parent subteams

Recruitment for Intern and Co-op Program – Parker Lord 2014-2025

- Attended career fairs at multiple unvierstities, including being the career fair lead at Penn State University, Penn State Behrend, Case Western, and the University of Akron at various times.
- Developed co-op and intern career fair and interview strategy and trained engineering recruiters.

Career Fair Readiness and Support 2018-Present

- Presented at multiple panels for career readiness, including:
    - Future Leaders in Aerospace symposium - 2025
    - Penn State Behrend Networking Panel – multiple years
    - Penn State University Resume Reviews – multiple years

Volunteer Experience

Erie School Career Fair Winter 2013 - 2025

- Volunteered at local area high school to discuss engineering as a career option
- Inspired students to work in STEM fields to become engineers

Junior Achievement Spring 2014 – 2025

- Board Member since 2019 with focus on classroom engagement
- Member of the Celebrate Success and Play4JA (Events) Committees
- Multiple times a year teach elementary school students about business, industry, and economics through JA programing
- Created a job simulation game that is improved each year to teach students money management, job decisions, and the interaction within a community.

National Aerospace Day Volunteer Fall 2012 – 2025

- Taught elementary and middle school students about aerospace topics in a day long event, including many hands-on activities. Led the Flight group.

Haunted Event Organizer Fall 2016-Present

- Devised, created, and orchestrated multiple haunted events with teams of up to 20 volunteers
- Events have included a haunted basement (2016), a haunted escape room (2018), and a haunted house in the Erie Women's Club (2021)
- Haunted events focused on cohesive themes and storytelling backed by innovative special effects and targeted human movement to maximize terror.

PJAS Winter 2013 – 2025

- Judged high school and middle school since projects for PJAS at regional and state level

PSU Schreyer Honors College Applicant Interviewer Fall 2012 – 2023

- Interviewed potential PSU Schreyer Honors students and provide a local point of contact for applicants with questions about the program.

PSU Aerospace Major Video Fall 2019

- Featured speaker in video highlighting the aerospace major at PSU

LORD Community School Partnership 2017 – 2019

- Created lesson plans and taught 3 STEM related classes

AHS Penn State Chapter President Fall 2008-Spring 2011

- Successfully increased chapter enrollment and helped chapter sponsor, Edward Smith, win the AHS Individual Member Sponsor Contest.
- Organized varied meetings including pilot panels, helicopter fly-ins, radio controlled helicopter airshows, trips to Rotorfest, and guest speakers.
- In charge of designing, organizing, and constructing the PSU display each year at the AHS conference.

Skills

Computer Experience:

Extensive use of Ansys Workbench Design Modeler, Meshing, and CFX
Detailed design experience with Autodesk Inventor
Training Course at ART to learn RCAS
Proficient with C++ , MATLAB, Simulink, and Simscape
Introductory programming in Visual Basic

Introductory Fortran experience

Multiple year experience with MS Office, Power Automate, Forms, Teams

Recruiter: Involved in recruiting at career fairs and university events since 2013

Team captain for Penn State University Park, Penn State Behrend, Gannon University, and Akron University at various times.

Relevant Specialized Course Work

Core rotorcraft classes: Structural Dynamics, Stability and Control, Aerodynamics

Courses in Finite Element / Boundary Element Methods, Optimization

Flight Testing Course with Dr. Barnes McCormick

Experimental Modal Analysis, and Advanced Structural Dynamics

Sailplane Class: Spring 2003 – May 2006

Leader of the wing design and construction group for an easy-build glider

Extensive hands on Fiberglass and composite design and construction experience

Coordinated closely with leaders from groups to integrate all parts of the glider

Language: Knowledgeable of Spanish (spoken and written)

Activities and Honors

Penn State University Early Career Award Recipient, 2025

Vertical Flight Society Member since 2006

Penn State Aerospace Industrial and Professional Advisory Board member since 2024

AHS/NASA Lichten Award for paper and presentation

Tau Beta Pi engineering honors society

Sigma Gamma Tau aerospace engineering honors society

Guest Speaker about Irish Folklore at Chatham College Irish Festival

Tour Guide for Aerospace Engineering Department