



- PREFACE
- ACKNOWLEDGMENTS
- AGENDA

GRAPH EXPLOITATION SYMPOSIUM

16-17 MAY 2022

MIT LINCOLN LABORATORY

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PREFACE

GRAPH EXPLOITATION SYMPOSIUM

The Graph Exploitation Symposium 2022 brought together leading experts from universities, industry, and government to explore the state of the art and define a future roadmap in network science. That year's symposium focused on responsible AI, adversarial graph learning, and representation learning on graphs. In order to provide an interactive environment and promote strong interaction among the attendees, the event was limited to a small group of invited attendees. In light of COVID-19, the symposium took place virtually on Monday, May 16- Tuesday, May 17.

SYMPOSIUM HIGHLIGHTS

The two-day technical program topics of interest included:

- Social influences
- Fair, Unbiased, and Ethical Approaches
- Adversarial Graph Learning
- Analysis of Anomalous, Covert, and Hidden Communities
- Inference Under Noise and Uncertainty
- Modeling, Prediction, and Control
- Recent Advances in Machine Learning on Graphs (e.g., GNNs, Knowledge Graphs)
- Various Applications including Bio, Cyber, Materials, Climate, Infrastructure, and Social Domains



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 - DAY 1 | 16 MAY
 - DAY 2 | 17 MAY

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DAY 1 | 16 MAY 2022

Keynote: Yevgeniya (Jane) Pinelis, *Department of Defense Joint Artificial Intelligence Center*
The Road to AI Assurance in the Department of Defense

Matthew Baum, *Harvard University*

Larger, faster, deeper, broader diffusion cascades – or simply larger?

Elena Zheleva, *University of Illinois at Chicago*

Relational Causal Inference from Social Media Data

Amna Greaves, *MIT Lincoln Laboratory*

Conducting Socially Responsible and Ethical Research to Counter
Mis/Dis/Malinformation

Yevgeniy Vorobeychik, *Washington University in St. Louis*

Adversarial Network Analysis

Ben Fish, *University of Michigan*

How Graph Exploitation Exploits People: Discrimination in Information Flow
in Social Networks



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DAY 2 | 17 MAY 2022

Keynote: Tina Eliassi-Rad, *Northeastern University*
Just Machine Learning

Petar Veličković, *Deep Mind, Google*
AI x Mathematics

C. Seshadhri (Sesh), *University of California, Santa Cruz*
Studying the (in)effectiveness of low dimensional graph embeddings

Jeremy Wendt, *Sandia National Laboratories*
Partitioning Communication Streams into Graph Snapshots using EASEE

Kamal Choudhary, *National Institute of Standards and Technology*
Atomistic Line Graph Neural Network for Improved Materials Design

Lin Li, *MIT Lincoln Laboratory*
AI-Driven Experimental Design for Novel Materials

Tian Xie, *Massachusetts Institute of Technology*
Forward and Inverse Design of Solid Materials with Graph Neural Networks