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Jon Boley, Ph.D.

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Audio Science & Engineering Manager

Senior Technical Leader with Experience Leading Highly Successful Teams

- Strategy development & implementation expert; known for dealing well with ambiguity, asking the right questions, planning carefully, and communicating clearly.
- Cross-disciplinary expert in signal processing, psychoacoustics, and auditory neuroscience; specializing in model-based systems engineering and experimental design.
- History of volunteering and being asked to lead increasingly large, distributed, and interdisciplinary teams.

Professional Experience

Research Program Manager, GN Hearing 2014-Present

Portfolio Manager (2019-Present) *Strategic Program Manager (2017-2019)* *Program Lead (2014-2017)*

Developed & coached an international team of scientists & engineers to research scientific questions and develop new technologies.

- Selected, prioritized, and staffed all of GN Hearing's early-stage research programs and managed an annual budget of $6 million USD. Coached principal investigators and project leads, helping them clarify objectives and build plans to achieve these goals.
- Proposed and spearheaded a board-sponsored strategic research program with a multi-year budget of $7 million USD and >20 scientists and engineers in the fields of machine learning, hearing science, and human-computer interaction.
- Strengthened GN's approach to data-driven decision making by updating processes for both formal and informal peer reviews. Served as the lead reviewer for technical designs and experimental protocols.
- Managed the research department's intellectual property portfolio (averaging 1-2 disclosures per month); regularly reviewed invention disclosures across the company and patent applications from competitors to recommend priorities for the legal team.
- Developed relationships with university researchers, external development partners, and suppliers to bring in new knowledge and technologies.

Research Scientist, GN Hearing 2011-2019

Senior Scientist (2017-2019) *Scientist (2014-2017)* *Associate Scientist (2011-2013)*

Quantified research problems and designed hypothesis-driven experiments to test new designs.

- Quantified benefits and discovered limitations of new product designs by designing experiments to measure the perceptual performance in challenging acoustic environments.
- Advocated for model-based systems engineering approaches and designed computational models to successfully predict human performance in psychoacoustic tasks & to predict behavioral interactions with machine learning systems.
- Developed a software package (and continuous integration environment) for conducting cognitive & behavioral experiments related to perceptual acoustics.
- Established & promoted specific approaches to managing noise and optimizing sound quality, supported by presentations, strategy documents, position papers, and technical reports showing evidence of benefit.

Psychoacoustics & Signal Processing Consultant 2007-2011

Provided technical consulting for Shure, Sound Devices, Sound World Solutions, Mayo Clinic, and others.

Research Fellow, Purdue University 2007-2011

Principal Investigator, NIH-funded project – "Effects of Hearing Aid Amplification on Robust Neural Coding of Speech."

DSP Engineer, Shure Incorporated 2003-2007

Senior Engineer (2007) *Engineer II (2005-2007)* *Intern (Summers 2003-2004)*

Led the development of signal processing & codec evaluation for digital microphones; served as a psychoacoustics expert.

DSP Engineer, Motorola Inc 2000-2002

Engineering Co-Op (May-Dec 2002) *Intern (Summer 2001)* *Intern (Summer 2000)*

Developed a novel speech detection algorithm & designed software for tuning echo cancellation and noise suppression algorithms.

Education & Development

Ph.D. Biomedical Engineering
Purdue University, West Lafayette, IN

M.S. Music Engineering
University of Miami, Coral Gables, FL

B.S. Electrical Engineering
University of Illinois at Urbana-Champaign

Certificate, Electronic Equipment Repair
Lake County Area Vocational Center, Grayslake, IL

Certified SAFe 5 Agilist
2020 - Present

Project Management Professional (PMP)
2010 - Present

Masters Certificate, Project Management
The George Washington University, Washington D.C.

Applied Management Principles ("Mini-MBA")
Purdue University, West Lafayette, IN

Selected Patents & Publications

Piechowiak, T., E. van der Werf, J. Boley. "Method and Device for Streaming Communication Between Hearing Devices." European Patent 3188508. March 2020.

Tiefenau, A., J. Boley, C. Ma. “Hearing Device with Suppression of Comb Filtering Effect.” US Patent 10,542,354. January 2020.

Boley, J., A. van den Berg, A. Svec. “Device and Method for Hearing Device Parameter Configuration.” US Patent Application 16/684544. November 2019.

Ma, C. and J. Boley. “Bilateral Hearing Aid System Comprising Temporal Decorrelation Beamformers.” US Patent Application 16/431690. May 2019.

Boley, J. “Hearing Devices with Eye Movement Detection.” US Patent Application 16/379678. April 2019.

Boley, J. “An Occlusion Control System for a Hearing Instrument and a Hearing Instrument.” US Patent 10,206,051. February 2019.

Boley, J. and E.E. Johnson, *“Computational Models to Predict Safety Limits for Aided Music Listening,”* in Proceedings of the 3rd AES International Conference on Music Induced Hearing Disorders, June 2018.

Pedersen, S., J. Boley, J. Anderson. “Binaural Hearing Device System with Binaural Active Occlusion Cancellation.” European Patent Application 3588985. June 2018.

Boley, J., T. Piechowiak. “Methods of Self-calibrating of a Hearing Device and Related Hearing Devices.” US Patent Application 15/703708. September 2017.

Humphrey, E.J., S.K. Rits, J. Boley, O. Masciarotte. "Detection System and Method for Mobile Device Application." US Patent 8,713,593. April 2014.

Boley, J. “*Effects of Hearing Aid Amplification on Robust Neural Coding of Speech*,” PhD Dissertation. Purdue University, December 2013.

Boley, J., C. Danner, and M. Lester, “*Measuring Dynamics: Comparing and Contrasting Algorithms for the Computation of Dynamic Range*,” in Proceedings of the 129th Convention of the Audio Engineering Society, November 2010.

Heinz, M., J. Swaminathan, J. Boley, and S. Kale, “*Across-Fiber Coding of Temporal Fine-Structure: Effects of Noise-Induced Hearing Loss on Auditory Nerve Responses,”* in The Neurophysiological Bases of Auditory Perception. Springer (New York), March 2010.

Boley, J. and M. Lester, “*Statistical Analysis of ABX Results Using Signal Detection Theory*,” in Proceedings of the 127th Convention of the Audio Engineering Society, October 2009.

Lester, M. and J. Boley, “*The Effects of Latency on Live Sound Monitoring*,” in Proceedings of the 123rd Convention of the Audio Engineering Society, October 2007.

Boley, J. “*Auditory Component Analysis*,” in Proceedings of the 121st Convention of the Audio Engineering Society, October 2006.

Professional Service

Audio Engineering Society – chair of Chicago section (2019-present). Previous leadership roles have included section founder (UIUC), treasurer, and committee member. Also held various chair positions for international conferences & conventions.

Reviewer for various journals (IEEE, AES, ASA, ASHA, AAS) and grant proposals (Hearing Industry Research Consortium).

Contributor to various standards (including ASA S3.72, AES42, ISO/IEC 23003-1); current member of ANSI/ASA standards committee on bioacoustics (S3).