jdb@jboley.com

Jon Boley, Ph.D.

phone: +1-312-231-4007

AUDITORY RESEARCH SCIENTIST

Senior Technical Leader with Extensive Experience Leading Highly Successful Teams

- Highly experienced research scientist & program manager; led numerous successful R&D projects for GN Hearing, LSB Audio, and Shure Incorporated.
- Track record of volunteering and being asked to lead increasingly large impact, difficult, interdisciplinary projects.
- Expert in psychoacoustics, signal processing, and auditory neuroscience; specializing in experimental design and perceptual modeling.
- Strategy development & implementation expert; superb communication, interpersonal and leadership skills.

Auditory Perception: Psychoacoustic & physiological models of loudness, masking, scene analysis, etc.; extensive knowledge of the latest research on localization, pitch, speech perception and hearing impairment.

Psychophysics: Classical & adaptive experimental methods; numerous statistical analyses.

DSP Algorithms: Filter design, adaptive filters, compression, spatialization, coding, watermarking, echo cancellation, noise suppression, feedback reduction, automatic mixing, speech enhancement, etc.

PROFESSIONAL EXPERIENCE

GN Hearing, Glenview, IL — 2011-Present

Senior Research Scientist (2017 to Present) — Research Scientist & Program Lead (2014-2017)
Program Manager, Auditory Research (2017 to Present) — Associate Research Scientist (2011-2013)

Led an international team of scientists & engineers to research scientific questions and develop new technologies. Quantified research problems and designed hypothesis-driven tests for new designs.

- Developed & implemented a research strategy to explore new opportunities and integrate solutions into products.
- Led auditory research direction and provided decisions to ensure desired auditory effects & end user behaviors. Established & promoted specific approaches to optimize sound quality.
- Designed psychoacoustic experiments to measure the performance of new algorithms and electroacoustic systems. Developed a custom software package for conducting listening experiments.
- Invented several novel solutions to improve sound quality. Three of these have resulted in patent applications.

Principal Consultant, LSB Audio LLC, Lafayette, IN — 2007-2011

Provided technical consulting and project management on numerous projects involving audio quality assessment, algorithm development, embedded firmware coding, and optimization.

- Hired, managed, and collaborated with global teams to develop several mobile applications on tight schedules.
- Developed applications including psychoacoustic models, a novel feedback reduction algorithm, and a fixed-point hearing aid architecture.

Research Fellow, Purdue University, West Lafayette, IN — 2007-2011

Principal investigator of an NIH-funded project (F31DC010966 – "Effects of Hearing Aid Amplification on Robust Neural Coding of Speech"). This multidisciplinary research combined neurophysiology and digital signal processing to develop a new hearing aid technology for listening in noisy environments.

Senior DSP Engineer, Shure Incorporated, Niles, IL — 2003-2007

Led the development of signal processing for digital microphone prototypes and served as a psychoacoustics expert, leading the design of several listening tests.

- Designed & implemented DSP algorithms including signal generators, filters, and compressors. Also implemented firmware interfaces for analog/digital converters, memory, and various other digital circuits.
- Invented a novel error concealment algorithm to improve the sound quality of digital wireless audio.

Engineering Intern, Motorola Inc, Schaumburg, IL — 2000-2002

Designed audio systems for OnStar, developed a novel speech detection algorithm, and designed software for real-time tuning of echo cancellation and noise suppression technologies.

EDUCATION & PROFESSIONAL DEVELOPMENT

Ph.D. Biomedical Engineering	Purdue University, West Lafayette, IN	2013
Masters Certificate, Project Management	The George Washington University, Washington D.C.	2009
Applied Management Principles ("Mini-MBA")	Purdue University, West Lafayette, IN	2008
M.S. Music Engineering	University of Miami, Coral Gables, FL	2005
B.S. Electrical Engineering	University of Illinois at Urbana-Champaign	2003
Certificate, Electronic Equipment Repair	Lake County Area Vocational Center, Grayslake, IL	1998

Certifications: **Project Management Professional (PMP),** 2010 – Present

SELECTED PATENTS / PUBLICATIONS / PRESENTATIONS

Boley, J., T. Piechowiak, E. van der Werf. "*Method and Device for Streaming Communication Between Hearing Devices*." EU Patent Application 16206243.4, filed Dec 2016.

Humphrey, E.J., S.K. Rits, J. Boley, O. Masciarotte. "*Detection System and Method for Mobile Device Application*." U.S. Patent 08713593, issued April 2014.

Boley, J. "The Psychoacoustics of Phase," Presentation to the Chicago section of the Audio Engineering Society, January 2014.

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

Boley, J. "*Toward a Perceptually Relevant Measure of the Occlusion Effect*," International Hearing Aid Research Conference, August 2012.

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.

Boley, J. and M. Heinz, "*Predicted Effects of Amplification on Spatiotemporal Coding of Vowels in Noise*," International Hearing Aid Research Conference, August 2010.

Gaston, L., J. Boley, S. Selter, and J. Ratterman, "*The Influence of Individual Audio Impairments on Perceived Video Quality*," in Proceedings of the 128th Convention of the Audio Engineering Society, May 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.

Kale, S., J. Boley, J. Swaminathan, M. Heinz, *"Within and across fiber temporal fine structure coding following noise induced hearing loss,"* 33rd Midwinter Meeting of the Association for Research in Otolaryngology, February 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.

Boley, J. and M. Heinz, *"Quantifying the Effects of Hearing Aid Dynamics on Temporal Coding in the Auditory Nerve,"* First International Symposium on Audible Acoustics in Medicine and Physiology, September 2008.

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

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

Contributor to various ANSI & ISO standards (including AES42, ASA S3.72, MPEG-Surround)

Audio Engineering Society

- Leadership Roles: local committee member (past chair & treasurer); session chair/panelist at multiple conferences
- Technical Committees: Perception and Subjective Evaluation, Hearing & Hearing Loss Prevention, Signal Processing