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Jon Boley, Ph.D.

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AUDITORY RESEARCH SCIENTIST

EXTENSIVE EXPERIENCE LEADING HIGHLY SUCCESSFUL CROSS-FUNCTIONAL TEAMS

- Highly experienced research scientist & program manager; led numerous successful R&D projects for GN ReSound, LSB Audio, and Shure Incorporated.
- Expertise in psychoacoustics and signal processing with superb communication, interpersonal and leadership skills.
- Excellent ability to prioritize and manage multiple, complex projects simultaneously while ensuring delivery on time and within budget.

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

Psychophysics: Numerous experimental methods and 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

Research Scientist & Program Manager, GN ReSound, Glenview, IL 2011-Present

Program Manager (2014 – Present)

Coordinate & communicate activities for a research program with multiple concurrent projects.

- Lead a team of scientists & engineers to research scientific questions and develop new technologies from concept through feasibility to proof-of-concept.
- Create research strategy, approve project proposals, coordinate project tasks, communicate program status, maintain budgets, coordinate resource needs, and facilitate technology transfer.

Research Scientist (2011 – Present)

Quantify research problems, design hypothesis-driven tests for new designs, and invent novel solutions to improve performance.

- Design, conduct, and analyze psychophysical & electroacoustic experiments. Position experiments to be included early and often in the iterative technology design process.
- Developed a software package for conducting behavioral experiments. Utilized software engineering best practices (e.g., version control, test-driven development, continuous integration, release management, etc).

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. Personally created numerous audio processing algorithms for both medical and entertainment industries.
- Developed several Matlab/Simulink models to prototype ideas and test algorithms. Applications included a new feedback reduction algorithm, a low-cost hearing aid architecture (floating & fixed point), and psychoacoustic models.

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

Developed embedded software/firmware and invented new signal processing technologies to significantly improve the sound quality of professional-grade audio devices. Conducted listening tests as a psychoacoustics expert and worked on highly advanced R&D projects to enhance live sound in business/public settings.

- Designed multiple digital microphone prototypes; led the development of digital signal processing for these products; created the firmware interfaces for analog/digital converters, memory, and various other digital circuits.
- Developed computer models of several innovative audio processing technologies and successfully implemented them in hardware prototypes.

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
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

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. "*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. and M. Heinz, "*Impaired Spatiotemporal Coding of Vowels in Noise*," 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 MEMBERSHIPS & ACTIVITIES

- Audio Engineering Society, Member, 2001-Present
  Technical Committees: Perception and Subjective Evaluation, Signal Processing, Audio Coding
  Leadership Roles: Chair & Treasurer of local sections; Chair/Panelist/Reviewer for several conferences
- IEEE Signal Processing Society, Member, 1998-Present (Senior Member since 2014)
- Acoustical Society of America, Member, 2001-Present
- Motion Picture Experts Group (MPEG), Member, 2003-2005
- Scientific & technical reviewer for various journals, including:
  IEEE Transactions on Audio, Speech and Language Processing
  Journal of the Audio Engineering Society
  Ear & Hearing