APPLICATION OF MACHINE LEARNING FOR AUTOMATED QUANTIFICATION OF BEHAVIOR

ABOUT

Over the past few years, behavior quantification and modeling has experienced an explosion of innovation and discovery largely enabled by application of new machine learning methods. These methods have enabled the quantification of behavior at high temporal and spatial resolution, and in concordance with simultaneous measurement and manipulation of neural and genetic function. However, access to this revolutionary technology is limited primarily due to a lack of adequate resources and training. Democratization of this technology through training of the next generation of scientists is necessary to elevate the field of quantitative behavior.

The *Short Course on the Application of Machine Learning for Automated Quantification of Behavior* will disseminate the theoretical and technical knowledge of this field, and train researchers to apply machine learning methods to behavior quantitation and modeling. Our goal is to build an educational program that fosters productive and interactive dialogue, teaches proper methodology, and provides support structure to nurture and lower the barrier of entry into this nascent field.

This course is appropriate for early career researchers from the fields of neuroscience, genetics, and biomedical research and will prioritize diverse learners and those who are educators and mentors. The workshop will also include scientific lectures and promote collaborative networking between researchers and technology developers to drive innovation in animal behavior modeling.
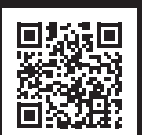
DATE

October 10 - 13, 2022

LOCATION

The Jackson Laboratory
600 Main Street
Bar Harbor, ME 04609

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The Jackson Laboratory

JAX COURSES & WORKSHOPS
www.jax.org/autobehavior

2022 FEATURED SPEAKERS

Kristin Branson, Ph.D.
Senior Group Leader, Janelia Research Campus, HHMI

Dr. Branson is a senior group leader and head of computation and theory at Howard Hughes Medical Institute's Janelia Research Campus, where she develops machine vision and learning algorithms designed to extract scientific understanding from imaging and video data sets resulting from large-scale, neurological studies of behaving animals. Branson and her team use these high-throughput tools to address previously unanswerable questions about the brain and behavior, thereby gaining insight into nervous system function, evolution, and ethology. Their goal is to develop robust, general-purpose implementations of these algorithms that are freely available for widespread use by biologists worldwide.

Sandeep Robert Datta, M.D., Ph.D.
Professor, Harvard Medical School

Dr. Datta is an associate professor in the Department of Neurobiology at Harvard Medical School. The goal of the Datta laboratory is to address how the brain extracts sensory information from the environment and converts that information into action. By studying and characterizing olfactory sensory and motor circuits in mice, the Datta laboratory aims to understand how neural codes for sensation and action are built and how they generate organized and goal-oriented behaviors, including both survival-based and social behaviors. Datta has received the National Institutes of Health New Innovator Award, the Burroughs Wellcome Career Award for Medical Scientists, an Alfred P. Sloan research fellowship, a Searle Scholars award, the Vallee Young Investigator Award, and the McKnight Scholar Award, and he has been named a Kavli fellow of the National Academy of Sciences.

Mala Murthy, Ph.D.
Assistant Professor, Princeton University

Dr. Murthy has a broad background in the fields of genetics, molecular biology, and neuroscience. As an Assistant Professor in the Department of Molecular Biology and Princeton Neuroscience Institute at Princeton University, her lab is focused on both olfactory and auditory perception in flies. The Murthy lab uses a combination of genetics, behavior, in vivo electrophysiology and functional imaging, comparative approaches, and computational methods to address how the brain converts sensory stimuli (such as odors and sounds) into meaningful representations, and how these representations are then used to drive behavioral responses. Dr. Murthy is the recipient of several early investigator awards, including ones from the National Science Foundation, the Alfred P. Sloan Foundation, the Klingenstein Fund, and the McKnight Foundation.

ORGANIZERS

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