## THOMAS MAGELINSKI

Pittsburgh, PA·tmagelinski.github.io·tmagelin@cs.cmu.edu

## SUMMARY OF INTERESTS

I am interested in solving problems with complex social data. To do so, I develop new new methodologies through network science and graph machine learning approaches, leveraging state of the art techniques in natural language processing. I am particularly interested in how AI is shaping online communities communities and how we can design new methods to maintain the integrity of the information space, but I am open to pursuing new areas of work in the next phase of my career.

## EDUCATION

Carnegie Mellon University

Pittsburgh, PA

PhD Computer Science (Societal Computing)

August 2017 - May 2023

Thesis: "Contextualized Conversational Network Dynamics on Social Media"

Committee: Kathleen M. Carley (Chair), Renaud Lambiotte, Patrick Park, and Osman Yagan

Virginia Tech Blacksburg, VA

Honors Baccalaureate Engineering Science and Mechanics GPA: 3.9

August 2013 - May 2017

Minors in Math and Physics

University of Oxford

Oxford, UK

January 2015 - April 2015

EXPERIENCE

Spotify Research

Visiting Student

New York, NY

Research Scientist Intern

June 2021 - September 2021

- Demonstrated the potential of social signals to improve podcast search and recommendation
- Improved podcast understanding by integrating heterogeneous social network embedding into a transformer-based pipeline using StellarGraph

CASOS Lab Graduate Research Assistant Pittsburgh, PA

aduate Research Assistant August 2017 - Present  $\bullet$  Improved unsupervised multi-modal tweet representational learning through  $Deep\ Tweet$ 

- Improved unsupervised multi-modal tweet representational learning through *Deep Tweet Informax*, which leverages state of the art multi-lingual natural language processing techniques, the conversational graph, hashtags, and URLs, implemented in PyG
- Developed highly scalable graph algorithms for bot detection and coordinated actor detection on Twitter datasets with tens of millions of Tweets using igraph and PyTorch
- $\bullet$  Improved SotA graph classification accuracy by 1-2% on social media datasets by creating and implementing a novel deep graph-convolutional architecture in PyTorch
- Built an interactive dashboard in Plotly to analyze Twitter hashtag network dynamics using diachronic node embeddings
- Designed and implemented a scalable centrality measure which improves the ranking of 1 million PA road intersections by a factor of 8, as measured by ability to fragment the road network
- Uncovered structural change in the Ukrainian Parliament through dynamic community detection
- Published in venues like AAAI, The WebConf, ICWSM, The Journal of Online Trust and Safety, Applied Network Science, and IEEE Transactions on Network Science and Engineering

Ross Dynamics Lab
Undergraduate Researcher

Blacksburg, VA

November 2015 - May 2017

Awards and Activities

Co-Organizer: Ethics for Technologists Lecture Series

Knight Foundation Fellow

**ARCS Foundation Scholar** 

November 2018 - November 2021 Fall 2020, Spring 2021

August 2017 - August 2020

May 2017

Outstanding Senior: Engineering Science and Mechanics

TECHNICAL SKILLS

Languages and Tools:

Python, R, Java, MATLAB, SQL (MySQL, BigQuery), IATEX, Git
ML Frameworks and Libraries:

Python, R, Java, MATLAB, SQL (MySQL, BigQuery), IATEX, Git
PyTorch, TensorFlow, PyG, StellarGraph, BigGraph, PySpark MLlib

Network Science Libraries: igraph, NetworkX, Graph-Tool Data and Statistics Libraries: PvSpark, NumPv, Pandas, Sci

PySpark, NumPy, Pandas, SciPy, statsmodels, scikit-learn

Visualization: Matplotlib, Seaborn, Plotly

Research Areas: Graph Representation Learning, Node Embedding, Node Classification,

Graph Classification, Network Science, Community Detection,

Multi-Modal Learning, Natural Language Processing (with graph data)