

## Ph.D. Dissertation Defense

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<b>Degree:</b>	Doctor of Philosophy
<b>School/Department.:</b>	Interdisciplinary / Data Science
<b>Date:</b>	Friday, April 14, 2023
<b>Time:</b>	3:00 pm – 4:30 pm
<b>Location:</b>	Virtual ( <a href="https://stevens.zoom.us/j/7683310809">https://stevens.zoom.us/j/7683310809</a> )
<b>Title:</b>	Human-machine collaboration to facilitate open collaboration governance
<b>Chairpersons:</b>	Dr. Jeffrey V. Nickerson, Information Systems, School of Business Dr. Feng Mai, Information Systems, School of Business
<b>Committee Members:</b>	Dr. Bei Yan, Information Systems, School of Business Dr. Aron Lindberg, Information Systems, School of Business Dr. Yue Ning, Computer Science, Schaefer School of Engineering and Science

### Abstract

Open collaboration communities, such as Wikipedia and open-source software projects, are complex socio-technical systems where humans and machines collaborate to produce knowledge. The success of such systems relies on effective governance of the collective knowledge production process. This thesis employs information systems theories and computational modeling techniques to investigate the collaboration dynamics between humans and machines within open collaboration communities.

The first study investigates how humans coordinate to produce knowledge with limited organizational structures and coordination mechanisms. The second study examines the use of autonomous machines, also known as bots, by exploring their functions, roles, and impacts on user engagement. The third study focuses on theorizing and analyzing the effects of machine learning-based bots on community members' participation and governance outcomes.

This work fills the gap in the literature on online community governance and AI use in organizations about the use of machines in online community governance. By studying the dynamic interplay between humans and machines and its secondary effects, this thesis sheds light on ways and means to improve human-machine collaboration and platform governance in the open collaboration context.