Troy Michael Bouman, PhD, MSE, MBA

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EDUCATION

Doctor of Philosophy in Mechanical Engineering May 2021
Michigan Technological University, Houghton, MI
Focus: Acoustics, Vibrations, and Dynamic Systems
Awards: -Graduate School's Outstanding Scholarship Award
-1st Place – Best Overall Paper at 2017 SAE Noise and Vibration Conference

Master of Science in Mechanical Engineering GPA: 3.89 May 2016
Michigan Technological University, Houghton, MI
Awards: -Outstanding Graduate Student Teaching
-Best of Show Award at 2015 SAE Noise and Vibration Conference
-Excellence in Noise Control from INCE 2016
Certificate: LabVIEW Associate Developer

Master of Business Administration GPA: 3.95 April 2014
Grand Valley State University, Grand Rapids, MI
AACSB Accredited
Beta Gamma Sigma International Honors Society
Award: Dean's Citation for Academic Excellence
Certificate: Managing Business, Government, and Public Policy, Washington, D.C.

Bachelor of Science in Mechanical Engineering GPA: 3.80 May 2012
Michigan Technological University, Houghton, MI
Minors: Electrical Engineering & General Music

INDUSTRY EXPERIENCE

Bouman Acoustics LLC, Houghton, MI Fall 2013-Present
Owner/Principle - Supporting businesses with acoustic and vibration consulting services

Great Lakes Sound and Vibration, Houghton, MI Feb 2022-Sep 2024
Senior Engineer – Supporting government dynamic systems projects

Michigan Technological University, Houghton, MI May 2021-May 2023
Adjunct Assistance Professor – Teaching advanced courses in acoustics and signal processing
Award: Top 10% in university wide student evaluations spring 2022

Roush Industries, Livonia, MI Summer 2016-Summer 2019
NVH Engineer – NVH consulting for a variety of customers in many sectors
Certificate: Recognition for extraordinary performance in 2017

Michigan Technological University Mechanical Engineering Department, Houghton, MI 2011-2012
Senior Design – Design and fabrication of an acoustic test stand for Tier 1 automotive supplier

Caterpillar Inc., Peoria, IL Summer 2011
Internship – Validation and repair of heavy equipment via noise and vibration solutions

Boston Scientific, Arden Hills, MI Summer 2010
Internship – Analysis of conversion from stamping to CNC routing for anode excision

Magna Donnelly Holland Mirror, Holland, MI Summer 2008
Internship – Design and fabrication of electro-chromatic (EC) mirror test stands

Mission Design & Automation, Holland, MI 2004-2007
Machine Builder – Custom design, production, and installation of automated machinery

PUBLICATIONS

Raju, M., Friedman, L., **Bouman, T.**, Komogortsev, O. Filtering Eye-Tracking Data From an EyeLink 1000: Comparing Heuristic, Savitzky-Golay, IIR and FIR Digital Filters, *arXiv*, 2023

Raju, M., Friedman, L., **Bouman, T.**, Komogortsev, O. Determining Which Sine Wave Frequencies Correspond to Signal and Which Correspond to Noise in Eye-Tracking Time-Series, *arXiv*, 2023

Raju, M., Friedman, L., **Bouman, T.**, Komogortsev, O. Analysis of Heuristic and Digital Filters as Applied to Video-oculography Signals, *arXiv*, 2022

Bouman, T. "Development of the Carbon Nanotube Thermoacoustic Loudspeaker", Open Access Dissertation, Michigan Technological University, 2021. https://doi.org/10.37099/mtu.dc.etdr/1204

Bouman, T., Barnard, A., Alexander, J., Continued Drive Signal Development for the Carbon Nanotube Thermoacoustic Loudspeaker Using Techniques Derived from the Hearing Aid Industry, *SAE NVH Conference Proceedings*, 2017. **First** place paper in SAE NVC Best Student Paper Competition

Bouman, T., Barnard, A., Asgarisabet, M., Experimental quantification of the true efficiency of carbon nanotube thin-film thermophones, *Journal of the Acoustical Society of America*, 2016.

Asgarisabet, M., **Bouman, T.**, Barnard A., Near field acoustic holography measurements of carbon nanotube thin film speakers, *Journal of the Acoustical Society of America*, 2016.

Van Karsen, C., **Bouman, T.**, Gwaltney, G., Operating Deflection Shapes of a Violin String via High Speed/High Resolution Videography, *IMAC Conference Proceedings*, March, 2013.

Moyer, J., Priest, R., **Bouman, T.**, Abraham, A. Donahue, T., Indentation properties and glycosaminoglycan content of human menisci in the deep zone, *Acta Biomaterialia Journal*, December 2012

RESEARCH EXPERIENCE

Dr. Andrew Barnard, Assistant Professor
Michigan Technological University 2014-2021
Research Assistant – Development of carbon nanotube (CNT) thinfilm thermophone (speaker)

Prof. Charles D. Van Karsen, Associate Professor & Associate Chair and Director of Undergraduate Studies
Michigan Technological University 2011-2012
Research Assistant – Testing the use of a high speed camera to gain input force into violin body

Dr. Tammy Haut Donahue, Associate Professor, Colorado State University 2011-2012
Research Assistant – Method development to better understand the mechanical properties of the human knee

Dr. Scott Miers, Assistant Professor, Michigan Technological University Summer 2009
Research Assistant – **Design and fabrication of a servo-controlled four bar linkage to control engine throttle**

PRESENTATIONS

Subjective evaluation of carbon nanotube thermophones using spoken text
Acoustic Society of America Fall Annual Meeting 2020

Continued Drive Signal Development for the Carbon Nanotube Thermoacoustic Loudspeaker Using Techniques Derived from the Hearing Aid Industry
SAE Noise & Vibration Conference and Exhibition, Grand Rapids, MI 2017

Demonstration of Solidstate Carbon Nanotube Thinfilm Speaker 2015
SAE Noise & Vibration Conference and Exhibition, Grand Rapids, MI

Measuring True Power Efficiency of Carbon Nanotube Thin Film Speakers 2015
SEM Regional Conference, Madison, WI