

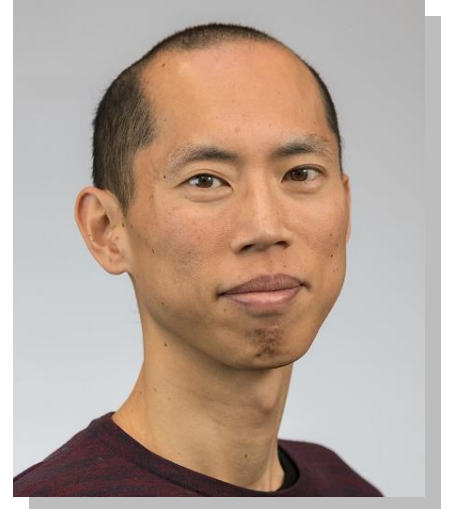


CoCo Seminar Series

Fall 2021

Energy Landscape Analysis of Complex Time Series Data

Dr. Naoki Masuda
Professor of Mathematics
University at Buffalo, SUNY



Wednesday September 29, 2021 11:00am-12:00pm EDT
Hybrid (EB-T1 & Zoom; meeting link available on
<http://coco.binghamton.edu/>)

I will introduce the so-called energy landscape analysis of multivariate time series data. In this analysis, one identifies the state of the system at each time point as the position of a "ball" constrained on an energy landscape inferred from data. A ball tends to go downhill on the energy landscape whereas it sometimes goes uphill to transit from one local minimum of the energy to another, possibly corresponding to major dynamical transitions of the system. The application of the method to neuroimaging data is illustrated (while the method is not domain specific). I will also introduce a variant of the method to identify state-transition dynamics of temporal (i.e., time-varying) networks and show application to social network data.

Dr. Naoki Masuda is a Full Professor in the Department of Mathematics and the Computational Data Science and Engineering Program at the University at Buffalo, State University of New York. His research interests include network science, mathematical biology, dynamical systems, and their applications to a wide variety of science/engineering domains. Dr. Masuda obtained his PhD in Mathematical Engineering and Information Physics from the University of Tokyo, Japan. He held faculty positions at the University of Tokyo and then at the University of Bristol, UK, before joining the University at Buffalo in 2019.

For more information, contact Hiroki Sayama (sayama@binghamton.edu).
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