WaiYan(Anson) Chan

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Education

University of Wisconsin-Madison **Madison, WI**

M.S - Electrical and Computer Engineering, GPA: 3.88/4 Expected July 2024

B.S - Mechanical Engineering, GPA: 3.72/4 December 2021

Relevant Coursework

- Dynamics and Control of AC Drives
- EM Design of AC Machines
- Redesign and Prototype Fabrication
- Power Electronic Circuits and Lab
- Automatic Controls Lab
- Finite Elements

Research Experience

Wisconsin Electric Machinery and Power Electronics Consortium **August 2022 – Present**

Graduate Research Assistant – Severson Group *Madison, WI*

- **Additively Manufactured Stator Housing for High-Speed Bearingless Generator**
  - Develop and fabricate additively manufactured housing with integrated cooling channels for a 100kW, 80kRPM high-speed twin bearingless generator in a microturbine-based CHP generation system.
- **Bearingless Machines (BSPM) for Aerial E-Turbocharger Application**
  - Perform ANSYS structural and modal analysis to validate high-speed rotor design. Identify critical speed and rotor stress under rated operating condition.
  - Facilitate the development of a multi-physics modeling framework for evaluating and optimizing BSPM electric machines. Create Python scripts necessary to evaluate machine constants and coil inductances in JMAG.
  - Perform characterization of a 4-DOF 8kW twin stators BSPM machine. Fabricate components for test fixturing.

Work Experience

Milwaukee Tool **January – August 2022**

NPD Mechanical Design Engineer *Brookfield, WI*

- Conducted FEA analysis on BLDC motors of different sizes and winding configurations, recommended optimal designs for product development using Pugh Matrix for informed and cost-effective solutions.
- Assessed power tool performance requirements through the collection and analysis of motor thermal characteristics and power output data from competitor products.

Wisconsin Electric Machinery and Power Electronics Consortium **September 2019 – December 2021**

Undergraduate Researcher *Madison, WI*

- Prototyped a desktop size dynamometer setup capable of characterizing electric machines rated up to 10 N-m of torque and 3000 RPM. Reduced the original setup volume by 35%.
- Collaborated with a team of graduate researchers to prototype a modular terminal box for powering a 200 kW NASA prototype machine. Responsible for sourcing parts and creating CAD models.
- Fabricated BSPM machines by producing stator slot windings and machining components used in the assembly.

Projects

eMach | *Open-Source Python Machine Modeling and Optimization Framework* **2022 - Present**

Compact Low Voltage Induction Machine with 3D Printed Housing | *ME Senior Design* **2021**

UW CoE Undegraduate Learning Center | *Tutor, Physics and Engineering Statics* **2018-19**

Wisconsin Racing Electric | *Chassis Team Member* **2018-21**

Publications

1. T. Noguchi, N. Petersen, **W. Chan**, L. Rapp, E. Severson, "Bearingless Motor/Generator Opportunities in sCO_2 Power Cycles," *The 8th Internationl Supercritical CO_2 Power Cycles Symposium, San Antonio, TX, USA, 2024 (Submitted)*
2. T. S. Slininger, **W. Chan**, E. L. Severson, and B. Jawdat, "An Overview on Passive Magnetic Bearings," *2021 IEEE International Electric Machines & Drives Conference (IEMDC), Hartford, CT, USA, 2021*

Technical Skills

Hands-on: Electric Machine Fabrication, Component Machining and Assembly, CAD Design and Drafting, GD&T
Tools: Python, Git, SolidWorks, NX, ANSYS, MATLAB / Simulink, Altium, LabView, MAGNET, FEMM, JMAG, LaTeX