Wu-Jung Lee

Curriculum Vitae

March 2025

Acoustics Department
Applied Physics Laboratory, University of Washington
1013 40th St, Seattle, WA 98105
Echospace: uw-echospace.github.io
+1 206 685 3904
leewj@uw.edu
leewujung

Education and qualifications

2013 **Ph.D., Oceanographic Engineering**
MIT-WHOI Joint Program in Oceanography/Applied Ocean Science
Massachusetts Institute of Technology (MIT), Cambridge, MA, USA
Woods Hole Oceanographic Institution (WHOI), Woods Hole, MA, USA
Advisors: Dr. Timothy K. Stanton and Dr. Andone C. Lavery (scattering physics)
Dr. Peter L. Tyack (bioacoustics)
Thesis: Broadband and statistical characterization of echoes from random scatterers: Application to acoustic scattering by marine organisms

2005 **B.Sc. in Eng., Electrical Engineering**
National Taiwan University, Taipei, Taiwan

2005 **B.Sc., Life Science (Zoology focus)**
National Taiwan University, Taipei, Taiwan

Current positions

2023-present Principal Oceanographer, Acoustics Department, Applied Physics Laboratory, University of Washington

2021-present Affiliate Faculty, Department of Electrical and Computer Engineering, University of Washington

2019-present Affiliate Faculty, eScience Institute, University of Washington

Past positions

2019-2023 Senior Oceanographer, Acoustics Department, Applied Physics Laboratory, University of Washington

2016-2018 SEED Postdoctoral Fellow (with Principal Investigator status), Applied Physics Laboratory, University of Washington
Mentors: Dr. Dajun Tang and Dr. Eric I. Thorsos
Research focus: plant regulatory genomics, epigenome variation, transcriptional regulatory networks in plant hormone responses

2013-2015 F. V. Hunt Postdoctoral Research Fellowship, Acoustical Society of America
Research Associate, Department of Psychological and Brain Sciences, Johns Hopkins University
Mentor: Dr. Cynthia F. Moss
Research focus: computational methods for discovery of signaling and transcriptional regulatory networks in glioblastoma

2007-2013 Graduate student, WHOI-MIT Joint Program in Oceanography/Applied Ocean Science
Mentors: Dr. Timothy K. Stanton, Andone C. Lavery, Peter L. Tyack
Research focus: computational methods for integrative analysis of phosphoproteome and transcriptome data

2007 Research assistant, Marine Mammal Research Project, Hawai'i Institute of Marine Biology
Mentor: Dr. Whitlow W. L. Au
Research focus: identification of conserved regulatory modules in mammalian genomes

2006 Research Assistant, Electrophysiology Laboratory, Marine Research Station, Institute of Cellular and Organismic Biology, Academia Sinica, Taiwan

2005	Intern, BioSonar Project, Acoustic Research Laboratory, Tropical Marine Science Institute, National University of Singapore
2004-2005	Undergraduate research assistant, Cetacean Laboratory, Institute of Ecology and Evolutionary Biology, National Taiwan University
2003-2005	Undergraduate research assistant, Spatial Ecology Laboratory, Institute of Ecology and Evolutionary Biology, National Taiwan University

Scientific leadership and services

2025-present	Associate Editor, Journal of the Acoustical Society of America (JASA).
2018-present	Subject Matter Expert for the NSF Ocean Observatories Initiative (OOI) Bio-acoustic sonar.
2014-present	Technical Committees in Acoustical Oceanography (since 2014), Animal Bioacoustics (since 2015), and Computation Acoustics (since 2022) of the Acoustical Society of America.
2023-2024	Committee member, Ocean Acoustics Education and Expertise, National Academies of Sciences, Engineering, and Medicine. https://www.nationalacademies.org/our-work/ocean-acoustics-education-and-expertise
2016-2023	Associate Editor, Journal of the Acoustical Society of America Express Letters (JASA-EL).

Funding

Ongoing grant support

NOAA - NA24NMFX405C0016 Lee (PI) 2024/07/01 – 2027/06/30

NOAA Fisheries
Title: Synoptic echo classification: integrating machine learning and physics-based approaches to streamline West Coast Pelagic Acoustic-Trawl Surveys
Co-Investigator: Valentina Staneva (University of Washington)
Total aware to UW: $1,594,525

ONR - N00014-23-1-2065 Lee (Co-PI) 2022/12/01 - 2026/11/30

Office of Naval Research, Multidisciplinary University Research Initiative (MURI)
Title: Neurobehavioral, physiological, and computational processes of auditory object learning in mammals
Investigators: Barbara Shinn-Cunningham (Carnegie Mellon University; PI), Peter Tyack (Woods Hole Oceanographic Institution; Co-PI), John Buck (University of Massachusetts Dartmouth); Heidi Harley (New College of Florida), Jana Kainerstorfer (Carnegie Mellon University; Co-PI), Bogdan Popa (University of Michigan; Co-PI)
Total award to UW: $624,564

ONR - N00014-23-1-2878 Lee (PI) 2023/11/01 - 2025/10/31

Office of Naval Research, Code 32
Title: BOAT: Bridge to Ocean Acoustics and Technology
Co-Investigators: B. Todd Hefner, Valentina Staneva (University of Washington)
Total aware to UW: $293,015

NOAA - NA22OAR0110484 Lee (PI) 2022/09/01 - 2025/08/31

NOAA Ocean Exploration
Title: Reducing uncertainty in acoustic biomass estimation through multi-angle ADCP data
Total aware to UW: $82,185

Completed grants: Ocean Acoustics

NOAA - NA20OAR0110429 Lee (PI) 2020/07/01 - 2024/08/31

NOAA Ocean Exploration
Title: Coordinated simultaneous physical-biological sampling by ADCP-equipped ocean gliders
Co-Investigators: Sarah Webster, Aleksandr Aravkin (University of Washington), Dezhang Chu (NOAA Northwest Fisheries Science Center)
Total aware to UW: $412,200

NOAA - NA21OAR0110201 Lee (PI) 2021/07/01 - 2024/06/30

NOAA Fisheries
Title: Accelerating ocean exploration through cloud-native processing of active ocean sonar data
Co-Investigators: Valentina Staneva, Emilio Mayorga (University of Washington)
Total aware to UW: $340,227

NOAA - NA20OAR4320271 Lee (PI) 2021/04/01 - 2024/03/31

NOAA Fisheries
Title: Accelerating information extraction from fisheries acoustic data through a cloud-based machine learning workflow
Co-Investigators: Valentina Staneva, Emilio Mayorga (University of Washington)
Total aware to UW: $700,000

NOAA - NA20OAR4320271AM148 Lee (Co-PI) 2022/09/01 - 2023/08/31

NOAA Fisheries
Title: Transitioning an inversion model that integrates acoustic data for euphausiid biomass estimation to open-source software
Investigator: Emilio Mayorga (University of Washington; PI)
Total aware to UW: $46,556

NOAA - NA20OAR4320271 Lee (PI) 2021/07/01 - 2023/06/30

NOAA Fisheries
Title: Modernizing the EchoPro workflow for integrating acoustic and biological survey samples for biomass estimation
Co-Investigator: Emilio Mayorga (University of Washington)
Total aware to UW: $70,000

NOAA - NA20OAR4320271 Lee (PI) 2021/07/01 - 2023/06/30

NOAA Fisheries
Title: Systematic integration of biological data for Pacific hake from scientific surveys and commercial fisheries
Co-Investigators: Emilio Mayorga (University of Washington)
Total aware to UW: $48,200

NSF - OCE-1849930 Lee (PI) 2019/01/01 - 2021/12/31

National Science Foundation, Division of Ocean Sciences (OCE)
Title: EAGER: Developing a temporally adaptive decomposition framework for analyzing long-tern echosounder time series

Investigators: Valentina Staneva (University of Washington)
Total aware to UW: $281,608

NOAA - NA15OAR4320063 AM160 Lee (PI) 2018/07/01 - 2021/03/31

NOAA Fisheries
Title: Broadband acoustic species identification and enumeration using trans-dimensional Bayesian inversion
Co-Investigators: Dezhang Chu (NOAA Fisheries Northwest Fisheries Science Center), Stan Dosso (University of Victoria
Total award to UW: $84,193

Completed grants: Animal Echolocation

ONA - N00014-20-1-2709 Lee (Co-PI) 2020/07/01 - 2024/11/30

Office of Naval Research, Multidisciplinary University Research Initiative (MURI)
Title: Specialization of neural processing during active acoustic sensing in marine mammals and humans
Investigators: Barbara Shinn-Cunningham (Carnegie Mellon University; PI); Peter Tyack (Woods Hole Oceanographic Institution; Co-PI); John Buck (University of Massachusetts Dartmouth)
Total award to UW: $453,784

ONR - N00014-18-1-2069 Lee (Co-PI) 2018/07/01 - 2020/11/30

Office of Naval Research
Title: Active sensing in echolocating humans and marine mammals
Investigators: Barbara Shinn-Cunningham (Carnegie Mellon University; PI), Peter Tyack (Woods Hole Oceanographic Institution; Co-PI), John Buck (University of Massachusetts Dartmouth; Co-PI), Kenneth Shorter (University of Michigan; Co-PI)
Total award to UW: $436,804

Completed grants: Education

NSF - OCE-2038697 Lee (Co-PI) 2020/08/01 - 2022/08/31

National Science Foundation, Division of Ocean Sciences (OCE)
Title: Collaborative Conference: OceanHackWeek: A Workshop to Explore Data Science in Oceanography
Investigators: Nick Records (Bigelow Laboratory for Ocean Sciences; PI), Catherine Mitchell (Bigelow Laboratory for Ocean Sciences; Co-PI), Emilio Mayorga (University of Washington; Co-PI)
Total award to UW: $42,487

NSF - OCE-2038697 Lee (PI) 2019/08/01 - 2021/08/31

National Science Foundation, Division of Ocean Sciences (OCE)
Title: Oceanhackweek: A Workshop to Explore Data Science in Oceanography
Investigators: Valentina Staneva (University of Washington; Co-PI), Amanda Tan (University of Washington; Co-PI)
Total aware to UW: $49,967

Publications

Notation: *corresponding author, #Echospace group trainee.

Peer-reviewed publications

1. **Lee**, **W.-J.**, L. Setiawan, **C. Tuguinay**[#], E. Mayorga, and V. Staneva. Interoperable and scalable echosounder data processing with Echopype. *ICES Journal of Marine Science* 81, no. 10 (2024): 1941–1951. https://doi.org/10.1093/icesjms/fsae133.
2. **Lee**, **W.-J.**, V. Staneva, L. Setiawan, E. Mayorga, **C. Tuguinay**[#], **S. Butala**[#], **B. Lucca**[#], and **D. Lei**[#]. Echostack: A flexible and scalable open-source software suite for echosounder data processing. Video: https://youtu.be/YRFxMGisGww, *Proceedings of the 23rd Python in Science Conference (SciPy 2023)*, *Tacoma*, *WA*, 2024, 386–397. https://doi.org/10.25080/WXRH8633.
3. Castellote, M., A. Mooney, R. Andrews, S. Deruiter, **W.-J. Lee**, M. Ferguson, and P. Wade. Beluga whale (*Delphinapterus leucas*) acoustic foraging behavior and applications for long term monitoring. *PLOS ONE* 16, no. 11 (2021): e0260485. https://doi.org/10.1371/journal.pone.0260485.
4. **Lee**, **W.-J.**, and V. Staneva. Compact representation of temporal processes in echosounder time series via matrix decomposition. **Special issue on Machine Learning in Acoustics**, *The Journal of the Acoustical Society of America* 148, no. 6 (2020): 3429–3442. https://doi.org/10.1121/10.0002670.
5. **Lee**, **W.-J.**, and V. Staneva. Tensor decomposition of multi-frequency echosounder time series. *Proceedings of OCEANS 2019 MTS/IEEE Seattle*, *WA*, 2019. https://doi.org/10.23919/OCEANS40490.2019.8962566.
6. **Lee**, **W.-J.**, D. Tang, T. K. Stanton, and E. I. Thorsos. Macroscopic observations of diel fish movements around a shallow water artificial reef using a mid-frequency horizontal-looking sonar. **Technical Area Pick of 2018**, *The Journal of the Acoustical Society of America* 144, no. 3 (2018): 1424–1434. https://doi.org/10.1121/1.5054013.
7. Stanton, T. K., **W.-J. Lee**, and K. Baik. Echo statistics associated with discrete scatterers: A tutorial on physics-based methods. *The Journal of the Acoustical Society of America* 144, no. 6 (2018): 3124–3171. https://doi.org/10.1121/1.5052255.
8. **Lee**, **W.-J.**, B. Falk, C. Chiu, A. Krishnan, J. H. Arbour, and C. F. Moss. Tongue-driven sonar beam steering by a lingual-echolocating fruit bat. *PLOS Biology* 15, no. 12 (2017): e2003148. https://doi.org/10.1371/journal.pbio.2003148.
9. **Lee**, **W.-J.**, and C. F. Moss. Can the elongated hindwing tails of fluttering moths serve as false sonar targets to divert bat attacks? *The Journal of the Acoustical Society of America* 139, no. 5 (2016): 2579–2588. https://doi.org/10.1121/1.4947423.
10. **Lee**, **W.-J.**, and T. K. Stanton. Statistics of broadband echoes: Application to acoustic estimates of numerical density of fish. *IEEE Journal of Oceanic Engineering* 41, no. 3 (2016): 709–723. https://doi.org/10.1109/JOE.2015.2476619.
11. Warnecke, M., **W.-J. Lee**, A. Krishnan, and C. F. Moss. Dynamic echo information guides flight in the big brown bat. *Frontiers in Behavioral Neuroscience* 10 (2016). https://doi.org/10.3389/fnbeh.2016.00081.
12. Danilovich, S., A. Krishnan, **W.-J. Lee**, I. Borrisov, O. Eitan, G. Kosa, C. F. Moss, and Y. Yovel. Bats regulate biosonar based on the availability of visual information. *Current Biology* 25, no. 23 (2015): R1124–R1125. https://doi.org/10.1016/j.cub.2015.11.003.
13. **Lee**, **W.-J.**, and T. K. Stanton. Statistics of echoes from mixed assemblages of scatterers with different scattering amplitudes and numerical densities. *IEEE Journal of Oceanic Engineering* 39, no. 4 (2014): 740–754. https://doi.org/10.1109/JOE.2013.2285657.
14. **Lee**, **W.-J.**, A. C. Lavery, and T. K. Stanton. Orientation dependence of broadband acoustic backscattering from live squid. *Journal of the Acoustical Society of America* 131, no. 6 (2012): 4461–4475. https://doi.org/10.1121/1.3701876.
15. Au, W. W. L., D. S. Houser, J. J. Finneran, **W.-J. Lee**, L. A. Talmadge, and P. W. Moore. The acoustic field on the forehead of echolocating Atlantic bottlenose dolphins (*Tursiops truncatus*). *The Journal of the Acoustical Society of America* 128, no. 3 (2010): 1426–1434. https://doi.org/10.1121/1.3372643.
16. Mooney, T. A., **W.-J. Lee**, and R. T. Hanlon. Long-duration anesthetization of squid (*Doryteuthis pealeii*). *Marine and Freshwater Behaviour and Physiology* 43, no. 4 (2010): 297–303. https://doi.org/10.1080/10236244.2010.504334.

Manuscripts under review and in preparation

17. **Lee**, **W.-J.**, M. Ladegaard, M. D. Schalles, J. R. Buck, K. Beedholm, P. T. Madsen, and P. L. Tyack. "Movement trajectories reflect active information acquisition by an echolocating porpoise in a target discrimination task." Under review; manuscript available upon request.
18. **Cheong**, **Y.** [#], R. Alexander, M. D. Schalles, J. M. Kainerstorfer, B. Shinn-Cunningham, and **W.-J. Lee**[*]. "Head-related transfer function predictions reveal dominant sound transduction mechanisms in a dolphin head." Under review; manuscript available upon request.
19. **Krishna**, **A.** [#], and **W.-J. Lee**[*]. "Influence of duty-cycle recording on measuring bat activity in passive acoustic monitoring." In preparation; expected to be posted on bioRxiv in spring 2025.
20. **Lee**, **W.-J.**, **C. Tuguinay**[#], V. Staneva, E. M. Phillips, J. Clemons, and D. Chu. "Semantic segmentation of multi-frequency echogram for polymorphic Pacific hake aggregations with diffused boundaries." In preparation; expected to be posted on arXiv in spring 2025.
21. **Tuguinay**, **C.** [#], **W.-J. Lee**[*], V. Staneva, E. M. Phillips, J. Clemons, and A. Billings. "An open-source workflow for organizing fisheries acoustics survey data for machine learning applications." In preparation; expected to be posted on arXiv in spring 2025.
22. **Lee**, **W.-J.**, **S. Butala**[#], **B. Lucca**[#], **C. Tuguinay**[#], V. Staneva, A. Billings, and J. Clemons. "A ship-to-cloud machine learning pipeline for trawl-informed echosounder survey." In preparation; expected to be posted on arXiv in summer 2025.
23. **Lee**, **W.-J.**, J. R. Buck, and P. L. Tyack. "Modeling echolocation as an information-guided active sensing behavior." In preparation.

Conference and Seminar Talks

Invited seminars and keynote lecture

1. ASA School 2024: Living in the Acoustic Environment. Ottawa, ON, Canada. Website: https://acousticalsociety.org/asa-school-2024/, May 2024.
2. Department of Marine and Coastal Sciences, Rutgers University, April 2024.
3. *Understanding echoes*. Keynote lecture at the 182th Meeting of the Acoustical Society of America. Denver, CO, USA. Video: https://acousticalsociety.org/keynote-lectures-collection/, May 2022.
4. Marine Biology Seminar Series, University of Washington, April 2021.
5. University of Washington Data Science Seminar, University of Washington, October 2021.
6. Mathematics Colloquium, Calvin University, October 2020.
7. Department of Electrical and Computer Engineering, University of Massachusetts Dartmouth, September 2019.
8. School of Aquatic and Fishery Sciences Quantitative Seminar, University of Washington, November 2019.
9. Wildlife Sciences Seminar, University of Washington, May 2018.
10. Department of Electrical and Computer Engineering, Dalhousie University, April 2017.
11. Institute of Cellular and Organismic Biology, Academia Sinica, Taiwan, December 2016.
12. School of Earth and Ocean Sciences, University of Victoria, September 2016.
13. Applied Physics Laboratory, University of Washington, September 2015.
14. Department of Mechanical Engineering, University of New Hampshire, June 2015.
15. Endemic Species Research Institute, Council of Agriculture, Taiwan, April 2015.
16. Hatfield Marine Station, Oregon State University, July 2015.
17. Department of Engineering Science and Ocean Engineering, National Taiwan University, May 2013.
18. Institute of Oceanography, National Taiwan University, January 2012.

Select conference presentations

19. **Lee**, **W.-J.**, V. Staneva, **C. Tuguinay**[#], **S. Butala**[#], and **B. Lucca**[#]. *High-throughput information processing in fisheries and plankton acoustics*. The 188th Meeting of the Acoustical Society of America. New Orleans, LA, USA. **Invited talk**, May 2025.

20. **Lee**, **W.-J.**, and **Y. Cheong**[#]. *Exploring dolphin spatial hearing in ocean ambient soundscape via model head-related transfer functions*. The 188th Meeting of the Acoustical Society of America. New Orleans, LA, USA. **Invited talk**, May 2025.
21. **Tuguinay**, **C.** [#], **W.-J. Lee**, and V. Staneva. *An open-source workflow for organizing fisheries acoustics data from transect surveys for machine learning applications*. The 188th Meeting of the Acoustical Society of America. New Orleans, LA, USA., May 2025.
22. **Krishna**, **A.** [#], and **W.-J. Lee**. *Investigation of duty cycles for measuring activity in passive acoustic bat monitoring*. The 186th Meeting of the Acoustical Society of America. Ottawa, ON, Canada, March 2024.
23. **Lee**, **W.-J.**, V. Staneva, **D. Lei**[#], **Z. Miao**[#], and **C. Tuguinay**[#]. *A ship-to-cloud machine learning pipeline built on the open-source Python Echostack software tools*. Brest, France, April 2024.
24. **Lee**, **W.-J.**, V. Staneva, and C. Tuguinay. *Variability and influence of fisheries acoustic echogram annotations on machine learning applications*. The 186th Meeting of the Acoustical Society of America. Ottawa, ON, Canada. **Invited talk**, May 2024.
25. **Butala**, **S.** [#], V. Staneva, and **W.-J. Lee**. *Prefect workflows for scaling acoustic fisheries survey pipelines*. Video: https://youtu.be/YQhECbW_ujo. PyData Global 2023. Virtual, December 2023.
26. **Cheong**, **Y. J.** [#], **W.-J. Lee**, A. Ruesch, M. Schalles, J. Kainerstorfer, and B. Shinn-Cunningham. *Modeling and interpreting the head-related transfer function to understand directional hearing in bottlenose dolphins*. The 184th Meeting of the Acoustical Society of America. Chicago, IL, USA, May 2023.
27. **Lee**, **W.-J.**, M. Ladegaard, J. R. Buck, P. T. Madsen, K. Beedholm, and P. L. Tyack. *Learning from Freja the harbor porpoise to appreciate movements as an important behavioral readout to understand echolocation-based target discrimination*. The 184th Meeting of the Acoustical Society of America. Chicago, IL, USA. **Invited talk**, May 2023.
28. **Lee**, **W.-J.**, E. Mayorga, V. Staneva, and **B. Reyes**[#]. *Building an open-source software toolbox for cloud-native processing of fisheries and plankton acoustic data*. The 2024 ICES Working Group in Fisheries Acoustics, Science, Technology (WGFAST) Meeting. ICES Fisheries, and Plankton Acoustics Symposium. Portland, ME, USA, March 2023.
29. **Lee**, **W.-J.**, M. Ladegaard, J. R. Buck, P. T. Madsen, K. Beedholm, and P. Tyack. *Is broad angular coverage necessary for echolocation-based discrimination involving aspect-dependent targets?* The 182th Meeting of the Acoustical Society of America. Denver, CO, USA, May 2022.
30. Staneva, V., **W.-J. Lee**, and F. S. Frazao. *Software best practices*. Tutorial at the 181st Meeting of the Acoustical Society of America. Seattle, WA, USA, December 2021.
31. **Lee**, **W.-J.**, J. R. Buck, P. L. Tyack, and B. Shinn-Cunningham. *Active infotaxis as a model for echolocation*. The 178th Meeting of the Acoustical Society of America. San Diego, CA, USA, October 2019.
32. **Lee**, **W.-J.**, D. Chu, and S. E. Dosso. *How much more informative are broadband compared to narrowband echoes for biological interpretation?* The 178th Meeting of the Acoustical Society of America. San Diego, CA, USA, December 2019.
33. **Lee**, **W.-J.**, and V. Staneva. *Echopype: Enhancing the interoperability and scalability of ocean sonar data processing for biological information*. Video: https://youtu.be/qboH7MyHrpU. SciPy 2019 (The 18th Python in Science Conference). Austin, TX, USA, July 2019.
34. Stanton, T. K., **W.-J. Lee**, and K. Baik. *Two decades of progress in physics-based echo statistics*. The 178th Meeting of the Acoustical Society of America. San Diego, CA, USA, December 2019.
35. **Lee**, **W.-J.**, and V. Staneva. *Exploring matrix and tensor factorization for discovering latent structures in large echosounder datasets*. The 176th Meeting of the Acoustical Society of America and the 2018 Acoustics Week in Canada. Victoria, BC, Canada, November 2018.
36. **Lee**, **W.-J.**, V. Staneva, B. Herman, and A. Y. Aravkin. *Data-driven decomposition of ocean observatory echosounder time series for ecological insights*. The 2018 Ocean Sciences Meeting. Portland, OR, USA, February 2018.
37. **Lee**, **W.-J.** *I wonder how animals can do it so well: An ongoing detour to build better sonar, enabled by the Hunt fellowship*. The 174th Meeting of the Acoustical Society of America. New Orleans, LA, USA. **Invited talk**, December 2017.

38. **Lee**, **W.-J.**, B. Falk, C. Chiu, A. Krishnan, and C. F. Moss. *Asymmetric multi-frequency biosonar beam pattern of tongue-clicking bat, Rousettus aegyptiacus*. Salt Lake City, UT, USA, May 2016.
39. **Lee**, **W.-J.**, D. Tang, and E. I. Thorsos. *Mid-frequency clutter and reverberation characteristics of fish in a shallow ocean waveguide*. The 5th Joint Meeting of the Acoustical Society of America and the Acoustical Society of Japan. Honolulu, HI, USA, December 2016.
40. **Lee**, **W.-J.**, H.-Y. Yu, W. W. Au, A. Smith, I.-F. Jen, W.-C. Yang, Y.-C. Fan, P. E. Nachtigall, and L.-S. Chou. *Biosonar radiation field on the forehead of a Risso's dolphin during prey capture*. The 5th Joint Meeting of the Acoustical Society of America and the Acoustical Society of Japan. Honolulu, HI, USA, December 2016.
41. **Lee**, **W.-J.**, and C. F. Moss. *Detection and tracking of fluttering moths by echolocating bats*. The 171st Meeting of the Acoustical Society of America. Pittsburg, PA, USA, May 2015.
42. **Krishnan**, **A.**, W.-J. Lee, and C. F. Moss. *Use of multisensory information by flying bats*. The 2014 Annual meeting of the Society for Neuroscience. Washington, D.C., USA, November 2014.
43. **Lee**, **W.-J.**, S. Sändig, A. Denzinger, H.-U. Schnitzler, T. K. Horiuchi, and C. F. Moss. *Reconstructing the acoustic scenes encountered by free-flying, foraging bats*. The 167th Meeting of the Acoustical Society of America. Providence, RI, USA. **Invited talk**, May 2014.
44. **Lee**, **W.-J.**, and T. K. Stanton. *Accounting for the non-Rayleigh echo statistics of individual elongated scatterers in an aggregation*. The 167th Meeting of the Acoustical Society of America. Providence, RI, USA, May 2014.
45. Lavery, A. C., W. R. Geyer, M. E. Scully, G. L. Lawson, P. H. Wiebe, **W.-J. Lee**, T. K. Stanton, and J. R. Fincke. *Development of high-frequency broadband acoustic scattering techniques for imaging, classification, and quantification of stratified turbulence and zooplankton*. The 2012 Ocean Sciences Meeting. Salt Lake City, UT, USA, February 2012.
46. **Lee**, **W.-J.**, T. K. Stanton, and A. C. Lavery. *Estimating numerical density of scatterers in monotype aggregations using the statistics of broadband echoes: Applications to fish echoes*. The 164th Meeting of the Acoustical Society of America. Kansas City, MO, USA, October 2012.
47. Ross, T., **W.-J. Lee**, J. E. Keister, A. Lara-Lopez, and C. Greene. *Broadband acoustics on the VENUS observatory in Saanich Inlet*. The 2012 Ocean Sciences Meeting. Salt Lake City, UT, USA, February 2012.
48. **Lee**, **W.-J.**, L. S. Sayigh, F. H. Jensen, and P. L. Tyack. *Tonal whistles or burst pulses? Linking potential sound production mechanisms to the classification of toothed whale sounds*. The 19th Biennial Conference on the Biology of Marine Mammals. Tampa, FL, USA, December 2011.
49. **Lee**, **W.-J.**, and T. K. Stanton. *Statistics of echoes from mixed assemblages of scatterers with different scattering strengths and numerical densities*. The 162th Meeting of the Acoustical Society of America. San Diego, CA, USA, November 2011.
50. **Lee**, **W.-J.**, A. C. Lavery, and T. K. Stanton. *Interpretation of the compressed pulse output for broadband acoustic scattering from inhomogeneous weakly scattering objects.* The 2nd Pan-American/Iberian Meeting on Acoustics. Cancun, Mexico, November 2010.
51. **Lee**, **W.-J.**, and T. K. Stanton. *Analysis of mixed assemblages of fish using the statistics of echoes from a single beam broadband echosounder.* The 2nd Pan-American/Iberian Meeting on Acoustics. Cancun, Mexico, November 2010.
52. **Lee**, **W.-J.**, T. K. Stanton, and A. C. Lavery. *Broadband acoustic backscattering from live squid: Experiment and analysis.* The 157th Meeting of the Acoustical Society of America. Portland, OR, USA, May 2009.
53. **Lee**, **W.-J.**, P.-Y. Tsai, Y.-S. Chen, and L.-S. Chou. *Exploration of the behavior and movement patterns of spinner dolphins in North Ilan waters*. The 8th Animal Behavior and Ecology Conference. Taichung, Taiwan, March 2005.
54. **Lee**, **W.-J.**, H.-Y. Yu, and L.-S. Chou. *Vocalization repertoire of the three strayed rough-toothed dolphins (Steno bredanensis) in Danshui River, Taipei, Taiwan*. San Diego, CA, USA, December 2005.
55. Lee, P.-F., **W.-J. Lee**, Y.-A. Chen, C.-C. Yeh, and L.-S. Chou. *Distribution of cetaceans in the waters off eastern Taiwan*. The 16th Biennial Conference on the Biology of Marine Mammals. San Diego, CA, USA, December 2005.

Field experience

2024	The 2024 California Current Ecosystem cruise (CCE24): Leg 2. August 5-21, 2024. **Visiting scientist**: deployed near real-time, ship-to-cloud machine learning pipeline, deployed autonomous active acoustic profiler.
2023	The 2023 Joint U.S.-Canada Integrated Ecosystem and Pacific Hake Acoustic Trawl Survey: Leg 1. June 23-July 1, 2023. **Visiting scientist**: deployed near real-time, ship-to-cloud machine learning pipeline.
2021	Simultaneous physical-biological sampling by an ADCP-equipped ocean glider. August 27-September 15, 2021. **Chief scientist**: led acoustic sampling, zooplankton trawls, and glider deployment.
2017-2018	VISIONS'17 and '18 : Ocean Observatories Initiative (OOI) Regional Cabled Array (RCA) maintenance cruises. August 20-27, 2017; July 19-August 5, 2018. **Visiting Scientist**: deployed zooplankton trawls.
2017	The 2017 Joint U.S.-Canada Integrated Ecosystem and Pacific Hake Acoustic Trawl Survey: Leg 3. July 23-August 7, 2017. **Visiting Scientist**: performed x-ray imaging of midwater fish species for acoustic modeling.
2010	Zooplankton patchiness and ecosystem dynamics at the shelf break, led by Dr. Gareth Lawson. September 21-30, 2010 and October 26-November 6, 2010. **Graduate research assistant**: developed acoustic instrument synchronizer, analyzed active acoustic data, assisted in zooplankton trawls.
2010	Broadband acoustic studies of fish in Georges Bank and the Gulf of Maine, led by Dr. Timothy Stanton. September 8-18, 2010. **Graduate research assistant**: analyzed active acoustic data.
2003-2006	Behavioral observation and visual survey of marine mammals in the waters off Taiwan. **Survey lead**: organized and led visual surveys of marine mammals.

Supervision and training

Professional staff [**Position upon departure**]

2022-2023	Don Setiawan [Scientific Software Engineering Center, eScience Institute, University of Washington]
2022-2023	Brandon Reyes [Research Computing Analyst, University of Colorado Boulder]
2021-2022	Derya Gumustel [Data Analytics Immersive Senior Instructional Associate, General Assembly]]

Postdoctoral scholars [**Position upon departure**]

2023-present	Brandyn Lucca
2022-2024	YeonJoon Cheong [University of Washington]
2022	Zhongqi Miao [Microsoft Research]

Graduate students [**Position upon graduation**]

2024-present	Aditya Krishna, Ph.D. in Electrical and Computer Engineering, UW.
2024-present	Caesar Tuguinay, M.S. in Applied Mathematics, UW.
2023-2024	Soham Butala, M.S. in Data Science, UW. [Software Data Operations Engineer, MAQ Software]
2022-2023	Dingrui Lei, M.S. in Data Science, Rice University. Google Summer of Code mentee; Intern at UW. [Software Engineer, GEICO]

Undergraduate research assistants [**Position upon departure**]

2024-present	Ameena Majeed
2024-present	Aidan Lee

2023-2024	Liuyixin Shao
2023	Mollie Ball: Intern, APL Diverse and Inclusive Naval Oceanographic (DINO) Summer Internship Program (SIP)
2023	Shahnaz Mohideen
2022-2023	Josie Sachen [Research Technician, Seattle Children's Research Institute]
2020-2022	Imran Majeed [Software Engineer Intern, Sage Bionetworks]
2019-2022	Kavin Ngyuen [Master's Program in Electrical Engineering, UW]

Capstone projects

Master of Science in Data Science Program, UW

2025 project:	EcoAcoustic AI: Automated Soundscape Monitoring for Ecological Studies. Team: Lawrie Brunswick, Isha Gokhale, Jacob Peterson.
2024 project:	Bats! Application of deep learning model on audio bat calls detection. Team: Harshita Maddi, Rhea Sharma, Jenny Wong.
2023 project:	Bats! Audio recording bat calls detection and classification. Team: Corbin Charpentier, Ernesto Cediel, Kirsteen Ng.

Engineering Innovation and Entrepreneurship (ENGINE) capstone program, UW

2025 project:	Cloud Interactive Visualization for Near Real-Time Ocean Sonar Data. Team: Sasha Lai, Xinyuan Lin, Siyu Meng, Ethan Takahashi.
2024 project:	Track Foraging Bats in the Union Bay Natural Area. Team: Catalina Kashiwa, Eric Martin, Suhail Inayatulla, Elizabeth Kohagen, Qiancheng Li, Uma Nene, Archish Sridhar.

Community workshops and courses

OceanHackWeek: Data Science in Oceanography. https://oceanhackweek.org/

2024	Bigelow Laboratory for Ocean Sciences. Role: Organizing committee member.
2023	Hybrid: University of Washington. Role: Organizing committee member.
2022	Hybrid: Multiple locations, including University of Washington + Virtual. Role: Co-lead organizer.
2021	Hybrid: Bigelow Laboratory for Ocean Sciences + Virtual. Role: Organizing committee member.
2020	Virtual program. Role: Co-lead organizer.
2019	University of Washington. Role: Lead organizer.
2018	University of Washington. Role: Lead organizer.

BOAT: Bridge of Ocean Acoustics Technology. https://boat-ocean-acoustics.github.io/

Mar 2025 (upcoming)	Seattle. Role: Lead organizer.
May 2025 (upcoming)	New Orleans. Role: Lead organizer.

Other workshops

Jul 2025 (upcoming)	Ocean Observatories Initiative Facility Board (OOIFB) Summer School on Acoustics. Role: Co-chair of Planning Committee.
Apr 2025 (upcoming)	Getting started with Git, Python, and Echopype-related tools. 2025 ICES Working Group on Fisheries Acoustics, Science and Technology (WGFAST) meeting. Marine and Freshwater Research Institute, Iceland. Role: Lead organizer and instructor.
Jun 2024	BioAcoustic Summer School (SeaBASS), University of New Hampshire. Role: Instructor for Fundamentals of Ocean Acoustics.
May 2024	ASA School 2024. Ottawa, ON, Canada.

Role: Instructor for Active Acoustics and Best Practices in Scientific Computing.

Peer review activities

Journal review (selected)	Animal Behaviour, Fisheries Research, Frontiers in Behavioral Neuroscience, ICES Journal of Marine Science, IEEE Journal of Oceanic Engineering, Journal of Marine Science and Technology, Journal of the Acoustical Society of America, Journal of the Acoustical Society of America Express Letter, Limnology and Oceanography: Method, Proceedings of the National Academy of Sciences, Scientific Reports.
Grant review	NOAA Office of Ocean Exploration and Research Grant.

Honors and awards

2025	Science and Engineering Achievement Award, Applied Physics Laboratory, University of Washington.
2016-2017	Science and Engineering Enrichment & Development (SEED) Postdoctoral Fellowship, Applied Physics Laboratory, University of Washington.
2014-2015	Frederick V. Hunt Postdoctoral Fellowship in Acoustics, the Acoustical Society of America
2012	Best student paper in Acoustical Oceanography, the 164th ASA meeting.
2010	Best student paper in Underwater Acoustics, the 160th ASA meeting.
2009	Best student paper in Acoustical Oceanography, the 157th ASA meeting.
2009	wards for Outstanding Poster Presentations, the 5th Animal Sonar Symposium, Kyoto, Japan.
2007-2009	Taiwan Merit Scholarships, jointly supported by Taiwan's Ministry of Education, Council for Economic Planning and Development, and National Science Council in Taiwan.

In the news

2021	Ocean exploration features: Sampling using ADCP-equipped gliders. NOAA Ocean Exploration. August-September, 2021.
2021	A bountiful sea of data: Making echosounder data more useful. Ocean Observatories Initiative (OOI). April 1, 2021.
2021	Echolocation is nature's built-in sonar. Here's how it works. National Geographic. February 3, 2021.
2020	Big data and fisheries acoustics. International Council for the Exploration of the Sea (ICES) September 15, 2020.
2018	Wu-Jung Lee's journey into ocean sound from dolphins to bats and back to the sea. Ocean Observatories Initiative. August 8, 2018.
2018	Fruit bat's locating clicks echo sophisticated radar. Reuters | Video – Technology, April 22, 2018.
2018	Navigating with the tongue, the Egyptian fruit bat way! Research Matters, April 3, 2018.
2018	Phased arrays & the Egyptian fruit bat. Lab Animal Magazine, February 2018.
2018	Fruit bat's echolocation may work like sophisticated surveillance sonar. UW Today, February 6, 2018.
2016	Luna moth's long tail could confuse bat sonar through its twist. UW Today, August 15, 2016.
2009	The Squid, the Whale, and the Grad Student – A young scientist deciphers meaning embedded in sonar signals. Oceanus Magazine, 2009.