# Curriculum Vitae
# Hongmei Hu

**Education**

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|---|---|
| 2004-2008 (PhD) | Signal and Information Processing, Southeast University, China |
| 2000-2003 (MSc) | Measurement and Control, Jiangsu University, China |
| 1996-2000 (BSc) | Mechanical Design and Theory, Jiangsu University, China |

**Employment**

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|---|---|
| 2013-now | Research Fellow<br>Medical Physics and Cluster of Excellence Hearing4all, University of Oldenburg, Germany |
| 2012-2013 | Associate Professor<br>Institute of Measurement and Control, Jiangsu University, China |
| 2010-2012 | Marie Curie Senior Research Fellow<br>Institute of Sound and Vibration Research, University of Southampton, UK |
| 2008-2009 | Lecturer<br>Institute of Measurement and Control, Jiangsu University, China |
| 2004-2008 | Ph.D. researcher<br>Signal and Information Processing, Southeast University, China |
| 2000-2004 | Teaching Assistant<br>Dept. of Mechanical Engineering, Jiangsu University, China |

**Grants (last 5 years)**

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| 2020-2023 | Principle researcher of WP3 in Model-based speech audiology across tonal and non-tonal language systems (MOBATON, Sino-German Mobility Programme; PI: Prof. Dr. Dr. Birger Kollmeier, Dr. Fei Chen) |
| 2019-2023 | Consultant in experiments and models of speech recognition across tonal and non-tonal language systems (EMSATON, DFG; PI: Prof. Dr. Dr. Birger Kollmeier, Dr. Anna Warzybok) |
| 2018-2023 | Co-investigator of the bilateral fitting work package in the UK MRC project: Developing Electrophysiological Measures of Brain Activity to Optimise Cochlear Implant Outcomes (PI: Dr. Debi Vickers) |
| 2018-2022 | Named principle researcher of WP 3 (Electric Profile) and 6 (Technology Development) in ERC project: Individualized Binaural Diagnostics and Technology (IBiDT; PI: Prof. Dr. Mathias Dietz) |
| 2016-2018 | Lead researcher, EASSR and related high-rate objective measurements (MED-EL Project number FK3080) |

**Teaching Experience**

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| Since 2013 | University of Oldenburg: Physiological, Psychophysical, and Audiological Acoustics (PPAA) practical course about brainstem response (EEG)<br>Auditory Signal Processing and Perception practical course about digital filters<br>Neuropathy practical course about Cochlea Implants (CI) |
| 2000-2009 | Jiangsu University: Module coordinator and lecturer of 3 main courses for undergraduate (3rd and 4th year): Measurement and Test Technology (around 100 students/semester); Sensor Principle and Technology (more than 50 students/semester); Signals and Systems (more than 50 students/semester)<br>Responsible for the laboratory management for student course projects |

Responsible for designing and marking exams

**Supervisory Experience**

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| 2013-now | Co-supervised 2 Master student research projects and 2 Bachelor thesis project in UOL.<br>Co-supervised 1 Master student research project in JSU.<br>Technical support and consulting in Regina Baumgärtel's PhD project.<br>Technical support and consulting in Prof. Dr. Dietz's group for CI experimental design and setup.<br>Technical support for EEG equipment and setup. |
| 2010-2012 | Co-supervised 2 undergraduates, 4 Master, and 1 PhD (Jinqiu Sang) students at University of Southampton<br>Closely collaborated with 3 visiting PhD (Jalil Taghia, Jalal Taghia, Nasser Mohammadiha) students in AUDIS project at the University of Southampton<br>Technical support and consulting in several PhD and Master projects, such as, e.g., wavelet based speech enhancement in CIs, application of independent component analysis on EEG signals, experimental set up for binaural CI localization project. |
| 2000-2009 | Supervised around 12 undergraduate final year projects at Jiangsu University<br>Co-supervised 3 Master student research projects at Southeast University. |

**Engagement in the Research System and distinctions**

Activities as ad-hoc reviewer: Applied Acoustics, Biomedical Signal Processing and Control, Frontiers in Neuroscience, IJA, Hearing research, Trends in Hearing, JASA, JARO
Session chair: CIAP 2023
Steering Committees: CIAP 2023
Guest Editor: Frontiers in Neuroscience
Fellowships: Marie Curie Senior Research Fellow

**Programming skills**

Matlab; Python; SIMULINK; SPSS; AutoCAD

**Languages**

Chinese (Native); English (Fluent); German (Basic, B1)

**Teaching qualifications or certificates**

Teacher's Certification for College Education (People's Republic of China)

## Publication List

**Peer-reviewed journals publications**

1. **Hu, H.**, Ausili, S. A., Williges, B., Klug, J., Felsheim, R. C., Vickers, D., & Dietz, M. (2023). A Model Framework for Simulating Spatial Hearing of Bilateral Cochlear Implant Users. Acta Acustica (accepted, open source code https://doi.org/10.5281/zenodo.7471961)
2. Kirsch, C., Wendt, T., Van De Par, S., **Hu, H.**, & Ewert, S. D. (2023). Computationally-efficient simulation of late reverberation for inhomogeneous boundary conditions and coupled rooms. Journal of the Audio Engineering Society, 71(4), 186-201.
3. Müller, M., **Hu, H.**, Dietz, M., Beiderbeck, B., Ferreiro, D. N., & Pecka, M. (2022). Temporal hyper-precision of brainstem neurons alters spatial sensitivity of binaural auditory processing with cochlear implants. Frontiers in Neuroscience, 16, 2234.
4. **Hu, H.**, Klug, J., & Dietz, M. (2022). Simulation of ITD-Dependent Single-Neuron Responses under Electrical Stimulation and with Amplitude-Modulated Acoustic Stimuli. Journal of the Association for Research in Otolaryngology. doi: 10.1007/s10162-021-00823-1
5. **Hu, H.**, Hochmuth, S., Man, C. K., Warzybok, A., Kollmeier, B., & Wong, L. L. N. (2022). Development and evaluation of the Cantonese matrix sentence test. International Journal of Audiology, 1-13. doi: 10.1080/14992027.2022.2142683
6. **Hu, H.**, Hartog, L., Kollmeier, B., & Ewert, S. D. (2022). Spectral and binaural loudness summation of equally loud narrowband signals in single-sided-deafness and bilateral cochlear implant users. Front. Neurosci., https://doi.org/10.3389/fnins.2022.93174.
7. **Hu, H.**, Xi, X., Wong, L. L. N., Hochmuth, S., Warzybok, A., and Kollmeier, B. (2018). "Construction and evaluation of the Mandarin Chinese matrix (CMNmatrix) sentence test for the assessment of speech recognition in noise," International Journal of Audiology 57, 838-850.
8. **Hu, H.**, Dietz, M., Williges, B., and Ewert, S. D. (2018). "Better-ear glimpsing with symmetrically-placed interferers in bilateral cochlear implant users," The Journal of the Acoustical Society of America 143, 2128-2141.
9. Williges, B., Jürgens, T., **Hu, H.**, and Dietz, M. (2018). "Coherent Coding of Enhanced Interaural Cues Improves Sound Localization in Noise With Bilateral Cochlear Implants," Trends in Hearing 22.
10. **Hu, H.**, Ewert, S. D., McAlpine, D., and Dietz, M. (2017). "Differences in the temporal course of interaural time difference sensitivity between acoustic and electric hearing in amplitude modulated stimuli," The Journal of the Acoustical Society of America 141, 1862-1873.
11. Baumgärtel, R. M., **Hu, H.**, Kollmeier, B., and Dietz, M. (2017). "Extent of lateralization at large interaural time differences in simulated electric hearing and bilateral cochlear implant users," The Journal of the Acoustical Society of America 141, 2338-2352.
12. **Hu, H.**, and Dietz, M. (2015). "Comparison of interaural electrode pairing methods for bilateral cochlear implants," Trends in Hearing 19.
13. **Hu, H.**, Kollmeier, B., and Dietz, M. (2015). "Reduction of stimulation coherent artifacts in electrically evoked auditory brainstem responses," Biomedical Signal Processing and Control 21, 74-81.
14. **Hu, H.**, Lutman, M. E., Ewert, S. D., Li, G., and Bleeck, S. (2015). "Sparse Nonnegative Matrix Factorization Strategy for Cochlear Implants," Trends in Hearing 19.
15. Baumgärtel, R. M., **Hu, H.**, Krawczyk-Becker, M., Marquardt, D., Herzke, T., Coleman, G., Adiloğlu, K., Bomke, K., Plotz, K., Gerkmann, T., Doclo, S., Kollmeier, B., Hohmann, V., and

Dietz, M. (2015). "Comparing binaural pre-processing strategies II: speech intelligibility of bilateral cochlear implant users," Trends in Hearing 19.

16. Baumgärtel, R. M., Krawczyk-Becker, M., Marquardt, D., Völker, C., **Hu, H.**, Herzke, T., Coleman, G., Adiloğlu, K., Ernst, S. M. A., Gerkmann, T., Doclo, S., Kollmeier, B., Hohmann, V., and Dietz, M. (2015). "Comparing Binaural Pre-processing Strategies I: Instrumental Evaluation," Trends in Hearing 19.
17. Sang, J., **Hu, H.**, Zheng, C., Li, G., Lutman, M. E., and Bleeck, S. (2015). "Speech quality evaluation of a sparse coding shrinkage noise reduction algorithm with normal hearing and hearing impaired listeners," Hearing research 327, 175-185.
18. Sang, J., **Hu, H.**, Zheng, C., Li, G., Lutman, M. E., and Bleeck, S. (2014). "Evaluation of the sparse coding shrinkage noise reduction algorithm in normal hearing and hearing impaired listeners," Hearing research 310, 36-47.
19. **Hu, H.**, Krasoulis, A., Lutman, M., and Bleeck, S. (2013). "Development of a real time sparse non-negative matrix factorization module for cochlear implants by using xPC target," Sensors 13, 13861-13878.
20. **Hu, H.**, Zhou, L., Ma, H., and Wu, Z. (2008). "HRTF personalization based on artificial neural network in individual virtual auditory space," Applied Acoustics 69, 163-172.

***in Chinese language***

21. **Hu, H.**, Zhou, L., Ma, H., and Wu, Z. (2008). "Head-related transfer function personalization based on partial least square regression," Journal of Electronics and Information Technology 30, 154-158.
22. **Hu, H.**, Zhou, L., Ma, H., and Wu, Z. (2008). "Optimization of headphone-based virtual sound system," Journal of Southeast University 38, 1-5.
23. **Hu, H.**, Xu, G., and Sheng, A. (2003). "A new method for quickly measuring the degree of subgrade compaction," Journal of Jiangsu University (Natural and Science Edition) 24.
24. Ma, H., Zhou, L., Hu, H., and Wu, Z. (2008). "Adaptive cascade inverse filter design for crosstalk cancellation system," Journal of Southeast University 38, 6-10.
25. Ma, H., Wu, Z., Zhang, J., and **Hu, H.** (2007). "Binaural character extraction and clustering of head related transfer function," Journal of Circuits and Systems 5, 012.
26. Ma, H., Wu, Z., Zhang, J., and **Hu, H.** (2007). "Head related transfer function based neural network sound localization," Journal of Electronics and Information Technology 29, 2058-2062.
27. Xu, G., Sheng, A., and **Hu, H.** (2001). "A new method for quickly measuring the degree of subgrade compaction," Transactions of the Chinese Society of Agricultural Machinery 32.

**Peer-reviewed conference proceedings**

1. Ewert, S. D., Gößling, N., Buttler, O., van de Par, S., and **Hu, H**. (2023). Computationally-efficient and perceptually-motivated rendering of diffuse reflections in room acoustics simulation (Forum Acusticum 2023, accepted). arXiv preprint arXiv:2306.16696.
2. **Hu, H.** and Ewert, S. D., "Exploring Artifact Rejection for High-pulse Rate Electrically Evoked Auditory Steady State Responses in Cochlear Implants Users," in 2021 Asia-Pacific Signal and Information Processing Association Annual Summit and Conference (APSIPA ASC), 2021, pp. 1311-1316.
3. **Hu, H.** and Ewert, S. D., "Speech intelligibility of Mandarin- and German-speaking listeners in challenging conditions (accepted)," presented at the 2021 IEEE Workshop on Applications of Signal Processing to Audio and Acoustics, New Paltz, NY, 2021.

4. Ewert, S. D., Buttler, O. and **Hu, H.**, "Computationally Efficient Parametric Filter Approximations for Sound-Source Directivity and Head-Related Impulse Responses," in 2021 Immersive and 3D Audio: from Architecture to Automotive (I3DA), 2021, pp. 1-6.
5. **Hu, H.**, Kollmeier, B., and Dietz, M. (2016). "Suitability of the Binaural Interaction Component for Interaural Electrode Pairing of Bilateral Cochlear Implants," in Physiology, Psychoacoustics and Cognition in Normal and Impaired Hearing, edited by P. van Dijk, D. Başkent, E. Gaudrain, E. de Kleine, A. Wagner, and C. Lanting (Springer International Publishing, Cham), pp. 57-64.
6. **Hu, H.**, Ewert, S. D., Campbell, T., Kollmeier, B., and Dietz, M. (2014). "An interaural electrode pairing clinical research system for bilateral cochlear implants," in Signal and Information Processing (ChinaSIP), 2014 IEEE China Summit & International Conference on (IEEE), pp. 66-70.
7. **Hu, H.**, Sang, J., Lutman, M., and Bleeck, S. (2013). "Non-negative matrix factorization on the envelope matrix in cochlear implant," in Acoustics, Speech and Signal Processing (ICASSP), 2013 IEEE International Conference on (IEEE), pp. 7790-7794.
8. **Hu, H.**, Mohammadiha, N., Taghia, J., Leijon, A., Lutman, M. E., and Wang, S. (2012). "Sparsity level in a non-negative matrix factorization based speech strategy in cochlear implants," in Signal Processing Conference (EUSIPCO), 2012 Proceedings of the 20th European (IEEE), pp. 2432-2436.
9. **Hu, H.**, Taghia, J., Sang, J., Taghia, J., Mohammadiha, N., Azarpour, M., Dokku, R., Wang, S., Lutman, M. E., and Bleeck, S. (2012). "Speech enhancement via combination of Wiener filter and blind source separation," in Practical Applications of Intelligent Systems (Springer Berlin Heidelberg), pp. 485-494.
10. Sang, J., **Hu, H.**, Zheng, C., Li, G., Lutman, M. E., and Bleeck, S. (2012). "Evaluation of a sparse coding shrinkage algorithm in normal hearing and hearing impaired listeners," in Signal Processing Conference (EUSIPCO), 2012 Proceedings of the 20th European (IEEE), pp. 1074-1078.
11. **Hu, H.** (2011). "Rao-Blackwellized Particle Filtering for Mobility Positioning in Mixed Sight Conditions," in Applied Mechanics and Materials, pp. 329-332.
12. **Hu, H.**, Li, G., Chen, L., Sang, J., Wang, S., Lutman, M. E., and Bleeck, S. (2011). "Enhanced sparse speech processing strategy for cochlear implants," in Signal Processing Conference, 2011 19th European (IEEE), pp. 491-495.
13. **Hu, H.**, Sang, J., Lutman, M. E., and Bleeck, S. (2011). "Simulation of hearing loss using compressive gammachirp auditory filters," in Acoustics, Speech and Signal Processing (ICASSP), 2011 IEEE International Conference on (IEEE), pp. 5428-5431.
14. Sang, J., **Hu, H.**, Li, G., Lutman, M. E., and Blee, S. (2011). "Supervised sparse coding strategy in hearing aids," in Communication Technology (ICCT), 2011 IEEE 13th International Conference on (IEEE), pp. 827-832 (**best paper**).
15. Sang, J., **Hu, H.**, Winter, I. M., Wright, M., and Bleeck, S. (2011). "The 'neural space': A physiologically inspired noise reduction strategy based on fractional derivatives," in Communications and Information Technologies (ISCIT), 2011 11th International Symposium on (IEEE), pp. 512-517.
16. Sang, J., Li, G., **Hu, H.**, Lutman, M. E., and Bleeck, S. (2011). "Supervised sparse coding strategy in cochlear implants," in Twelfth Annual Conference of the International Speech Communication Association.

17. **Hu, H.**, Chen, L., and Wu, Z. Y. (2008). "The estimation of personalized HRTFs in individual VAS," in Natural Computation, 2008. ICNC'08. Fourth International Conference on (IEEE), pp. 203-207.
18. Chen, L., **Hu, H.**, and Wu, Z. (2008). "Head-related impulse response interpolation in virtual sound system," in Natural Computation, 2008. ICNC'08. Fourth International Conference on (IEEE), pp. 162-166.
19. **Hu, H.**, Zhou, L., Zhang, J., Ma, H., and Wu, Z. (2006). "Head related transfer function personalization based on multiple regression analysis," in Computational Intelligence and Security, 2006 International Conference on (IEEE), pp. 1829-1832.

**Book chapters**

1. **Hu, H.**, Li, G., Lutman, M. E., and Bleeck, S. (2014). "Nonnegative matrix factorization sparse coding strategy for cochlear implants," in Blind Source Separation (Springer), pp. 413-434.