

Anqi Xu

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Work Experience

Assistant Professor, Harbin Institute of Technology, Shenzhen	2023.02-Present
Research assistant, The Hong Kong Polytechnic University	2016.09-2017.08
Coordinator, Waseda University Shanghai Education and Research Centre	2014.07-2015.07

Education

PhD in Speech, Hearing and Phonetic Sciences, University College London, UK	2017.09-2022.12
MA in Linguistics (Distinction), The University of Hong Kong, Hong Kong	2015.09-2016.09
BA in Japanese Language and Literature (GPA:3.7/4), Ocean University of China, China	2010.09-2014.07

Research summary

My research investigates speech production, perception, and acquisition through an integrated experimental and computational approach. **Computationally**, I build models integrating 3D articulatory synthesis and deep learning to probe theories of speech cognition. **Empirically**, I examine languages using behavioral and neurophysiological methods (fMRI, ERPs, and SEEG). This interdisciplinary framework bridges phonetics and psycholinguistics, advancing theoretical models of speech production, perception and its linkage, as well as computational approaches to cognition and acquisition. Key research areas are detailed in Publications [1–34]

- Computational modelling of speech cognition and language acquisition [1-3,5,13,16-21,23]
- Neural, acoustic and articulatory foundations of speech processing [8,15,22,25]
- Prosody-syntax/morphology interface in Chinese languages, Dravidian, Iranian and Arabic languages [4,6-7,9-12,14,24,26-28,30-31]
- Sociophonetic aspects of speech [30,32-34]

Publications

Journal articles (* indicates corresponding author)

1. Lu, Y., Tang, X., Xiao, Z., **Xu, A.**, Chen, J., Tian X., (2025). Regulation of sensorimotor serial learning in speech production by motor compensation rather than sensory error. *eLife*14:RP108357. DOI: [10.7554/eLife.108357](https://doi.org/10.7554/eLife.108357)
2. **Xu, A.***, Niekerk, D. R. v., Gerazov, B., Krug, P. K., Prom-on, S., Birkholz, P., & Xu, Y. (2025). Learnability of English diphthongs: One dynamic target vs. two static targets. *Speech Communication* 170, 103225. DOI: [10.1016/j.specom.2025.103225](https://doi.org/10.1016/j.specom.2025.103225)
3. **Xu, A.**, Niekerk, D. R. v., Gerazov, B., Krug, P. K., Birkholz, P., Prom-on, S., Halliday, L., & Xu, Y.* (2024). Artificial vocal learning guided by speech recognition: What it may tell us about how children learn to speak. *Journal of Phonetics* 105, 101338. DOI: [10.1016/j.wocn.2024.101338](https://doi.org/10.1016/j.wocn.2024.101338)
4. Krug, P. K.*, Birkholz, P., Gerazov, B., Niekerk, D.v., **Xu, A.**, Xu, Y. (2023). Artificial Vocal Learning guided by Phoneme Recognition and Visual Information. *IEEE Transactions on Audio, Speech and Language Processing* 31, 1734-1744. DOI: [10.1109/TASLP.2023.3264454](https://doi.org/10.1109/TASLP.2023.3264454)
5. Alzaidi, M.*, Szreder, M., **Xu, A.** & Xu, Y. Analysis and computational modeling of Emirati Arabic intonation - A preliminary study. (2023). *Journal of Phonetics* 98, 101236. DOI: [10.1016/j.wocn.2023.101236](https://doi.org/10.1016/j.wocn.2023.101236)
6. Niekerk, D. R. v.*, **Xu, A.**, Gerazov, B., Krug, P. K., Birkholz, P., Prom-on, S., Halliday, L., Prom-on, S., & Xu, Y. (2023). Simulating vocal learning of spoken language: Beyond imitation. *Speech Communication* 147, 51-62. DOI: [10.1016/j.specom.2023.01.003](https://doi.org/10.1016/j.specom.2023.01.003)

7. Syed, N. A.*, Shah, A. W., **Xu, A.**, & Xu, Y. (2022). Post-focus compression in Brahvi and Balochi. *Phonetica* 79(2), 189-218. DOI: [10.1515/phon-2022-2020](https://doi.org/10.1515/phon-2022-2020)
8. Krug, P. K.*, Gerazov, B., Niekerk, D. R. v., **Xu, A.**, Xu, Y., & Birkholz, P. (2021). Modelling microprosodic effects can lead to an audible improvement in articulatory synthesis. *The Journal of the Acoustical Society of America* 150(2), 1209-1217. DOI: [10.1121/10.0005876](https://doi.org/10.1121/10.0005876)
9. Xu, Y. & **Xu, A.*** (2021). Consonantal F0 perturbation in American English involves multiple mechanisms. *The Journal of the Acoustical Society of America*, 149(4), 2877-2895. DOI: [10.1121/10.0004239](https://doi.org/10.1121/10.0004239)
10. Hsu, Y.*, & **Xu, A.** (2020). Interaction of prosody and syntax-semantics in Mandarin wh-indeterminates. *The Journal of the Acoustical Society of America*, 148, EL119. DOI: [10.1121/10.0001676](https://doi.org/10.1121/10.0001676)
11. Alzaidi, M.*, Xu, Y. & **Xu, A.** (2019). Prosodic encoding of focus in Hijazi Arabic. *Speech Communication*, 106, 127-149. DOI: [10.1016/j.specom.2018.12.006](https://doi.org/10.1016/j.specom.2018.12.006)

Conference papers & abstract

12. **Xu, A.** & Hsu, Y. (2025). When focus shapes the flow: prosodic restructuring in Mandarin complex nominals. *Proc. Interspeech 2025*. DOI: [10.21437/Interspeech.2025-1121](https://doi.org/10.21437/Interspeech.2025-1121)
13. Hsu, Y., & **Xu, A.** (2025). When Focus Overrides Form: Prosodic Rephrasing in Mandarin complex nominals. The 31st Architectures and Mechanisms for Language Processing conference (AMLaP) 2025.
14. Gerazov, B., Krug, P.K., Niekerk, D. R. v., **Xu, A.**, Birkholz, P., Xu, Y. (2024). In Pursuit for the Best Error Metric for Optimisation of Articulatory Vowel Synthesis. 26th International Conference on Speech and Computer (SPECOM-2024), Belgrade, Serbia. DOI: [10.1007/978-3-031-78014-1_17](https://doi.org/10.1007/978-3-031-78014-1_17)
15. Cao, S., Hsu, Y., & **Xu, A.** (2024). Morphosyntax and prosody interaction: A perceptual study of Chinese classifiers. The 12th International Conference of the European Association of Chinese Linguistics (EACL- 12), Roma Tre University.
16. **Xu, A.**, Gerazov, B., van Niekerk D., Krug P., Prom-on S., Birkholz P., & Xu, Y. (2023). Computational models for articulatory learning of English diphthongs: One dynamic target vs. two static targets. International Congress of Phonetic Sciences ICPhS 2023. <https://guarant.cz/icphs2023/453.pdf>
17. Krug, P.K., Birkholz, P., Gerazov, B., van Niekerk, D.R., **Xu, A.**, Xu, Y. (2023). Self-Supervised Solution to the Control Problem of Articulatory Synthesis. *Proc. INTERSPEECH 2023*, 4329-4333, DOI: <http://dx.doi.org/10.21437/Interspeech.2023-2173> [EI Compendex]
18. Xu, Y., **Xu, A.**, van Niekerk., D. R., Gerazov, B., Birkholz, P., Krug, P. K., Prom-on, S., Halliday, L. F. (2022). Evoc-Learn — High quality simulation of early vocal learning. *Proc. Interspeech* 2022, 3665-3666. https://www.isca-speech.org/archive/pdfs/interspeech_2022/xu22j_interspeech.pdf
19. Niekerk, D. R. v., **Xu, A.**, Gerazov, B., Krug, P. K., Birkholz, P. & Xu, Y. (2022). Exploration strategies for articulatory synthesis of complex syllable onsets. *Proc. Interspeech 2022*, 635-639. DOI: [10.21437/Interspeech.2022-10689](https://doi.org/10.21437/Interspeech.2022-10689)
20. Krug, P. K., Birkholz, P., Gerazov, B., van Niekerk, D. R., **Xu, A.**, Xu, Y. (2022). Articulatory synthesis for data augmentation in phoneme recognition. *Proc. Interspeech 2022*, 1228-1232. DOI: [10.21437/Interspeech.2022-10874](https://doi.org/10.21437/Interspeech.2022-10874)
21. Hsu, Y., **Xu, A.**, & Chen, Y. (2022). Perceiving focus: A study on Cantonese and Mandarin speakers' processing Mandarin prosody. 34th North American Conference on Chinese Linguistics (NACCL-34), Bloomington, Indiana.
22. Krug, P. K., Birkholz, P., Gerazov, B., van Niekerk, D. R., **Xu, A.**, Xu, Y. (2022). Efficient exploration of articulatory dimensions. In: Niebuhr O, Lundmark MS, Weston H (eds.) *Studentexte zur Sprachkommunikation: Elektronische Sprachsignalverarbeitung 2022* (TUDPress, Dresden), pp.51-58

23. **Xu, A.**, Niekerk, D.v., Gerazov, B., Krug, P.K., Prom-on, S., Birkholz, P., Xu, Y. (2021). Model-Based Exploration of Linking Between Vowel Articulatory Space and Acoustic Space. *Proc. Interspeech 2021*, 3191-3195. DOI: [10.21437/Interspeech.2021-1422](https://doi.org/10.21437/Interspeech.2021-1422)
24. Niekerk, D. R. v., **Xu, A.**, Gerazov, B., Krug, P. K., Birkholz, P. & Xu, Y. (2020). Finding intelligible consonant-vowel sounds using high-quality articulatory synthesis. *Proc. Interspeech 2020*, 4457-4461. DOI: [10.21437/Interspeech.2020-2545](https://doi.org/10.21437/Interspeech.2020-2545)
25. Hsu, Y., & **Xu, A.** (2020). Wh-indeterminates and Prosody in Hong Kong Cantonese. *Proc. 10th International Conference on Speech Prosody 2020*, 376-380. DOI: [10.21437/SpeechProsody.2020-77](https://doi.org/10.21437/SpeechProsody.2020-77)
26. **Xu, A.**, Birkholz, P. & Xu, Y. (2019). Coarticulation as synchronized dimension-specific sequential target approximation: An articulatory synthesis simulation. *International Congress of Phonetic Sciences ICPHS 2019*. https://www.internationalphoneticassociation.org/icphs-proceedings/ICPhS2019/papers/ICPhS_254.pdf
27. Hsu, Y., & **Xu, A.** (2019). Sentence Prosody and Wh-indeterminates in Taiwan Mandarin. *Proc. Interspeech 2019*, 3950-3954. DOI: [10.21437/Interspeech.2019-2545](https://doi.org/10.21437/Interspeech.2019-2545)
28. Hsu, Y., & **Xu, A.** (2019). Focus Acoustics and Prosodic Organization in Hong Kong Cantonese and Taiwan Mandarin. *International Congress of Phonetic Sciences ICPHS 2019*. https://www.internationalphoneticassociation.org/icphs-proceedings/ICPhS2019/papers/ICPhS_755.pdf
29. Hsu, Y., Chan, K-W., Lo, T-S., Wang, X. & **Xu, A.** (2019). Sentence Final Particles and Wh-indeterminates in Beijing Mandarin. *Hanyang International Symposium on Phonetics and Cognitive Sciences of Language (HISPhonCog 2019)*.
30. **Xu, A.**, & Lee, A. (2018). Perception of vocal attractiveness by Mandarin native listeners. *Proc. 9th International Conference on Speech Prosody 2018*, 344-348. DOI: [10.21437/SpeechProsody.2018-70](https://doi.org/10.21437/SpeechProsody.2018-70)
31. Hsu, Y., **Xu, A.** & Hang, N. (2018). Focus Prosody in Cantonese and Teochew Noun Phrases. *Proc. 9th International Conference on Speech Prosody 2018*, 961-965. DOI: [10.21437/SpeechProsody.2018-194](https://doi.org/10.21437/SpeechProsody.2018-194)
32. Hsu, Y., & **Xu, A.** (2017). Focus Acoustics in Mandarin Nominals. *Proc. Interspeech 2017*, 3231-3235. DOI: [10.21437/Interspeech.2017-1167](https://doi.org/10.21437/Interspeech.2017-1167)
33. **Xu, A.**, Leung, S. & Lee, A. (2016). Universal vs. language-specific aspects in human vocal attractiveness: An investigation towards Japanese native listeners' perceptual pattern. *Proceedings of Meetings on Acoustics*, 29, 060001. DOI: [10.1121/2.0000392](https://doi.org/10.1121/2.0000392)
34. **Xu, A.**, & Leung, S. (2016). Universal vs. language-specific aspects in human vocal attractiveness: An investigation towards Japanese native listeners' perceptual pattern. *Journal of Acoustical Society of America*, 140, 3401. DOI: [10.1121/1.4970911](https://doi.org/10.1121/1.4970911)
35. Leung, S., & **Xu, A.** (2016). Perceived vocal attractiveness by gay listeners in Hong Kong. *Journal of Acoustical Society of America*, 140, 3401. DOI: [10.1121/1.4970916](https://doi.org/10.1121/1.4970916)

Manuscripts in preparation

1. **Xu, A.**, & Hsu, Y. Beyond focus detection: Cantonese learners' perception of focus scope in L2 Mandarin (Under review)
2. Lu, Y., Tang, X., Xiao, Z., **Xu, A.**, Chen, J., Tian, X. Motor compensations, not sensory errors, regulate serial dependence in naturalistic speech production. (Under review)
3. **Xu, A.**, Wu, Y., Chen, H., Li, X., Lu, Y., Han, Z., Liu, Z., Xu, Y., & Tian, X. Phonological units in the networks of speech perception. (Expected in 2026)
4. **Xu, A.**, & Lee, A. Is the perception of an attractive voice universal? Cross-cultural investigation into Japanese and Mandarin females. (Expected in 2026)
5. **Xu, A.**, Gerazov, B., Prom-on, S., Birkholz, P., Xu, Y. Decode the perception-production link:

computational simulations on the relationship between acoustic space and articulatory space (Expected in 2026)

6. Hsu, Y., **Xu, A.** & German, S. Beyond lexical tones: Focus prosody in Mandarin noun phrases. (Expected in 2026)

Research Grants

1. **Research start-up fund for newly recruited high-level, cutting-edge, and urgently needed talent** (Shenzhen Government, RMB¥900,000, **PI**)
 - AI-Based Research on Speech Perception and Production 2025.01-2027.12
2. **Shenzhen Decision-Making Committee Think Tank Alliance Project** (Shenzhen Government, RMB¥100,000, **co-PI**)
 - Research on Artificial Intelligence Supporting Shenzhen's Development as a Design Capital 2024.06-2025.06
3. **Research start-up Fund** (Harbin Institute of Technology, Shenzhen, RMB¥30,000, **PI**)
 - Computational modelling of speech acquisition 2023.03-2025.09
4. **Guangdong Provincial Department of Education Research fund** (Guangdong Provincial Department of Education, RMB¥100,000, **co-PI**)
 - Research on the cultivation of harmonious mentoring relationship between science and engineering from the perspective of positive psychology 2022.09-2024.11
5. **SLMS Graduate Student Fund** (University College London. GBP£1,000, **PI**)
 - Inside the blackbox of human vocal learning 2019.07-2020.07

Teaching Experience

- Harbin Institute of Technology, Shenzhen
CHIN4005 Elementary Mandarin (Postgraduate)
LANG1007 College English B: Academic Writing in English (Undergraduate)
 - **Teaching Achievement Award**LANG1006 College English A: Listening and Speaking (Undergraduate)
LANG1008 College English C: Advanced Level (Undergraduate)
- University College London (Teaching assistant)
PLIN0074 Introduction to Phonetics and Phonology (undergraduate and postgraduate)
PLIN0065 Intermediate Phonetics and Phonology (undergraduate and postgraduate)
PALS0002 Research Methods (postgraduate)
 - Linear models, data visualization, and experimental design for psychology and linguisticsPALS0046 Introduction to Statistical Methods (undergraduate)
 - **UCL Education Award**
 - Statistical reasoning and hypothesis testing using R

Invited Talks & Workshops

- The Education University of Hong Kong, Hong Kong, 2025
 - Articulatory learnability of English diphthongs
- iFlytek, Shanghai, 2024
 - Statistical methods in speech science
- The Education University of Hong Kong, Hong Kong, 2024
 - Introduction to articulatory synthesis using VocalTractLab (Workshop)
- Beijing Institute of Technology, Beijing, 2023
 - Computational models of English diphthongs: One dynamic target vs. two static targets.
- The Education University of Hong Kong, Hong Kong, 2023
 - Artificial vocal learning guided by speech perception: How children may learn to speak

- Beijing Institute of Technology, Beijing, 2023
 - Artificial vocal learning guided by auditory experience: How children may learn to speak.
- Ss. Cyril and Methodius University, Macedonia, 2022
 - A computational simulation of human vocal learning (online workshop)
- Nankai University, Tianjin, 2019
 - Inside the blackbox of human vocal learning
- University College London, 2019
 - Can infants learn to speak by acoustic imitation?

Supervision

- Harbin Institute of Technology, Shenzhen
 - Zifang Lan (MA): co-supervision with Dr. Xi Cun
 - Ruishao Zhang (MA): co-supervision with Dr. Yi Jing
- The Hong Kong Polytechnic University
 - Yutong Chen (MA): co-supervision with Dr. Yu-yin Hsu

Academic Services

- Reviewer: Journal of Phonetics, Journal of Further and Higher Education, Speech and Language, Lingua; Interspeech 2023-Present
- Course coordinate: College English C 2023.02-Present
- UCL Speech Science Forum Organizer 2019.11-2021.06

Scholarships & Awards

- Teaching Achievement Award in Higher Education 2024.12
- UCL Faculty Education Award 2021.04
- UCL Provost Education Award Nomination: Educational Success for all 2021.04
- Chinese Government Scholarship, China Scholarship Council 2018.06
- Overseas Research Scholarship, University College London 2018.03
- First Class Scholarship, Ocean University of China 2012.12&2011.12
- Excellent Student Award, Ocean University of China 2012.12
- National Scholarship of China (0.2%), Ministry of Education of China 2012.11
- Third Prize, Wenzao Japanese Debate Competition, Wenzao Ursuline University of Languages 2011.12

Skills

- Experiment tools: Stereoelectroencephalography (SEEG), Event-related potentials (ERPs), fMRI, Ultrasound, Eye tracking
- Programming: Python, R, Bash, C++, MATLAB, JavaScript, CSS, HTML, Perl
- Languages: Mandarin, Wu, Min (native); English, Japanese, Cantonese, Spanish (L2)