

Yi Shen

Personal Information

Date of Birth: January 3, 1981
Gender: Male

Address

Department of Speech and Hearing Sciences
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Education

Ph.D., Hearing Science, Indiana University Bloomington, 2010

Dissertation: *Measuring Auditory Temporal Acuity: Confounds, Interpretations, and Possible Solutions*

Dissertation adviser: Dr. Jennifer J. Lentz

M.Sc., Engineering Acoustics, Technical University of Denmark, 2006

Master thesis: *Prediction of Audio-Frequency Vibration in Multi-Plate Structures*

Thesis adviser: Dr. Mogens Ohlrich

B.Sc., Applied Physics, Beijing Institute of Technology, 2003

Employment

09/2022–present: Associate Professor, Department of Speech and Hearing Sciences, University of Washington.

08/2020–08/2022: Assistant Professor, Department of Speech and Hearing Sciences, University of Washington.

09/2014–07/2020: Assistant Professor, Department of Speech and Hearing Sciences, Indiana University Bloomington.

08/2010–09/2014: Postdoctoral Scholar, Department of Cognitive Sciences, University of California, Irvine.

10/2003–07/2004: Technical Support Engineer, UNITED SCIENCE International Corporation Beijing Representative Office, Division of high-accuracy electric energy meters.

Research Grants

Current research support:

- “Cochlear Mechanics, Wave Propagation, and Compression,” (Yi Shen, subcontract PI; Stephen Neely, PI), NIH R01 Research Grant (DC008318), 6/2023–present.
- “Improving Efficacy of Cochlear Implant Fitting using Machine Learning,” (Yi Shen, Co-PI; Ward Drennan, Co-PI), Bloedel Mini Research Grant, 3/2023–6/2023.
- “Individualized Assessment and Prediction of Speech-Recognition Performance in Adults with Age-related Hearing Loss,” (Yi Shen, PI), NIH R01 Research Grant (DC017988), 08/2019–07/2024.

Completed research support:

- “Quantifying the Importance of Phase to Improve Deep-Learning based Speech Enhancement for Individual with Hearing Impairments,” (Yi Shen, Co-PI; Donald S. Williamson, Co-PI), FY19 Faculty Research Support Program-Seed Funding, Indiana University, 06/2019–03/2020.

- “Tapping Into Human Communication Using Eye Movement Monitoring,” (Yi Shen, Co-PI; Julie D. Anderson, Co-PI), Research Equipment Fund, Indiana University, 04/2019-09/2019.
- “Understanding Speech in Noise - The Roles of Aging and Attentional Entrainment,” (Yi Shen, Co-Investigator; Gary R. Kidd, Co-PI; J Devin McAuley, Co-PI), NIH R01 Research Grant (DC013538), 07/2014-06/2023.
- “DNN-based Speech Enhancement Algorithms for Hearing-Impaired Listeners,” (Yi Shen, PI), Nvidia GPU Grant, 05/2018-05/2019.
- “Rapid Measurement of Routinely Estimated Psychophysical Functions,” (Yi Shen, Co-PI; Virginia M. Richards, Co-PI), NIH R21 Research Grant (DC013406), 04/2014-03/2017.
- “Temporal Modulation Transfer Function as a Clinical Tool for the Assessment of Auditory Temporal Resolution,” (Yi Shen, PI), ASHA New Investigators Research Grant, 11/2012-11/2013.

Submitted research proposals:

- “Improving Efficacy of Cochlear Implant Fitting using Machine Learning,” (Yi Shen, Co-PI; Ward Drennan, Co-PI), the Institute of Translational Health Sciences New Interdisciplinary Academic Collaborations Grant, 3/2023-2/2024, unfunded.
- “Improving the Listening Experience in Noisy Environments for Adults with Age-Related Hearing Loss using Phase-Sensitive Speech Enhancement,” (Yi Shen, Co-PI; Donald S. Williamson, Co-PI), NIH R01 Research Grant, 10/2021-9/2026, unfunded.
- “Speech-Perception Benefit of Fitted Hearing Aids,” (Yi Shen, Consultant; James D. Miller, PI), NIH R43 SBIR Grant, 03/2019-03/2020, unfunded.
- “Central Effects of Age-Related Hearing Loss on Neural Processing and Speech Communication,” (Yi Shen, Co-Investigator; Larry E. Humes, PI), NIH R01 Research Grant, 06/2018-05/2023, unfunded.

Publications

Peer-reviewed articles:

- Toni M. Smith, **Yi Shen**, Chrisina N. Williams, Gary R. Kidd, and J. Devin McAuley, (2024). *Contribution of speech rhythm to understanding speech in noisy conditions: Further test of a selective entrainment hypothesis*, Attention, Perception, & Psychophysics, **86**, 627-642.
- Nikolina Samardzic, Mathieu Lavandier, and **Yi Shen**, (2023). “The Utilization of Psychometric Functions to Predict Speech Intelligibility in Vehicles,” SAE International Journal of Vehicle Dynamics, Stability, and NVH, **8**, (10-08-01-0002).
- Dylan V. Pearson, **Yi Shen**, J. Devin McAuley, and Gary R. Kidd, (2023). “The effect of rhythm on selective listening in multiple-source environments for young and older adults,” Hearing Research, **435**, 108789.
- Dylan V. Pearson, **Yi Shen**, J. Devin McAuley, and Gary R. Kidd (2023). *Differential sensitivity to speech rhythms in young and older adults*, Frontiers in Psychology, **14**, 1160236.
- **Yi Shen**, and Lauren Langley, (2023). *Spectral weighting for sentence recognition in steady-state and amplitude-modulated noise*, The Journal of the Acoustical Society of America Express Letters, **3**, 055202.
- Donghyeon Yun, **Yi Shen**, and Jennifer J. Lentz, (2023). *Verification of estimated output signal-to-noise ratios from a phase inversion technique Using a simulated hearing aid*, American Journal of Audiology, **32**, 197-209.
- Ellen Peng, Sebastian Waz, Emily Buss, **Yi Shen**, Virginia M. Richards, Hari Bharadwaj, G. Christopher Stecker, Jordan A. Beim, Adam K. Bosen, Meredith Braza, Anna C. Diedesch, Claire M. Dorey, Andrew R. Dykstra, Frederick J. Gallun, Raymond L. Goldsworthy, Lincoln Gray, Eric C. Hoover, Antje Ihlefeld, Thomas Koelewijn, J.G. Kopun, Juraj Mesik, Daniel E.

- Shub, and Jonathan H. Venezia, (2022). *Remote testing for psychological and physiological acoustics*, The Journal of the Acoustical Society of America, **151**, 3116-3128.
- Donghyeon Yun, **Yi Shen**, and Zhuohuang Zhang, (2022). *Feasibility of hearing aid gain self-adjustment using speech recognition*, The Journal of the Acoustical Society of Korea, **41**, 76-86.
 - Mackenzie L. Mills, **Yi Shen**, and Robert H. Withnell, (2021). *Examining the factors that contribute to non-monotonic growth of the $2f_1 - f_2$ otoacoustic emission in humans*, Journal of the Association for Research in Otolaryngology, **22**, 275-288.
 - J. Devin McAuley, **Yi Shen**, Toni Smith, and Gary R. Kidd, (2021). *Effects of speech-rhythm disruption on selective listening with a single background talker*, Attention, Perception, & Psychophysics, **83**, 2229-2240.
 - Virginia M Richards, Mariel Kazuko Tisby, Eli N Suzuki-Gill, and **Yi Shen**, (2021). *Sub-optimal construction of an auditory profile from temporally distributed spectral information*, The Journal of the Acoustical Society of America, **149**, 1567-1578.
 - **Yi Shen**, Donghyeon Yun, and Yi Liu, (2020). *Individualized estimation of the Speech Intelligibility Index for short sentences: Test-retest reliability*, The Journal of the Acoustical Society of America, **148**, 1647-1661.
 - J. Devin McAuley, **Yi Shen**, Sarah Dec, and Gary R. Kidd, (2020). *Altering the rhythm of target and background talkers differentially affects speech understanding*, Attention, Perception, & Psychophysics **82**, 3222–3233.
 - Yufan Du, **Yi Shen**, Xihong Wu, and Jing Chen, (2019). *The effect of speech material on the band importance function for Mandarin Chinese*, The Journal of the Acoustical Society of America, **146**, 445–457.
 - **Yi Shen**, and Dylan V. Pearson, (2019). *Efficiency in glimpsing vowel sequences in fluctuating makers: effects of temporal fine structure and temporal regularity*, The Journal of the Acoustical Society of America, **145**, 2518–2619.
 - **Yi Shen**, Allison B. Kern, and Virginia M. Richards, (2019). *Toward routine assessments of auditory-filter shape*, Journal of Speech, Language, and Hearing Research, **62**, 442–455.
 - **Yi Shen**, Celia Zhang, and Zhuohuang Zhang, (2018). *Feasibility of interleaved Bayesian adaptive procedures in estimating the equal-loudness contour*, The Journal of the Acoustical Society of America, **144**, 2363–2374.
 - **Yi Shen**, and Allison B. Kern, (2018). *An analysis of individual differences in recognizing monosyllabic words under the Speech Intelligibility Index framework*, Trends in Hearing, **22**, 2331216518761773.
 - **Yi Shen**, (2017). *Auditory sequential accumulation of spectral information*, Hearing Research, **356**, 118–126.
 - **Yi Shen**, and Dylan V. Pearson, (2017). *Recognition of synthesized vowel sequences in steady-state and sinusoidally amplitude-modulated noises*, The Journal of the Acoustical Society of America, **141**, 1835–1843
 - **Yi Shen**, Monica L. Folkerts, and Virginia M. Richards, (2017). *Head movements while recognizing speech arriving from behind*, The Journal of the Acoustical Society of America, **141**, EL108–EL114.
 - **Yi Shen** (2016). *The effect of frequency cueing on the perceptual segregation of simultaneous tones: bottom-up and top-down contributions*, The Journal of the Acoustical Society of America, **140**, 3496–3503.
 - Lucas S Baltzell, Cort Horton, **Yi Shen**, Virginia M. Richards, Michael D’Zmura, and Ramesh Srinivasan (2016). *Attention selectively modulates cortical entrainment in different regions of the speech spectrum*, Brain Research **1644**, 203–212.

- **Yi Shen**, Nicole Manzano, and Virginia M. Richards, (2015). *Psychometric functions for sentence recognition in sinusoidally amplitude-modulated noises*, The Journal of the Acoustical Society of America **138**, 3613–3624.
- **Yi Shen**, Wei Dai, and Virginia M. Richards, (2015). *A Matlab toolbox for the efficient estimation of the psychometric function using an updated maximum-likelihood procedure*, Behavior Research Methods **47**, 13–26.
- **Yi Shen**, Rajeswari Sivakumar, and Virginia M. Richards, (2014). *Rapid estimation of high-parameter auditory-filter shapes*, The Journal of the Acoustical Society of America **136**, 1857–1868.
- **Yi Shen**, (2014). *Gap detection and temporal modulation transfer function as behavioral estimates of auditory temporal acuity using band-limited stimuli in young and older adults*, Journal of Speech, Language, and Hearing Research **57**, 2280–2292.
- **Yi Shen**, and Virginia M. Richards, (2013). *Bayesian adaptive estimation of the auditory filter*, The Journal of the Acoustical Society of America **134**, 1134–1145.
- Virginia M. Richards, **Yi Shen**, and Charles Chubb, (2013). *Level dominance for the detection of changes in level distribution in sound streams*, The Journal of the Acoustical Society of America **134**, EL237–EL243.
- **Yi Shen**, (2013). *Comparing adaptive procedures for estimating the psychometric function for an auditory gap detection task*, Attention, Perception, & Psychophysics **75**, 771–780.
- **Yi Shen**, and Virginia M. Richards, (2013). *Temporal modulation transfer function for efficient assessment of auditory temporal resolution*, The Journal of the Acoustical Society of America **133**, 1031–1042.
- **Yi Shen**, and Virginia M. Richards, (2012). *Investigating the auditory enhancement phenomenon using behavioral temporal masking patterns*, The Journal of the Acoustical Society of America **132**, 3363–3374.
- **Yi Shen**, and Virginia M. Richards, (2012). *A maximum-likelihood adaptive procedure for estimating psychometric functions: thresholds, slopes, and lapses of attention*, The Journal of the Acoustical Society of America **132**, 957–967.
- **Yi Shen**, and Virginia M. Richards, (2012). *Spectral processing of two concurrent harmonic complexes*, The Journal of the Acoustical Society of America **131**, 386–397.
- Virginia M. Richards, Eva Maria Carreira, and **Yi Shen**, (2012). *Toward an objective measure for stream segregation*, The Journal of the Acoustical Society of America **131**, EL8–EL13.
- **Yi Shen**, and Jennifer J. Lentz, (2011). *The effect of temporal asymmetry on amplitude modulation detection using pure-tone carriers*, The Journal of the Acoustical Society of America **130**, 2635–2638.
- Jennifer J. Lentz, and **Yi Shen**, (2011). *Investigating temporal asymmetry using masking period patterns and models of peripheral auditory processing*, The Journal of the Acoustical Society of America **129**, 3194–3205.
- **Yi Shen**, and Jennifer J. Lentz, (2010). *Effect of fast-acting compression on modulation detection interference for normal hearing and hearing impaired listeners*, The Journal of the Acoustical Society of America **127**, 3663–3674.
- **Yi Shen**, and Jennifer J. Lentz, (2009). *Level dependence in behavioral measurements of auditory-filter phase characteristics*, The Journal of the Acoustical Society of America **126**, 2501–2510.

Peer-reviewed conference papers:

- Zhuohuang Zhang, Donald S. Williamson, and **Yi Shen**. (2022). *Investigation on the band importance of phase-aware speech enhancement*, Proceedings of the Annual Conference of the International Speech Communication Association (INTERSPEECH) 2022, 4651-4655.

- Zhuohuang Zhang, **Yi Shen**, and Donald S. Williamson, (2020). *Investigation of phase distortion on perceived speech quality for hearing-impaired listeners*, Proceedings of the Annual Conference of the International Speech Communication Association (INTERSPEECH) 2020, 2512-2516.
- Zhuohuang Zhang, Chengyun Deng, **Yi Shen**, Donald S. Williamson, Yongtao Sha, Yi Zhang, Hui Song, Xiangang Li, (2020). *On loss functions and recurrency training for GAN-based speech enhancement systems*, Proceedings of the Annual Conference of the International Speech Communication Association (INTERSPEECH) 2020, 3266-3270.
- Zhuohuang Zhang, and **Yi Shen**, (2019). *Listener preference on the local criterion for ideal binary-masked speech*, Proceedings of the Annual Conference of the International Speech Communication Association (INTERSPEECH) 2019, 1383-1387.
- Zhuohuang Zhang, **Yi Shen**, and Donald S. Williamson, (2019). *Objective evaluation of speech enhancement algorithms for normal-hearing and hearing-impaired listeners*, 2019 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), 6845-6849.
- Yufan Du, **Yi Shen**, Hongying Yang, Xihong Wu, and Jing Chen, (2018). *Measuring the band importance function for mandarin Chinese with a Bayesian adaptive procedure*, Proceedings of the Annual Conference of the International Speech Communication Association (INTERSPEECH) 2018, 961-965.
- **Yi Shen**, and Konstantinos Angelakis, (2006). *Evaluation of loudness in a room acoustic model*, 120th Convention of the Audio Engineering Society, Paris, France.

Conference Presentations

- Bertan Kursun, and **Yi Shen**, (2023). *Exploring the effect of sound scene on self-directed hearing-aid gain adjustment*, the 185th Meeting of the Acoustical Society of America.
- **Yi Shen**, Susan J. Anderson, and Adrian KC Lee, (2023). *Exploring the educational requirements for paraprofessionals in audiology*, American Academy of Audiology Convention 2023.
- Donghyeon Yun, Jennifer J. Lentz, and **Yi Shen**, (2023). *Influences of the number of background talkers on hearing-aid output signal-to-noise ratios*, the Annual Meeting of the American Auditory Society.
- Erik A. Petersen, and **Yi Shen**, (2023). *Determining auditory brain stem response threshold using an adaptive stimulus selection procedure*, the 46th Annual Meeting of the Association for Research in Otolaryngology.
- Bertan Kursun, Chemay Shola, Lauren Langley, and **Yi Shen**, (2022). *A touchscreen-based self-fitting procedure for hearing aids and initial evaluations*, the International Hearing Aid Research Conference.
- Dylan V. Pearson, **Yi Shen**, Gary R. Kidd, and J. Devin McAuley, (2022). *The effect of competitor rhythmic structure when recalling vowels in a complex listening environment*, the 182nd Meeting of the Acoustical Society of America.
- Erik A. Petersen, and **Yi Shen**, (2023). *Determining auditory brain stem response threshold using an adaptive stimulus selection procedure*, the 182nd Meeting of the Acoustical Society of America.
- **Yi Shen**, Yihui Zhang, Winnie Shao, and Stephen Neely, (2022). *Toward an adaptive procedure for multi-frequency categorical loudness scaling: A Monte-Carlo simulation study*, the 182nd Meeting of the Acoustical Society of America.
- Bertan Kursun, Chemay Shola, and **Yi Shen**, (2022). *Initial validation of an iterative hearing-aid self-fitting procedure with Monte-Carlo simulations*, the 182nd Meeting of the Acoustical Society of America.

- **Yi Shen**, (2022). *Information redundancy across spectral regions for sentence recognition in noise*, the 182 Meeting of the Acoustical Society of America.
- Jaime Morales, Dylan V. Pearson, **Yi Shen**, J. Devin McAuley, William P. Hetrick, Gary R. Kidd, and Brian F. O'Donnell, (2022). *The auditory steady-state responses and auditory perception in younger and older adults*, the Annual Meeting of the Society for Psychophysiological Research.
- **Yi Shen**, Robert H. Withnell, Mackenzie L. Mills, and Kevin K. Ohlemiller, (2022). *How distributed is the active process in generating cubic distortion product otoacoustic emissions?* 45th meeting of the Association for Research in Otolaryngology.
- Chemay Shola, and **Yi Shen**, (2022). *An interactive hearing-aid fitting interface powered by the Open Master Hearing Aid*, 45th meeting of the Association for Research in Otolaryngology.
- **Yi Shen**, and Lauren Langley, (2021). *Amplitude modulation of background noise varies listeners' spectral weights for sentence recognition*, 181st Meeting of the Acoustical Society of America, Seattle.
- Toni Smith, **Yi Shen**, Gary R. Kidd, Anusha Mamidipaka, and J. Devin McAuley, (2021). *Effect of relative timing of target and background words on speech understanding using the coordinate response measure paradigm*, 181st Meeting of the Acoustical Society of America, Seattle.
- Dylan Pearson, **Yi Shen**, Gary R. Kidd, and J. Devin McAuley, (2021). *Recalling vowel sequences in competing backgrounds: Effects of rhythmic regularity and tempo*, 181st Meeting of the Acoustical Society of America, Seattle.
- Donghyeon Yun, **Yi Shen**, and Jennifer J. Lentz, (2021). *Validating a phase-inversion procedure to assess the signal-to-noise ratios at the output of hearing aids with wide-dynamic-range compression*, 181st Meeting of the Acoustical Society of America, Seattle.
- Gavriel D. Kohlberg, Eric M. Prater, **Yi Shen**, Adrian K. C. Lee, Jay T. Rubinstein, Les E. Atlas, and Richard A. Wright (2021). *Do humans integrate auditory and text information in a statistically optimal fashion?* 181st Meeting of the Acoustical Society of America, Seattle.
- Dylan Pearson, **Yi Shen**, Gary R. Kidd, and J. Devin McAuley, (2021). *Recall of vowel sequences in altered rhythm contexts: In-person versus online testing*, 180th Meeting of the Acoustical Society of America.
- Ryan Anderson, **Yi Shen**, and William P. Shofner, (2021). *Dynamically varying timbre cues interfere with listeners' pitch perception*, 180th Meeting of the Acoustical Society of America.
- Donghyeon Yun, **Yi Shen**, and Jennifer J. Lentz, (2021). *Effects of audiogram configurations on output signal-to-noise ratios of digital hearing aids*, American Auditory Society Meeting.
- G. Christopher Stecker, Jordan A. Beim, Hari Bharadwaj, Adam K. Bosen, Emily Buss, Meredith Braza, Anna C. Diedesch, Claire M. Dorey, Andrew R. Dykstra, Richard Freyman, Frederick J. Gallun, Raymond L. Goldsworthy, Lincoln Gray, Eric C. Hoover, Antje Ihlefeld, Thomas Koelewijn, J.G. Kopun, Juraj Mesik, Ellen Peng, Virginia M. Richards, **Yi Shen**, Daniel E. Shub, Jonathan H. Venezia, Sebastian Waz, (2020). *Remote testing for psychological and physiological acoustics: Initial report of the ASA P&P Task Force on Remote Testing*, 179th Meeting of the Acoustical Society of America.
- Zhuohuang Zhang, **Yi Shen**, and Donald S. Williamson, (2020). *Investigation of phase distortion on perceived speech quality for hearing-impaired listeners*, the Annual Conference of the International Speech Communication Association (INTERSPEECH) 2020.
- Zhuohuang Zhang, Chengyun Deng, **Yi Shen**, Donald S. Williamson, Yongtao Sha, Yi Zhang, Hui Song, Xiangang Li, (2020). *On loss functions and recurrency training for GAN-based speech enhancement systems*, the Annual Conference of the International Speech Communication Association (INTERSPEECH) 2020.

- Eileen Y. Brister, Christoph Rau, Robert H. Withnell, **Yi Shen**, Stephen R. Hoff, and Claus-Peter Richter (2020). *Development of ossification in the neonatal gerbil middle ear*, 43rd Midwinter Meeting of the Association for Research in Otolaryngology, San Jose.
- Eileen Y. Brister, Claus-Peter Richter, Mackenzie Mills, Stephen R. Hoff, **Yi Shen**, and Robert H. Withnell, (2020). *Functional role of ligaments in the gerbil middle ear*, 43rd Midwinter Meeting of the Association for Research in Otolaryngology, San Jose.
- **Yi Shen**, Ryan Anderson, and William P. Shofner, (2020). *Sensitivity to periodicity: potential discrepancies between frequency-following response and psychophysics*, 43rd Midwinter Meeting of the Association for Research in Otolaryngology, San Jose.
- Dylan V. Pearson, **Yi Shen**, J. Devin McAuley, and Gary Kidd, (2019). *Age effects on timing perception of altered sentence rhythms*, Aging and Speech Communication Research Conference 2019, Tampa.
- **Yi Shen**, Donghyeon Yun, and Yi Liu, (2019). *Individualized estimation of spectral weighting during sentence recognition in noise among normal-hearing and hearing-impaired listeners*, Aging and Speech Communication Research Conference 2019, Tampa.
- Zhuohuang Zhang, and **Yi Shen**, (2019). *Listener preference on the local criterion for ideal binary-masked speech*, the Annual Conference of the International Speech Communication Association (INTERSPEECH) 2019, Graz, Austria.
- Zhuohuang Zhang, and **Yi Shen**, (2019). *Impact of amplification on speech enhancement algorithms using an objective evaluation metric*, 23rd International Congress on Acoustics, Aachen, Germany.
- **Yi Shen**, Ryan Anderson, and William P. Shofner, (2019). *Composition of Periodicity in the Auditory Frequency-Following Response*, Midwest Auditory Research Conference 2019, Springfield, IL.
- Zhuohuang Zhang, and **Yi Shen**, (2019). *Inconsistencies between the predicted qualities of enhanced speech signals from two objective metrics*, 177th Meeting of the Acoustical Society of America, Louisville.
- Dylan Pearson, **Yi Shen**, J. Devin MacAuley, and Gary R. Kidd, (2019). *The effect of altered sentence rhythm on timing judgments*, 177th Meeting of the Acoustical Society of America, Louisville.
- **Yi Shen**, Yuan He, Kimberly Skinner, and Donghyeon Yun (2019). *The effect of reverberation on listening effort*, 177th Meeting of the Acoustical Society of America, Louisville.
- Donghyeon Yun, **Yi Shen**, and Zhuohuang Zhang, (2019). *Can listeners reliably identify their preferred amplification profiles for speech listening?*, 177th Meeting of the Acoustical Society of America, Louisville.
- **Yi Shen**, (2019). *Coping with the Black Swan in psychophysics*, 177th Meeting of the Acoustical Society of America, Louisville.
- **Yi Shen**, and Anna M. Hopkins, (2019). *The effect of temporal regularity on immediate serial recalls of synthesized vowel sequences*, 42nd Midwinter Meeting of the Association for Research in Otolaryngology, Baltimore.
- **Yi Shen**, and Amanda K. Tolen, (2019). *Contralateral suppression of chirp-evoked auditory brainstem responses*, 42nd Midwinter Meeting of the Association for Research in Otolaryngology, Baltimore.
- J. Devin MacAuley, Sarah Dec, **Yi Shen**, and Gary R. Kidd, (2018). *The role of rhythm in understanding speech in difficult listening situations*, 17th Annual Auditory Perception, Cognition and Action Meeting, New Orleans.

- Yufan Du, **Yi Shen**, Hongying Yang, Xihong Wu, and Jing Chen, (2018). *Measuring the band importance function for mandarin Chinese with a Bayesian adaptive procedure*, the Annual Conference of the International Speech Communication Association (INTERSPEECH) 2018, Hyderabad, India.
- **Yi Shen**, (2018). *Primacy and recency effects in serial recall of synthesized vowel sequences*, 175th Meeting of the Acoustical Society of America, Minneapolis.
- **Yi Shen**, and Dylan V. Pearson, (2018). *Masking of synthesized vowel sequences: the potential roles of perceptual segregation*, 175th Meeting of the Acoustical Society of America, Minneapolis.
- **Yi Shen**, and Allison B. Kern, (2018). *Bayesian estimation of the auditory-filter shape among naïve listeners with a wide range of age and hearing status*, American Auditory Society Meeting, Scottsdale.
- **Yi Shen**, and Carly J. Gurnik, (2018). *Talker similarity affects head-turn efficiency*, 41st Midwinter Meeting of the Association for Research in Otolaryngology, San Diego.
- **Yi Shen**, (2017). *Towards the individualized estimation of the band importance function for Speech Intelligibility Index*, 173rd Meeting of the Acoustical Society of America, Boston.
- **Yi Shen**, (2017). *Auditory sequential integration of spectral cues revealed using an informational masking paradigm*, 173rd Meeting of the Acoustical Society of America, Boston.
- **Yi Shen**, (2017). *Investigating the fluctuating masker benefit using synthesized vowel sequences*, 40th Midwinter Meeting of the Association for Research in Otolaryngology, Baltimore.
- **Yi Shen**, and Celia Zhang, (2017). *Will Bayesian adaptive procedures improve the efficiency of loudness balancing?* 40th Midwinter Meeting of the Association for Research in Otolaryngology, Baltimore.
- **Yi Shen**, and Brook E. Louthan (2016). *Frequency cueing and top-down processes in the perceptual segregation of simultaneous tone*, 171th Meeting of the Acoustical Society of America, Salt Lake City.
- **Yi Shen**, Monica Folkerts, and Virginia M. Richards (2016). *Undirected head movements when listening to speech in noise and competing speech*, 39th Midwinter Meeting of the Association for Research in Otolaryngology, San Diego.
- Lucas L. Baltzell, Cort Horten, **Yi Shen**, Virginia M. Richards, and Ramesh Srinivasan, (2015). *Selective auditory attention through cortical entrainment shows frequency dependency*, 38th Midwinter Meeting of the Association for Research in Otolaryngology, Baltimore.
- **Yi Shen**, (2014). *A detection theoretical framework for conceptualizing the bottom-up and top-down processes during concurrent-source segregation*, 167th Meeting of the Acoustical Society of America, Providence.
- **Yi Shen**, Rajeswari Sivakumar, and Virginia M. Richards, (2014). *Bayesian estimation of high-parameter models of the auditory filter*, 167th Meeting of the Acoustical Society of America, Providence.
- **Yi Shen**, Nicole Manzano, and Virginia M. Richards, (2014). *Psychometric functions of sentence recognition in amplitude-modulated noises*, 167th Meeting of the Acoustical Society of America, Providence.
- **Yi Shen**, (2014). *The effects of age and hearing loss on the temporal modulation transfer function*, 37th Midwinter Meeting of the Association for Research in Otolaryngology, San Diego.
- **Yi Shen**, and Virginia M. Richards, (2013). *Encoding of amplitude modulation upon interference in remote frequency regions*, 166th Meeting of the Acoustical Society of America, San Francisco.

- **Yi Shen**, (2013). *“Glimpsing” a target harmonic complex in a temporally interrupted masker*, 36th Midwinter Meeting of the Association for Research in Otolaryngology, Baltimore.
- **Yi Shen**, and Virginia M. Richards, (2013). *Efficient parameter-based estimates of auditory filters*, 36th Midwinter Meeting of the Association for Research in Otolaryngology, Baltimore.
- **Yi Shen**, (2012). *Perceptual organization of concurrent harmonic complexes*, 2nd Southern California Hearing Conference, Irvine.
- Virginia M. Richards, **Yi Shen**, and Theodore Lin, (2012). *Sensitivity to changes in level distributions over time*, 2nd Southern California Hearing Conference, Irvine.
- **Yi Shen**, (2012). *The use of relative weights to assess perceptual segregation in a concurrent profile analysis task*, 163rd Meeting of the Acoustical Society of America, Hong Kong, China.
- **Yi Shen**, and Virginia M. Richards, (2012). *An updated maximum-likelihood procedure for efficient estimation of the psychometric function*, American Auditory Society Meeting, Scottsdale.
- **Yi Shen**, (2012). *Behavioral assessment of perceptual segregation during a profile analysis task under simultaneous masking*, 35th Midwinter Meeting of the Association for Research in Otolaryngology, San Diego.
- **Yi Shen**, and Virginia M. Richards, (2011). *Concurrent profile analysis: The effect of segregation cues on spectral-shape comparisons for simultaneous stimuli*, 161st Meeting of the Acoustical Society of America, Seattle.
- **Yi Shen**, and Virginia M. Richards, (2011). *Masking patterns of stimuli exhibiting enhanced detection for spectrally notched precursors*, 161st Meeting of the Acoustical Society of America, Seattle.
- Virginia M. Richards, Eva Maria Carreira, and **Yi Shen**, (2011). *Loudness matching for enhanced sinusoids*, 161st Meeting of the Acoustical Society of America, Seattle.
- **Yi Shen**, and Jennifer J. Lentz, (2010). *Frequency-specific measurements of the temporal modulation transfer function using narrowband noise*, 159th Meeting of the Acoustical Society of America, Baltimore.
- **Yi Shen**, and Jennifer J. Lentz, (2010). *Contribution of non-simultaneous masking in masking period patterns of ramped and damped noises*, 33rd Midwinter Meeting of the Association for Research in Otolaryngology, Anaheim.
- Jennifer J. Lentz, and **Yi Shen**, (2009). *Masking period patterns of exponentially ramped and damped noises in hearing-impaired listeners*, 157th Meeting of the Acoustical Society of America, Portland.
- **Yi Shen**, and Jennifer J. Lentz, (2009). *Modulation detection of sawtooth-wave modulated tones: Effect of temporal asymmetry*, 157th Meeting of the Acoustical Society of America, Portland.
- Jennifer J. Lentz, and **Yi Shen**, (2009). *Masking period patterns of ramped and damped noises*, 32nd MidWinter Meeting of the Association for Research in Otolaryngology, Baltimore.
- **Yi Shen**, and Jennifer J. Lentz, (2008). *Modulation detection interference in hearing-impaired listeners with nonlinear amplification*, International Hearing Aid Research Conference, Lake Tahoe.
- **Yi Shen**, and Jennifer J. Lentz, (2008). *Phase interactions between auditory filter and complex stimuli: Psychophysical evidence for level dependence in cochlear phase response*, 155th Meeting of the Acoustical Society of America, Paris, France.

Invited Talks

- *Machine-learning approach for individualized listener profiling*, 2022, Bloedel Broad of Trustees Affiliate Lecture, Seattle.
- *Application of Monte-Carlo simulations for validating adaptive psychophysical procedures*, 2021, 181st Meeting of the Acoustical Society of America, Seattle.
- *Machine-learning approach for individualized listener profiling*, 2021, Hearing4all International Symposium 2021, Oldenburg, Germany.
- *Impact of amplification on speech enhancement algorithms using an objective evaluation metric*, 2019, 23rd International Congress on Acoustics, Aachen, Germany.
- *Inconsistencies between the predicted qualities of enhanced speech signals from two objective metrics*, 2019, 177th Meeting of the Acoustical Society of America, Louisville.
- *Coping with the Black Swan in psychophysics*, 2019, 177th Meeting of the Acoustical Society of America, Louisville.
- *Psychometrics, machine-learning, and clinical assessments*, 11/9/2018, Hearing Research Center, Boston University.
- *Hearing assessments in the era of artificial intelligence*, 1/19/2018, Boys Town National Research Hospital, Omaha.
- *Towards the individualized estimation of the band importance function for Speech Intelligibility Index*, 2017, 173rd Meeting of the Acoustical Society of America, Boston.
- *Encoding of amplitude modulation upon interference in remote frequency regions*, 12/5/2013, 166th Meeting of the Acoustical Society of America, San Francisco.
- *Task-driven and listener-driven perceptual segregation of concurrent sound sources*, 11/7/2011, The Ear Club Colloquium Series, University of California, Berkeley
- *Assessments of perceptual segregation of concurrent sound sources*, 10/12/2011, University of California, Irvine
- *Auditory temporal processing at the cocktail party*, 10/6/2008, Speech and Hearing Sciences Colloquium Series, Indiana University
- *Phase interactions between auditory filter and complex stimuli: psychophysical evidence for level dependence in cochlear phase response*, 8/7/2008, Technical University of Denmark, Denmark

Honors and Awards

- Travel Award for Lessons for Success Research Workshop, American Speech-Language-Hearing Association, Spring, 2013.
- Outstanding Postdoctoral Fellow Award, Center for Hearing Research, University of California Irvine, Fall, 2012.
- Student Travel Grant, Acoustical Society of America, Spring, 2010.
- Graduate Student/Postdoctoral Fellow Travel Award, Association for Research in Otolaryngology, Spring, 2010.
- Student Travel Award, Indiana University, College of Arts and Sciences, Spring, 2009.
- Student Travel Grant, Acoustical Society of America, Summer, 2009.
- Student Travel Award, Indiana University, College of Arts and Sciences, Fall, 2008.
- Student Scholarship for International Hearing Aid Research Conference, House Ear Institute, Summer, 2008.
- Student Travel Grant, Acoustical Society of America, Summer, 2008.

Teaching Experiences

Courses taught:

- Instructor for SPHSC 261 The Nature of Sound, Autumn 2020, Autumn 2021, University of Washington.
- Instructor for SPHSC 371 Introduction to Audiology, Winter 2023, University of Washington.
- Instructor for SPHSC 461 Hearing Science, Spring 2021, Spring 2022, Spring 2023, University of Washington.
- Instructor for SPHSC 511 Psychoacoustics, Spring 2023, University of Washington.
- Instructor for SPHSC 567 Research Seminar In Speech And Hearing Sciences, Winter 2021, Spring 2021, Winter 2023, University of Washington.
- Instructor for S375 Hearing Science, Fall 2015, Fall 2016, Spring 2017, Fall 2018, Spring 2018, Spring 2019, Fall 2019, Spring 2020, Indiana University.
- Instructor for S429 Principles of Audiology, Fall 2014, Spring 2015, Fall 2015, Spring 2016, Spring 2018, and Fall 2019, Indiana University.
- Instructor for S674 Advanced Seminar in Audiology, Spring 2016, Indiana University.
- Instructor for S677 Implantable Auditory Prostheses, Spring 2015, and Spring 2017, Indiana University.
- Instructor for S777 Speech Communication, Aging and Hearing Impairment, Fall 2016, Fall 2017, Fall 2018, Indiana University.
- Guest lecturer (two weeks) for Neurbio 260 Auditory Neuroscience, Fall 2013, University of California, Irvine.
- Guest lecturer (two weeks) for BioSci N147 Hearing and the Brain, Fall 2012, University of California, Irvine.
- Guest lecturer (two weeks) for Neurbio 260 Auditory Neuroscience, Fall 2011, University of California, Irvine.
- Instructor for S302 Acoustics for Speech and Hearing Sciences, Fall 2009 and Spring 2010, Indiana University.
- Guest lecturer (two weeks) for S678 Introduction to Psychoacoustics, Spring 2009, Indiana University.
- Guest lecturer for S679 Otoacoustic Emissions, Summer 2008, Indiana University.
- Guest lecturer (two weeks) for S319 Math and Physics in Speech and Hearing Sciences, Spring 2008, Indiana University.
- Guest lecturer for S110 Survey of Communication Disorders, Fall 2007, Indiana University

Ph.D. student mentoring:

- Bertan Kursun, Autumn 2021-present, University of Washington.
- Donghyeon Yun, Fall 2017-Summer 2024, Indiana University.
- Dylan V. Pearson, Fall 2016-Summer 2023, Indiana University.
- Zhuohuang Zhang, Fall 2017-Spring 2022, Indiana University.
- Eileen Y. Brister, Fall 2017-Summer 2021, Indiana University.
- Christine Clements, Fall 2015-Spring 2016, Indiana University.

Graduate advisory/research committee:

- Dylan Robertson, Autumn 2021-present, University of Washington
- Liesbeth Gijbels, Spring 2021-Winter 2024, University of Washington.
- Mackenzie Mills, Spring 2018-Summer 2022, Indiana University.

- Ryan Anderson, Fall 2016-present, Indiana University.
- Kai Zhen, Fall 2020-Spring 2021, Indiana University.
- Yuan He, Spring 2018-Fall 2020, Indiana University.
- Matthew Walker, Spring 2018-Fall 2019, Indiana University.

Undergraduate research supervision at the University of Washington (2020-present):

- Michelle Jin and Michelle Pearman, “Inclusive design for older hearing-aid users,” Autumn 2022-present.
- Meghana Annamaneni, “A frequency remap algorithm for digital hearing aids,” Autumn 2022-present.
- Jake Kelly, “Modeling auditory spectrotemporal resolution using a physiologically inspired model of the auditory periphery,” Autumn 2022-Winter 2023.
- Khloe Sytsma and Aarushi Buddhavarapu, “Assessing user experiences of self-guided hearing aid fitting using smartphones,” Autumn 2022-Spring 2023, recipient of the Recognition Award by the UW Population Health Initiative.
- Yihui Zhang, “Validating an adaptive procedure for multi-frequency categorical loudness scaling using Monte-Carlo simulations,” Summer 2021-Winter 2021.
- Grace Duffy, “Speech understanding: dissecting strategies used in speech recognition vs. speech quality judgement,” Autumn 2021-Spring 2022, funded by the Mary Gates Undergraduate Research Scholarship at UW.
- Christina Williams, “Rhythm improves communication in a noisy world,” Spring 2021-Spring 2022, funded by the Mary Gates Undergraduate Research Scholarship at UW.
- Chemay Shola, “An iterative procedure for self-adjusting hearing aids,” Autumn 2020-present, Bioengineering capstone project.
- Winnie Shao, “An adaptive procedure for multi-frequency categorical loudness scaling,” Summer 2020 - Spring 2021.
- Claire Hsu, “Synchronized rhythmic adjustments of audiovisual speech signals,” Autumn 2020-Winter 2020.

Undergraduate research supervision at Indiana University, Bloomington (2014-2020):

- Sarah Moats, “The contributions of interaural difference on head movement in complex multi-talker environments,” Spring 2019-Spring 2020.
- Jillian Basset, “Perceived quality of speech signals with phase distortions by hearing-impaired listeners,” Spring 2020.
- Amanda Tolen, “Timing the cochlear traveling waves using electroencephalography (EEG),” Spring 2018-Spring 2019, funded by the Hutton Honors College Undergraduate Research Grant at IU.
- Anna Hopkins, “Cognitive load during the recognition of vowel sequences,” Spring 2018 - Spring 2019, funded by the Department of Speech and Hearing Sciences Undergraduate Research Grant.
- Carly Gurnik, “Head orientation in auditory scenes with high spatial uncertainty,” Spring 2017 - Spring 2018, funded by the Hutton Honors College Undergraduate Research Grant at IU.
- Celia Zhang, “Comparing adaptive procedures for the estimation of equal loudness-level contours,” TRACCS Summer Undergraduate Research Program 2016.
- Kylee DeWitt, “The role of spatial uncertainty in speech understanding under complex acoustic environments,” Summer 2016-Spring 2016.
- Elizabeth Pugh, “temporal integration of auditory information streams,” Summer 2016-Spring 2017.

- Malina Xiong, “Individualized estimation of the band-importance function for the Speech Intelligibility Index,” Summer 2016-Fall 2016.
- Brooke Louthan, “Top-down processes in the perceptual segregation of simultaneous tones,” Fall 2015.
- Allison Kern, “Efficient assessment of frequency resolution,” Spring 2015-Spring 2016, funded by the Hutton Honors College Undergraduate Research Grant at IU.

Undergraduate research supervision at University of California, Irvine (2010-2014):

- Nicole Manzano, “Calibration of sound delivery systems,” Spring 2013; “efficiency of speech communication in dynamically varying backgrounds,” Fall 2013, funded by the Undergraduate Research Opportunities Program at UCI.
- Alyssa McGranahan, “Modulation detection interference and its neural correlates,” Spring 2013.
- Rajeswari Sivakumar, “Rapid estimation of frequency acuity in hearing,” Summer 2013, funded by the Summer Undergraduate Research Program at UCI.
- Andrew Silva, “Measuring frequency responses of loudspeakers,” Spring 2012.
- Grace Hunter, “Effect of harmonicity on detection sensitivity to tone complexes,” Spring 2011.
- Russle Benson, “Instrumentation and calibration for psychoacoustical research,” Winter 2011.

Undergraduate research supervision at Indiana University, Bloomington (2006-2010):

- Jacklynn T. Neutz, “Effect of dynamic range compression on the perception of temporal envelopes,” Spring 2009.
- Trissan D. Jones, “Effects of compressor’s attack and release times on the recognition of competing messages,” TRACCS Summer Undergraduate Research Program 2009.
- Lindsay M. Weberling, “Behavioral assessments of interaural attenuation,” Fall 2008.

Professional Activities

Services:

- Member of the Task Force for Remote Testing, the Acoustical Society of America (2020).
- Editor for the hearing section of the *Journal of Speech, Language, and Hearing Research* (2020-2023).
- Elected technical committee member for the Psychological and Physiological Acoustic technical committee under the Acoustical Society of America (2020-2023).
- Reviewer for the Grant Review and Reviewer Training (GRRT), the American Speech-Language-Hearing Foundation (2019, 2022).
- Grant Reviewer for the Royal National Institute for Deaf People (2022).
- Editorial board member for the *Journal of Speech, Language, and Hearing Research* (2017-2019).
- Ad hoc reviewer for *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, *Auditory Perception and Cognition*, *Journal of Vision*, *Frontiers in Human Neuroscience*, *Speech Communication*, *Vision Research*, *Behavioral Research Methods*, *Computer Methods and Programs in Biomedicine*, *Journal of Experimental Psychology: Human Perception and Performance*, *Attention, Perception, and Psychophysics*, *Hearing Research*, *Journal of Acoustical Society of America*, *Ear and Hearing*.
- Invited CoChair of technical session “Psychological and Physiological Acoustics: Spectral, Temporal, and Complex Auditory Processing” at the 159th Meeting of the Acoustical Society of America, Baltimore (2010).

- Treasurer of Speech and Hearing Sciences PhD student organization at Indiana University (2008-2010).
- CoCoordinator of the Indiana University Speech and Hearing Sciences colloquium series (2008-2010).

Consulting:

- 05/2009–10/2010: Audiomics Inc., Signal processing algorithms for hearing aids.
- 02/2009–04/2009: Learnability Laboratory at Indiana University (PI: Dr. Judith Gierut), Instrumentation for audio recording.
- 04/2008–10/2008: Voice Physiology Laboratory at Indiana University (PI: Dr. Theresa Burnett), Instrumentation and programming for fMRI research studies.

Memberships

- American Auditory Society
- Acoustical Society of America
- Association for Research in Otolaryngology

Last updated: March 12, 2024