

Education**University of Illinois at Champaign-Urbana**

2017 – 2019

Master of Science in **Mechanical Engineering**, GPA: 3.92/4.0**Relevant Coursework:** Non-Linear Finite Element Analysis, Topology and Structural Optimization, Solid Mechanics, Advanced Numerical Methods**University of Illinois at Champaign-Urbana**

2013 - 2017

Bachelor of Science in **Aerospace Engineering**

• Technical GPA: 3.63/4.0 • Overall GPA: 3.64/4.0 • James Scholar Honors • Dean's List – 2013-2017

Relevant Coursework: Undergraduate SAE Automobile Design, Aerospace Computing, Aerospace Flight Mechanics, Mechanics of Aerospace Structures, Aerospace Dynamical Systems, Electronic Circuits, Applied Aerospace Structures, Control Systems, Numerical Methods, Mechanics of Composites, UAV Navigation and Control, Experimental Stress Analysis, Failure Analysis of Mechanical Components, Internal Combustion Engines**Engineering Experience****Formula SAE Team Captain, Illini Motorsports**

Fall 2016 - Present

- Responsible for keeping up schedules to meet ambitious deadlines team-wide (75-100 members) and between eight individual subsystems which finished 15th (of 120 international teams) at FSAEM and 6th (of 80 international teams) at FSAEL and reaching ranked 13th worldwide (of 713 teams).
- Designed parts and systems that lead to reducing overall racecar weight by 40lbm (from 476 to 434) in a single season without decrease of reliability.

Formula SAE Composites Subsystem Captain, Illini Motorsports

Fall 2015 - 2017

- Designed, manufactured, and tested all composite based components, such as carbon fiber chassis and aerodynamics package as an on-going and long-term design project, and tooling for competition entry vehicle with continual efforts to reduce mass and increase part quality.
- Reduced weight of composites aerodynamics package by ~25lbm (45% reduction over previous vehicle) on 475 lbm vehicle for '15-'16 competition season
- Managed and manufactured on first monocoque chassis for team with specific design projects in designing and sizing lightweight and structural hardpoints, and overseeing testing and validation of selected ply schedules and structures
- Created and implemented online database and procedure system for in-house manufacturing, and a part traceability system for increased production quality and efficiency, resulting in improved part quality, reduced material waste, and higher part throughput

Formula SAE Aerodynamics Subsystem

Fall 2013 - 2017

- Component project leader for new endplate design along with entire associated in-house manufacturing process
- Designed, tested and validated aerodynamics components and assemblies, such as front and rear wings, and underbody, through simulation and physical testing using combination of CFD and full-scale wind-tunnel and road-based data acquisition

Work Experience**Ford Motor Company – Dearborn, Michigan****Powertrain Controls Engineer**

2019-Present

- Developed SIL/HIL plant models for experimental air induction systems and xEV climate control systems.
- Created a suite of automated model checks and verifications for corporate style-guide compliance with a 10% reduction in issue tickets.
- Created and managed a new documentation system to meet end-user requirements leading to a 15% reduction in issue tickets.

Geubelle Research Group, CEIMM, MS Thesis in Mechanical Engineering**Research Assistantship; Thesis Research**

2017-Present

- Thesis: “*IGFEM modeling of transverse failure in carbon-epoxy composites and implementation of the IGFEM in Abaqus FEA*”
- Conducting work on numerical modelling of transverse composite fibers using the Interface-Enriched FEM (IGFEM) code to predict cohesive failure.
- Running analysis and performing numerical validation on realistic virtual meso-scale simulations and validating results against experimental equivalents.
- Testing sensitivity of various parameters to help tailor future applications of transverse fibers and usage against failure.

Ford Motor Company – Dearborn, Michigan**Body Exterior Engineering Intern**

Summer 2018

- Systems engineering intern for front end systems supporting new vehicle launch programs.
- Created system to track and report progress of new build fit and finish with automation for checking against master specifications across various trim levels.

Space Exploration Technologies (SpaceX) – Los Angeles, California**Vehicle Engineering, Associate Engineer – Post Grad**

Summer 2017

- Supported testing of fatigue specimens for flight critical hardware in room temperature and cryogenic conditions through sample preparation, load frame testing, in-test measurement and analysis, and final compilation of results.
- Designed tooling to help support ultrasonic and eddy current inspection post-friction stir welding to increase rate and accuracy of inspection.
- Reviewed and analyzed manufacturing processes for friction stir welding and inspection with a result of 5% increased throughput.

Ford Motor Company – Dearborn, Michigan

Body Engineering Intern

Summer 2016

- Worked on new lightweight, fleet-universal crash safety device to protect against door openings in side impact scenarios including CAD, simulation model and prototype and conducted crash test logistics and post-crash investigation relating to new latch assembly safety devices
- Created MATLAB based data analysis tools which became the standard use tool for the department in analyzing and dissecting accelerometer data

Space Exploration Technologies (SpaceX) – Los Angeles, California

Vehicle Engineering Intern, Dragon Composites

Summer 2015

- Analyzed and designed primary and secondary metallic and composites structures to support a manned space capsule with efforts to reduce mass in high loading scenarios, and subsequently created technical drawings per GD&T and company specifications
- Refined and analyzed data from full vehicle fem models and performed data extraction and analysis to design load cases for physical testing of composite components

University of Illinois at Chicago – Chicago, IL

Research Assistant

Summer 2009

- Prepared mediums and buffers, isolated plasmids, prepared and ran agarose gels, and performed data entry of laboratory specimens and inventory

Skills

Computer: Unigraphics/NX9, MATLAB, PTC Creo, Microsoft Word, Excel, PowerPoint, ANSYS (including Ansys Composites Prepost CAE), Abaqus, Catia V5, Java/C programming, Star-CCM+

Technical: Composite wet and pre-preg layups, 3/5 axis CNC, machine shop equipment (lathes, mills, band saw, etc.)

Languages: Fluent in Polish

Leadership / Involvement

Design Mentor, Whitney Young High School Robotics

Fall 2013-2015

Mentor for a FIRST Robotics Team in the FRC and FTC competitions

- Guided students the engineering process, CAD, and recruitment through the design and fabrication of a competition robot