The 20th IEEE International Conference on Machine Learning and Applications (IEEE ICMLA-2021)

Special Session: Machine Learning for Graphs
December 13-16, 2021, Pasadena, California, USA

Special session website: https://sites.google.com/view/ml4graphs/
Conference website: https://www.icmla-conference.org/icmla20/

Introduction
Graphs or networks are ubiquitous structures that appear in a multitude of complex systems like social networks, biological networks, knowledge graphs, world wide web, transportation networks, and many more. Real-world networks are massive and unstructured, apart from dynamic and multi-modal. Many existing domains can benefit from data analysis modelled as a networks problem that provide many computational and algorithmic challenges. Essentially, networks provide enormous potential both to address long-standing scientific questions and particularly inform the design of several machine learning applications. Graph-based learning and reasoning approaches offer a way to integrate symbolic reasoning (which offer more interpretability) with the representation learning capabilities of deep neural networks to introduce causality, interpretability, and transferability.

The second year of Machine Learning for Graphs special session aims to bring researchers across disciplines to share their innovative ideas on machine learning for graphs and leverage existing methodologies across several application domains. This special session will also serve as a common ground to showcase recent advancements in ML for graphs, build collaborations across disciplines, share benchmark datasets for graph-based ML algorithm evaluation, and inspire machine learning for graphs research in domains where there are limitations in the existing approaches. Authors of the best papers from this special session will have an opportunity to extend their work and publish in selected journals.

Scope
We welcome novel research papers on the following algorithms and applications, including but not limited to:

Algorithms
- Graph representation learning
- Hyperbolic graph embedding
- Community detection
- Node classification
- Link prediction
- ML on Signed networks
- ML on multi-layer and heterogeneous networks
- ML on knowledge graphs
- ML on dynamic graphs and graph streams
ML on cascades and cascade growth  
Network growth models  
Graph summarization  
Graph partitioning  
Network fusion  
Scalable ML algorithms for graphs  

Applications:
1. Computational social science  
   - Social network analysis  
   - Gender equality  
   - Affective polarization  
   - Echo chambers  
   - Civil unrest  
   - Fake news and misinformation spread  
   - Hate speech and polarization  
   - Population migration  
2. Computer Vision and Natural Language Processing  
   - Question Answering using Knowledge Graphs and Deep Learning  
   - Scene graph generation  
   - Activity understanding from multimodal data  
   - Image and Video captioning  
   - Knowledge graphs for multimodal understanding  
   - Neural-symbolic integration  
   - Explainable methods for visual understanding  
   - Common sense knowledge graph construction  
   - Applying knowledge graph embeddings to real world scenarios  
3. Health  
   - Health informatics and analytics  
   - Health misinformation  
   - Disease epidemics  
   - Genomics  
   - Population health  
   - Synthetic population  

Submission Guidelines and Instructions
Papers submitted for reviewing should conform to IEEE specifications. Manuscript templates can be downloaded from IEEE website. The maximum length of papers is 8 pages. All the papers will go through double-blind peer review process. Authors’ names and affiliations should not appear in the submitted paper. Authors’ prior work should be cited in the third person. Authors should also avoid revealing their identities and/or institutions in the text, figures, links, etc.
Papers must be submitted via the CTM System by selecting the track “Special Session on Machine Learning for Graphs”. All accepted papers must be presented by one of the authors, who must register.

**Paper Publication:**
Accepted papers will be published in the ICMLA 2021 conference proceedings (to be published by IEEE).

**Important Dates:**
Submission Deadline: August 6, 2021
Notification of Acceptance: September 4, 2021
Camera-ready papers & Pre-Registration: October 1, 2021

**Special Session Organizers**
Dr. Arunkumar Bagavathi  
Assistant Professor  
Department of Computer Science  
Oklahoma State University  
**Email:** abagava@okstate.edu

Dr. Sathyanarayanan N. Aakur  
Assistant Professor  
Department of Computer Science  
Oklahoma State University  
**Email:** saakurn@okstate.edu

Dr. Siddharth Krishnan  
Assistant Professor  
Department of Computer Science  
University of North Carolina at Charlotte  
**Email:** skrishnan@uncc.edu

**Program committee**
TBD