Joseph G. Tylka, Ph.D.

Research Scientist, Siemens Corporate Technology
jtylka.github.io

Email: joe.tylka@siemens.com
Mobile: +1 (609) 250-8271
755 College Rd. E, Princeton, NJ 08540

Education

Princeton University — Princeton, NJ
Doctor of Philosophy (Ph.D.) in Mechanical and Aerospace Engineering — 2012–2019
Master of Arts (M.A.) in Mechanical and Aerospace Engineering

The Pennsylvania State University — University Park, PA
Non-Degree Graduate Student in Acoustics (attended online) — 2012–2014

University of Maryland — College Park, MD
Bachelor of Science (B.S.) in Physics with a minor in Philosophy, *cum laude* — 2008–2012

Research Experience

Siemens Corporation, Corporate Technology — Princeton, NJ
Research Scientist, Sustainable Automation Solutions Research Group — 2020–present
Research Scientist, Automation Runtime Systems Research Group — 2019–2020

Princeton University — Princeton, NJ
Assistant in Research, 3D Audio and Applied Acoustics Laboratory — 2012–2019

University of Maryland — College Park, MD
Undergraduate Research Assistant, Cosmic Ray Laboratory — 2009–2012

Teaching Experience

Princeton University, Department of Mechanical and Aerospace Engineering — Princeton, NJ
Assistant in Instruction, **MAE 502**: Mathematical Methods of Engineering Analysis II — Spring 2017
Assistant in Instruction, **MAE 433**: Automatic Control Systems — Spring 2016 and Fall 2016
Guest Lecturer, **MAE 529**: The Physics and Engineering of Sound — Spring 2016
Assistant in Instruction, **MAE 412**: Microprocessors for Measurement and Control — Fall 2014

University of Maryland, Department of Physics — College Park, MD
Teaching Assistant, **PHYS 103**: Physics of Music Laboratory — Fall 2011

Selected Projects

Autonomous Robotic Spraying & Disinfection System — Advanced Robotics for Manufacturing (ARM) Institute
Role: *Principal Investigator* — 2020–present

SAFE: Safe Autonomy Features in the Edge — Advanced Robotics for Manufacturing (ARM) Institute
Role: *Research Scientist* — 2020–2021

RECON: Resilient Control Systems for Naval Vessels — U.S. Naval Research Laboratory (NRL)
Role: *Research Scientist* — 2019–2020

Virtual Navigation of 3D Sound Fields — Sony Corporation of America
Role: *Doctoral Candidate* — 2015–2019

Selected Publications

[1] J. Luo, M. Kang, E. Bisse, M. Veldink, D. Okunev, S. Kolb, J. G. Tylka, and A. Canedo. A Quad-Redundant PLC Architecture for Cyber-Resilient Industrial Control Systems. *IEEE Embedded Systems Letters*, page 4, 2020.

[2] J. G. Tylka and E. Y. Choueiri. Performance of Linear Extrapolation Methods for Virtual Sound Field Navigation. *The Journal of the Audio Engineering Society*, 68(3):138–156, March 2020.

[3] E. Y. Choueiri and J. Tylka. System and Method for Virtual Navigation of Sound Fields through Interpolation of Signals from an Array of Microphone Assemblies, Jan. 16, 2020. US Patent Application 2020/0021940.

[4] R. Sridhar, J. G. Tylka, and E. Y. Choueiri. Generalized Metrics for Constant Directivity. *The Journal of the Audio Engineering Society*, 67(9):666–678, September 2019.

[5] E. Y. Choueiri, J. Tylka, R. Sridhar, and B. Boren. Method and system for producing low-noise acoustical impulse responses at high sampling rate, May 1, 2018. US Patent 9,959,883.

[6] J. G. Tylka, B. B. Boren, and E. Y. Choueiri. A Generalized Method for Fractional-Octave Smoothing of Transfer Functions that Preserves Log-Frequency Symmetry. *The Journal of the Audio Engineering Society*, 65(3):239–245, March 2017.