Dylan Fyler

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Education

University Massachusetts Lowell (2010–2016)

- Bachelor's of Science in Mechanical Engineering with a minor in robotics, **GPA 3.58**, Deans list in 2015.
- Master's of Science in Mechanical Engineering with a concentration in vibrations, dynamics, and controls, **GPA 3.85** in 2016.
- Master's Thesis Topic: Probabilistic design approach to improve sound radiation characteristics of automotive automatic transmissions, research sponsored by Hyundai Motor Company.

Pennsylvania State University Graduate Program in Acoustics (2019-Present)

- Candidate for Master's of Engineering in Acoustics, **GPA 3.93**, expecting to graduate in 2024.
- Relevant Courses: Elements of Sound Waves in Fluids, Electroacoustic Transducers, Advanced Electroacoustic Transducers, Acoustics in Fluid Media, Signal Analysis for Acoustics and Vibration, Advanced Signal Analysis for Acoustics and Vibration, Elements of Acoustics and Vibration, Sound-Structure Interaction, Non-Linear Acoustics, Computational Acoustics

Publications

- Fyler D., Sullivan B., and Raptis I., 2015, "Distributed Object Manipulation Using a Mobile Multi-Agent System," IEEE International Conference on Technologies for Practical Robotic Applications.
- Fyler D., and Inalpolat M., 2016, "A Design Framework to Improve the Dynamic Characteristics of Double Planet Planetary Gearsets," International Modal Analysis Conference.
- Fyler D., and Inalpolat M., 2016, "A Dynamic Model for Double-Planet Planetary Gearsets," Journal of Vibration and Acoustics.
- Patent Application US20210173061A1 and WO2021010949A1

Engineering Experience

Structural Dynamics and Acoustic Systems Laboratory
Lowell, MA
Graduate Research Assistant December 2014 to December 2015

- Utilized specialized software packages to perform finite element analysis on spur gear trains subjected to various spacing errors and eccentricities.
- Worked with and developed lumped models for planetary gear trains to understand the effects of different operating speeds and extract resonant frequencies of the systems.

Airmar Technology Corporation
Milford, NH
Acoustical Engineer February 2016 to July 2022

- Modified a tonpilz design to incorporate a tapered head mass. The design modification improved the transducer bandwidth and source level.
- Applied finite element analysis to predict directivity patterns for convex and concave ultrasonic transducer arrays. Array simulations removed the need for costly prototyping and significantly reduced time to market for the designs.

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- Implemented digital signal processing algorithms to test transducer arrays and evaluate their performance. Evaluated how crosstalk between array elements impacted the system's ability to determine target bearing.
- Worked in multi-disciplinary teams with mechanical, electrical, and manufacturing engineers to bring new transducer designs from lab prototypes to marketable products.
- Developed novel concepts for ultrasound transducer designs and worked with attorneys to write patent applications.
- Designed and tested analog impedance matching circuits to improve power delivery to sonar arrays.
- Prototyped diode T-R switch circuits for testing transducers in a transceiver configuration.
- Used PC ADC capture card to build a system to test transducer echo-ranging performance with pulse compression signal processing.
- Utilized finite element analysis to guide the design of apodized split-beam composite transducers. Designed multi-tap transformers to implement apodization.
- Designed an acoustical lens for a broadband ultrasonic transducer. Utilized optimization tools and finite element analysis to develop a lens shape that provided a constant beamwidth over the transducer bandwidth. Patents filed on the transducer design. The design is used in the AIRMAR TM165HW transducer.
- Led the design of low frequency injection molded piezocomposite. Utilized finite element analysis to ensure bandwidth requirements were achieved while simultaneously negating detrimental effects from inter-pillar modes.
- Participated in SBIR to develop a submarine based ADCP system. Provided design guidance on apodization of the ADCP ultrasonic elements and tuning of matching layer to provide broad band performance at multiple resonances.

Acoustical Systems Engineer and Laboratory Manager July 2022 to Present

- Supervised 8 employees.
- Modernized impedance measurement process used with impedance analyzers. Modifications allowed for quick capture of impedance measurements from a large set of transducers.
- Oversaw the implementation of three transducer reciprocity calibration methods. Led an effort to develop an in-house procedure for calibration of ultrasonic transducers.
- Managed a team of engineers and technicians tasked with designing and prototyping ultrasonic transducers. Oversaw day-to-day tasks and ensured that deliverables were completed on time. Mentored team in methods for troubleshooting problems with transducer designs. Presented weekly progress and results to senior management team.
- Oversaw large sets of calibration measurements for production transducers. Interfaced with database to extract information and troubleshoot transducer manufacturing issues with production. Monitored production data to identify shifts in trends of nominal transducer impedance and sensitivity. Implemented design modifications to bring transducer performance back into customers required tolerance ranges.
- Collaborated with test engineering team to guide the implementation of a automated transducer test system for measuring transducer sensitivity and directivity.

Software Skills

- Proficient in MATLAB, PZFlex, OnScale, and MS Office.
- Experience with C programming, Python, LabVIEW, Simulink, Simscape, LTspice, PTC Cero, and SolidWorks.