

Kwang S. Kim, Ph.D.

Curriculum Vitae

updated September 2024

Contact Information

Department of Speech, Language, and Hearing Sciences
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Academic Appointments

Assistant Professor	Department of Speech, Language, and Hearing Sciences, Purdue University	2023-present
Research Associate	Department of Otolaryngology-Head and Neck Surgery University of California, San Francisco	2023-present
Postdoctoral Scholar	Department of Otolaryngology-Head and Neck Surgery, University of California, San Francisco Advisors: John F. Houde, Srikantan S. Nagarajan	2020-2022

Education

Ph.D. Speech & Hearing Sciences. University of Washington	2020
Advisor: Ludo Max	
B.S. Bioengineering. University of Washington	2012

Publications

Subrahmanya, A., Ranasinghe, K. G., Kothare, H., Raharjo, I., Kim, K. S., Houde, J. F., & Nagarajan, S. S. (2024). Pitch corrections occur in natural speech and are abnormal in patients with Alzheimer's disease. *Frontiers in human neuroscience*, 18, 1424920. <https://doi.org/10.3389/fnhum.2024.1424920>

Kim, K. S., Hinkley, L. B., Dale, C. L., Nagarajan, S. S., & Houde, J. F. (2023). Neurophysiological evidence of sensory prediction errors driving speech sensorimotor adaptation. *bioRxiv*.

Kim, K. S., Gaines, J. L., Parrell, B., Ramanarayanan, V., Nagarajan, S. S., & Houde, J. F. (2023). Mechanisms of sensorimotor adaptation in a hierarchical state feedback control model of speech. *PLOS Computational Biology*, 19(7), e1011244.

Kitchen, N. M., Kim, K. S., Wang, P. Z., Hermsillo, R. J., & Max, L. (2022). Individual sensorimotor adaptation characteristics are independent across orofacial speech movements and limb reaching movements. *Journal of Neurophysiology*, 128(3), 696-710.

Gaines, J. L., Kim, K. S., Parrell, B., Ramanarayanan, V., Nagarajan, S. S., & Houde, J. F. (2021). Discrete constriction locations describe a comprehensive range of vocal tract shapes in the Maeda model. *JASA express letters*, 1(12), 124402. <https://doi.org/10.1121/10.0009058>

Kim, K. S., & Max, L. (2021). Speech auditory-motor adaptation to formant-shifted feedback lacks an explicit component: reduced adaptation in adults who stutter reflects limitations in implicit sensorimotor learning. *The European journal of neuroscience*, 53(9), 3093-3108. <https://doi.org/10.1111/ejn.15175>

Kim, K. S., Daliri, A., Flanagan, J. R., & Max, L. (2020). Dissociated development of speech and limb sensorimotor learning in stuttering: speech auditory-motor learning is impaired in both children and adults who stutter. *Neuroscience*, 451, 1-21. <https://doi.org/10.1016/j.neuroscience.2020.10.014>

Kim, K. S., Wang, H., & Max, L. (2020). It's About Time: Minimizing Hardware and Software Latencies in Speech Research With Real-Time Auditory Feedback. *Journal of Speech, Language, and Hearing Research: JSLHR*, 63(8), 2522-2534. https://doi.org/10.1044/2020_JSLHR-19-00419

Kim, K. S., & Max, L. (2014). Estimating feedforward vs. feedback control of speech production through kinematic analyses of unperturbed articulatory movements. *Frontiers in human neuroscience*, 8, 911-911.

Presentations & Published Abstracts

Li, J. J., Daliri, A., Kim, K. S., & Max, L. (2024, February). Does pre-speech auditory modulation reflect processes involved in feedforward movement planning? Poster presentation at 2024 Motor Speech Conference. San Diego, CA.

Gaines, J., Kim, K. S., Pongos, A., Parrell, B., Ramanarayanan, V., Nagarajan, S., & Houde J. F. (2024, February). Bayesian inference of state feedback control parameters reveals control differences in fo perturbation responses in cerebellar ataxia. Oral presentation at 2024 Motor Speech Conference. San Diego, CA.

Kim, K. S., Gaines, J., Parrell, B., Ramanarayanan, V., Nagarajan, S., & Houde, J. F. (2024, February). Sensorimotor adaptation in a hierarchical state feedback control model of speech. Poster presented at 2024 Motor Speech Conference. San Diego, CA.

Kim, K. S., Nagarajan, S., & Houde, J. F. (2023, November). Neurophysiological evidence of prediction errors driving sensorimotor adaptation. PSTR217.07. 2023. Neuroscience Meeting Planner. Washington, DC: Society for Neuroscience, 2023. Online.

Kim, K. S., Nagarajan, S., & Houde, J. F. (2022, December). Speaking-Induced Suppression during auditory-motor adaptation. Poster presented at the 19th Annual UCSF Radiology Imaging Research Symposium.

Kim, K. S., Nagarajan, S., & Houde, J. F. (2022, August). The effects of error-clamping auditory feedback. Poster presented at the 8th International Conference on Speech Motor Control.

Gaines, J., Kim, K. S., Parrell, B., Ramanarayanan, V., Nagarajan, S., & Houde, J. F. (2022, August). Bayesian Inference of State Feedback Control Model Parameters for Pitch Perturbation Responses. Poster presented at the 8th International Conference on Speech Motor Control.

Kim, K. S., Gaines, J., Parrell, B., Ramanarayanan, V., Nagarajan, S., & Houde, J. F. (2022, August). Prediction errors drive auditory-motor adaptation in a hierarchical FACTS model. Poster presented at the 8th International Conference on Speech Motor Control.

Gaines, J., Kim, K. S., Parrell, B., Ramanarayanan, V., Nagarajan, S., & Houde, J. F. (2020, December). Discrete constriction locations describe a comprehensive range of vocal tract shapes in the Maeda model. Poster presented at the 12th International Seminar on Speech Production.

Max, L. & Kim, K. S. (2019, December). Self-monitoring of speech production in individuals who stutter. *The Journal of the Acoustical Society of America* 146, 2791-2791.

Kim, K. S., & Max, L. (2019, November). Speech auditory-motor adaptation is driven by implicit learning. Program No. 758.10. 2019 Neuroscience Meeting Planner. Chicago, IL: Society for Neuroscience, 2019. Online.

Kim, K. S., & Max, L. (2018, November). Sensorimotor learning in children and adults who stutter. Program No. 588.18. 2018 Neuroscience Meeting Planner. San Diego, CA: Society for Neuroscience, 2018. Online.

Kim, K. S., & Max, L. (2018, November). Speech & Nonspeech Sensorimotor Learning in Stuttering: An Integrated View of Developmental & Adult Data. Presented at the annual convention of the American Speech-Language-Hearing Association, Boston, MA.

Kim, K. S., & Max, L. (2018, May). Integrating data from speech and limb sensorimotor learning tasks in children and adults who stutter. Presented at the annual meeting of the Society for the Neural Control of Movement, Santa Fe, New Mexico.

Kim, K. S., Mitsuya, T., Wang, P. Z., & Max, L. (2017, November). Speech auditory-motor learning: are adaptation and de-adaptation similarly affected by practice schedule? Program No. 408.09. 2017 Neuroscience Meeting Planner. Washington, DC: Society for Neuroscience, 2017. Online.

Mitsuya, T., Kim, K. S., Wang, P. Z., & Max (2017, November). Is the number of practice trials or exposure duration most critical for speech auditory-motor learning? Presented at the annual convention of the American Speech-Language-Hearing Association, Los Angeles, CA.

Kim, K. S., Mitsuya, T., Wang, P. Z., & Max, L. (2017, July). Effects of exposure time versus practice rate on speech auditory-motor adaptation and de-adaptation. Stem-, Spraak- en Taalpathologie, 22, S54. Presented at the 7th International Conference on Speech Motor Control, Groningen, the Netherlands.

Kim, K. S., Hermosillo, R. J., Wang, P. Z., Ostry, D. J., & Max, L. (2016, November). Sensorimotor adaptation in unrelated effector systems: common or distinct learning mechanisms? Presented at the annual convention of the American Speech-Language-Hearing Association, Philadelphia, PA.

Hermosillo, R. J., Kim, K. S., Wang, P. Z., Ostry, D. J., & Max, L. (2016, April). Sensorimotor adaptation in unrelated effector systems: common or distinct learning mechanisms? Presented at the annual meeting of the Society for the Neural Control of Movement, Montego Bay, Jamaica.

Kim, K. S., Hermosillo, R. J., Anderson, A. K, Wang, P. Z., Ostry, D.J., & Max, L. (2016, March). Do distinct sensorimotor learning mechanisms underlie auditory-motor speech adaptation and visuo-motor reach adaptation? Presented at the Conference on Motor Speech, Newport Beach, CA.

Kim, K. S., & Max, L. (2011, November). Relationship among kinematic landmarks in the speech movements of stuttering and nonstuttering adults. Program No. 809.10. 2011 Neuroscience Meeting Planner. Washington, DC: Society for Neuroscience, 2011. Online.

Kim, K. S., & Max, L. (2011, June) Quantifying feedforward versus feedback control through kinematic analyses of unperturbed speech movements. Poster presented at the 9th International Seminar on Speech Production, Montreal, Canada.

Kim, K. S., & Max, L. (2011, June). Quantifying feedforward versus feedback control through kinematic analyses of unperturbed speech movements. Stem-, Spraak- en Taalpathologie, 17, S65. Poster presented at the 6th International Conference on Speech Motor Control, Groningen, The Netherlands.

Maruthy, S., Kim, K. S., Baldwin, C. J., Feng, Y., & Max, L. (2010, November). Experimental variables affecting speech sensorimotor adaptation to formant-shifted auditory feedback. Program No. 593.10. 2010 Neuroscience Meeting Planner. San Diego, CA: Society for Neuroscience, 2010. Online.

Kim, K. S., Huang, R. & Max, L. (2010, November). Kinematic analyses of feedforward versus feedback control in speech production. Presented at the annual meeting of the American Speech-Language-Hearing Association, Philadelphia, PA.

Funding

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| 2023-2024 | Tackling Acquisition of Language in Kids (TALK) initiative supplement to “Lexico-semantic abilities in early language growth and delay”
National Institute on Deafness and other Communication Disorders
R01DC018593-03S1 (PI: Borovsky, Role: Co-I) |
| 2021-2022 | “Neural basis of auditory-motor adaptation”
National Institute on Deafness and other Communication Disorders
F32DC019538 (PI: Kim, Sponsors: Houde & Nagarajan) |
| 2016 | New Century Scholars Doctoral Scholarship
American Speech-Language-Hearing Foundation |

Honors and Awards

2024	American Speech-Language-Hearing Foundation's Research Conference Travel Grants
2022	Best Poster Presentation at the 19 th Annual Radiology Imaging Research Symposium, UCSF
2020	Postdoc Work-at-Home award, UCSF
2016	Graduate School Fund for Excellence and Innovation, UW (2016 Motor Speech Conference)
2016	Lesley B. & Steven G. Olswang Travel Fund, UW (2016 Motor Speech Conference)
2011-2012	Washington Research Foundation Fellowship, Washington Research Foundation
2011	Undergraduate Research Conference Travel Award, UW (2011 International Seminar on Speech Production)
2011	Rex. J. and Ruth C. Robinson Scholarship Fund in Chemistry, UW
2010-2011	Undergraduate Research Conference Travel Award, UW (2010, 2011 Society for Neuroscience)
2010-2011	Annual Dean's List High Scholarship, UW
2010-2011	Mary Gates Endowment Research Scholarship, UW

Teaching

2023	Instructor, Stuttering: Nature, Diagnosis, and Treatment (SLHS 52900), Department of Speech, Language, and Hearing Sciences, Purdue University
2023	Instructor, Intro to Neural Bases of Speech and Hearing (SLHS 41900), Department of Speech, Language, and Hearing Sciences, Purdue University
2016	Instructor, Speech Signal Processing (SPHSC 525), Department of Speech & Hearing Sciences, University of Washington
2015-2018	Teaching assistant, Fluency disorders (SPHSC 537), Department of Speech & Hearing Sciences, University of Washington

Mentoring

2024-present	James Liu, Purdue University Interdisciplinary Life Science (PULSe)
2023-present	Alvincé Pongos, UCSF/Berkeley Graduate Program in Bioengineering
2022-2022	Nicole Roberts, Research Initiative to Promote Diversity in Radiology (UCSF)
2021-2022	Kurtis Brent, UCSF/Berkeley Graduate Program in Bioengineering
2021-2021	Serena Tang, UCSF/Berkeley Graduate Program in Bioengineering
2020-present	Jessica Gaines, UCSF/Berkeley Graduate Program in Bioengineering

Community Service & Outreach

2024	Step in2 STEM, Purdue University, West Lafayette, Indiana
2022	Mentor, Research Initiative to promote Diversity in Radiology, University of California, San Francisco (UCSF), San Francisco, CA
2020	Participant, University of Washington Women's Center Making Connections (MC) Program, Seattle WA
2019	Participant, Olympic Hill Elementary School Science Fair, Seattle WA
2018	Participant, Olympic Hill Elementary School's speech lab visit, Seattle WA
2017-2018	Volunteer, ROOTS Young Adult Shelter
2014-2019	Participant, Paws on Science, Pacific Science Center, Seattle WA
2013	Volunteer, Wallingford Boys & Girls Club, Seattle WA
2012-2013	Volunteer, Tutor/teacher's assistant for Physics, Garfield High School, Seattle WA

Invited Talks and Colloquia

2023	Health and Kinesiology Weekly Seminar, Purdue
2023	Speech, Language, and Hearing Sciences Weekly Seminar, Purdue
2021	Brain Development Imaging (Research Interests Group), UCSF Radiology
2019	Haskins Laboratories, New Haven, CT

Journal Reviews

2024	Journal of Speech, Language, and Hearing Research
2022	Journal of Fluency Disorder
2021	Neurobiology of Language
2020	Journal of Fluency Disorder

Software Development

Feedback-Aware Control of Tasks in Speech (FACTS, <https://github.com/kwangsk/FACTS>).

An updated version of the FACTS model of speech motor control, originally developed by Dr. Benjamin Parrell and colleagues. The code is currently being implemented and tested in Python.

Role: Co-developer

SPEA-K (<https://github.com/MaxLabSoftware/SPEA-K>).

MATLAB program that allows users with or without programming experience to test children in speech experiments with auditory feedback perturbations.

Role: Co-developer

Vocal Tract Models (<https://github.com/satra/VocalTractModels>).

A MATLAB-based software for a vocal tract model simulator and area function synthesizer based on the Maeda model, developed by Dr. Shinji Maeda. The software was developed and refined by Dr. Satrajit Ghosh.

Role: Contributor

Feedback Utility for Speech Production (FUSP).

A digital signal processing software library for auditory feedback perturbation, developed by Dr. John Houde and colleagues.

Role: Contributor

Societies

Society for Neuroscience

Society for the Neural Control of Movement

National Stuttering Association