

WaiYan(Anson) Chan

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Education

University of Wisconsin-Madison

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

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

Madison, WI

Expected July 2024

December 2021

Relevant Coursework

- Dynamics and Control of AC Drives
- Redesign and Prototype Fabrication
- Automatic Controls Lab
- EM Design of AC Machines
- Power Electronic Circuits and 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 Undergraduate 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 Applications in sCO₂ Power Cycles," *The 8th International Supercritical CO₂ Power Cycles Symposium, San Antonio, TX, USA, 2024 (Accepted)*
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, L^AT_EX