

The 21st IEEE International Conference on Machine Learning and Applications (IEEE ICMLA 2022)

Special Session on: Machine Learning for Graphs

December 12-15, 2022, The Bahamas, Caribbean

<https://www.icmla-conference.org/icmla22/>

<https://sites.google.com/view/ml4graphs/>

Background and Aims

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 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 third 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/Topics

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

Algorithms

- Graph representation learning
- Hyperbolic graph embedding
- ML on Signed networks
- ML on multi-layer, multi-modal, and heterogeneous graphs
- ML on knowledge graphs
- ML on evolving graphs and graph streams
- ML on cascades and cascade growth
- Network growth models
- Graph summarization
- Graph partitioning
- Graph matching
- Graph generative models
- Network fusion
- Graph reinforcement learning
- Scalable ML algorithms for graphs

Applications:

1. Computational social science
 - Social network analysis
 - Cyberbullying
 - Affective polarization
 - Echo chambers
 - Civil unrest
 - Fake news and misinformation spread
 - Hate speech
 - Population migration
 - Local and global politics
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 and Medicine
- Health informatics and analytics
 - Health misinformation
 - Disease epidemics
 - Genomics
 - Population health
 - Synthetic population
 - Drug discovery

Submission Guidelines and Instructions

Papers submitted for review should conform to IEEE specifications. Manuscript templates can be downloaded from [IEEE website](http://www.ieee.org/conferences_events/conferences/publishing/templates.html)¹. The maximum length of papers is 8 pages. All the papers will go through the double-blind peer-review process. Authors' names and affiliations should not appear in the submitted paper. The 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 [Microsoft CMT 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 IEEE ICMLA 2022 conference proceedings (published by IEEE). A selected number of accepted papers will be invited for possible inclusion, in an expanded and revised form, in some journal special issues.

Important Dates:

- Submission Deadline: September 9, 2022
- Notification of Acceptance: October 7, 2022
- Camera-ready papers & Pre-Registration: October 14, 2022

¹ www.ieee.org/conferences_events/conferences/publishing/templates.html

Special Session Organizers/Chairs:

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Programme Committee

TBA