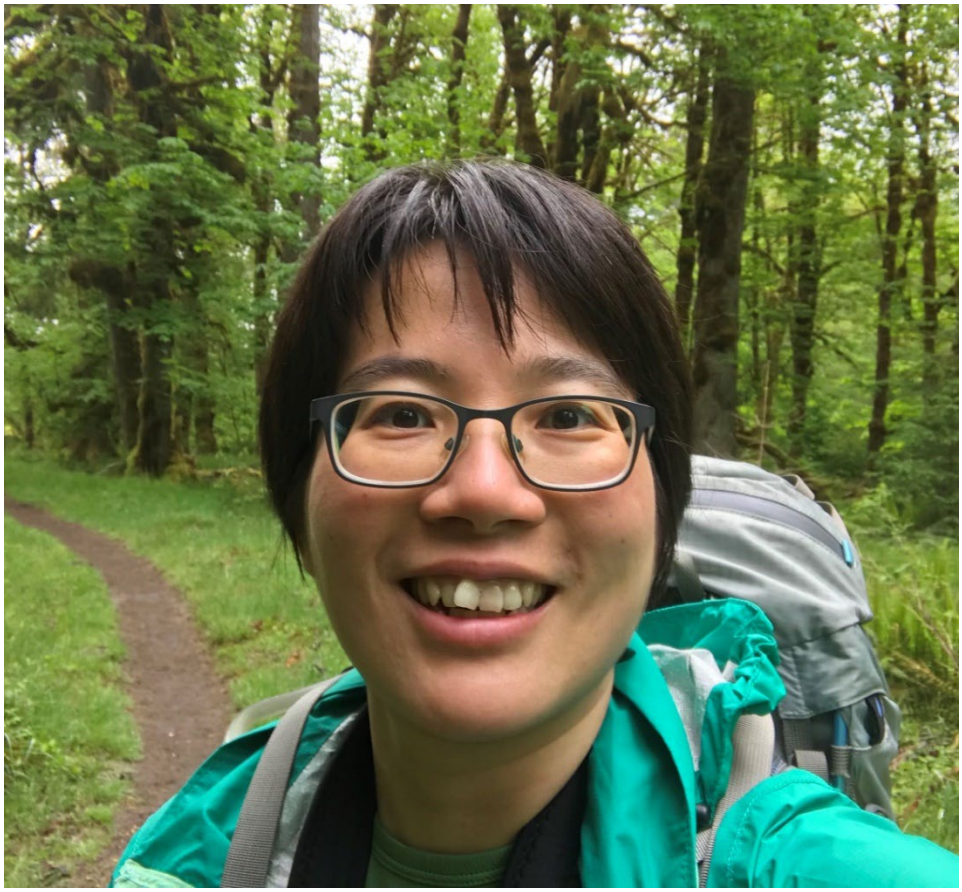

Wu-Jung Lee is a Principal Oceanographer at the Applied Physics Laboratory, University of Washington in Seattle, WA, USA. She holds double major B.S. degrees in Electrical Engineering and Life Science from National Taiwan University and a Ph.D. from the MIT-WHOI Joint Program in Oceanography. Prior to joining APL-UW, she took a detour from ocean acoustics to study bat echolocation as an ASA F. V. Hunt Postdoctoral Fellow at Johns Hopkins University. Dr. Lee enjoys working on problems that bridge across disciplinary boundaries and with people with different backgrounds. Her research spans two primary areas: Acoustical Oceanography and Animal Echolocation, where she integrates physics-based and data-driven methods to extract biological information from active acoustic observations of the ocean, and combines experimental and computational approaches to study the sonar of bats and dolphins as biological models for autonomous active acoustic sensing. Dr. Lee is an active contributor to open-source scientific software and an advocate for a more inclusive and supportive research community. She loves going to sea despite being very prone to motion sickness. Outside of work, she enjoys spending time in the mountains and drawing.

Two Pieces of the Same Puzzle: ACTIVE and Passive Acoustics for Cross-Trophic Marine Ecosystem Monitoring

In this presentation, I will discuss fundamental concepts of using active acoustic techniques as a remote sensing tool to observe mid-trophic level fish and zooplankton in the ocean. These observations complement passive acoustic measurements that tend to capture activities of higher trophic level animals, such as marine mammals. I will introduce physics-based acoustic scattering models and their use in interpreting active acoustic data (the echoes), and discuss recent advancements in incorporating data science techniques, including machine learning, to extract information from the rapidly growing volumes of active acoustic data around the world. Following this discussion, I will share a few tips for implementing best practices in reproducible research and scientific software development, and invite participants to anonymously share their thoughts and experiences on these topics in the fields of acoustics.