Ben Zastrow

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SUMMARY

Aerospace Engineering MS student researching reduced order modeling using physics-informed machine learning. Comfortable merging industrial and academic contexts due to 4 years of experience as an aerospace engineer working on finite element analyses. Published a conference paper with one of my customers based on our analysis results.

EDUCATION

MS in Aerospace Engineering, The University of Texas at Austin   Expected May 2023
3.78/4.0 GPA

BS in Engineering Mechanics, University of Wisconsin – Madison   May 2018
Certificate in International Engineering
3.79/4.0 GPA (Graduated with Distinction)

Budapest University of Technology and Economics, Hungary   Spring 2017

ENGINEERING EXPERIENCE

Graduate Research Assistant, Willcox Research Group, Austin, TX   August 2021-present
- Developing reduced order models of computational fluid dynamics simulations by combining data-driven learning with physics-informed modeling using the Operator Inference technique to reduce model size from millions of degrees of freedom to less than fifty.

Engineer 3, ATA Engineering, Inc., Lakewood, CO   June 2018-July 2021
- Postprocessed results from Sierra/SM explicit shock simulations by using extensive Python scripts to calculate and easily display key performance metrics to stakeholders from differing technical backgrounds.
- Investigated the physical mechanism causing contact chatter in electro-mechanical switches, leading to a novel explanation based on the results of high-fidelity finite element simulations.
- Analyzed detailed stress models under quasi-static, thermal, and random vibration environments using the Simcenter Nastran finite element code to support design improvements of 6 spacecraft components.

Summer Intern, Brake Control Algorithms, Ford Motor Company, Dearborn, MI   June-August 2017
- Designed and implemented a system of 18 threshold consumption metrics for Ford's electronic stability controls, allowing for easier development and testing of control algorithms.
- Programmed a Matlab tool to provide control algorithm performance information to developers by indicating proximity to controller activation and by performing situational coverage mapping.

Co-op student employee, ATA Engineering, Inc.   Spring 2015, Fall 2015, Summer 2016
- Performed finite element analyses on highly engineered spacecraft and themed entertainment components, including a large moving beam platform, an industry-grade conveyor belt drive frame, and a fuel mixer valve.
- Validated a finite element model of a rocket engine nozzle throat to test data received from the client to determine model accuracy using shock, sine, and random vibration results.

ADDITIONAL EXPERIENCE

Writer, The Wisconsin Engineer Magazine   September 2016-May 2018
  Authored eight published articles, including *Reaching for Mars* and *Engineering, It's a Global Job.*

Tutor, Undergraduate Learning Center   September 2017-May 2018
  Facilitated 1-10 student tutoring sessions for introductory mechanics of materials and computer science courses.

SKILLS

Computer Science – Python, Matlab
Finite Element Analysis – Nastran, NX, Femap, Ansys, Sierra, Cubit, Paraview
Computational Fluid Dynamics – FUN3D

PUBLICATIONS

B. G. Zastrow et al., "Investigation of electrical chatter in bifurcated contact receptacles," 2021 IEEE 66th Holm Conference on Electrical Contacts (HLM), 2021, pp. 16-23, doi: 10.1109/HLM51431.2021.9671173.

AWARDS

L. Moulton Bashford Scholarship
Millard W. Johnson, Jr. Scholarship