



CoCo Seminar Series Spring 2024

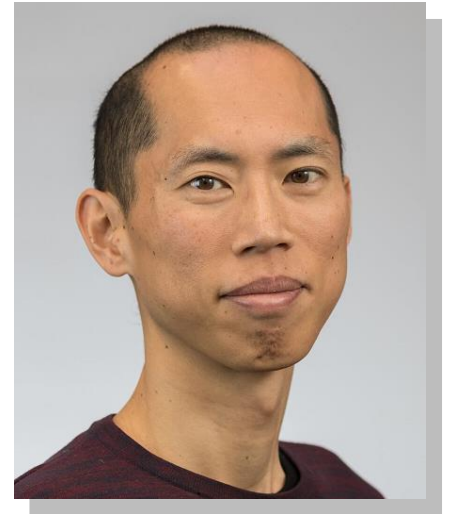
Temporal Networks: State-Transition Dynamics Modeling and Interaction among Manga Characters

Dr. Naoki Masuda

Professor of Mathematics, University at Buffalo

Friday February 9, 2024 12:00-1:00pm EST

**Hybrid (EB-R15 & Zoom; meeting link available on
<http://coco.binghamton.edu/>)**



A salient feature of empirical temporal (i.e., time-varying) network data is heavy-tailed distributions of inter-contact times. This feature can strongly impact dynamical processes occurring on networks, such as contagion and synchronization processes. In the first part of the talk, I show that heavy-tailed distributions of inter-contact times can be explained by state-dynamics modeling approaches in which each node is assumed to switch among a small number (typically two) of discrete states in a Markovian manner. The models are both interpretable (e.g., two people talk with each other at a higher event rate if and only if both of them want to) and facilitate mathematical analyses. The second part of the talk is on a quantitative network study on Japanese manga data. To the best of our knowledge, this is the first population study of character networks of manga, based on 162 manga titles. We found that manga character networks are similar to human social networks in many aspects including how heavy-tailed distributions of inter-contact times among characters occur. We also show that the character networks of most manga are protagonist-centered and that the manga mainly targeting girls and those mainly targeting boys have opposite trends of character networks over seven decades.

Dr. Naoki Masuda is a Full Professor and the Graduate Studies Director in the Department of Mathematics and the Institute for Artificial Intelligence and Data Science 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.

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