

# The 19<sup>th</sup> IEEE International Conference on Machine Learning and Applications (IEEE ICMLA-2020)

## **Special Session: Machine Learning on Graphs**

December 14-17, 2020, Miami, Florida, USA

<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. Apart from being massive and unstructured, real-world networks are dynamic and multi-modal. Many existing domains can benefit from the analysis of data modeled as networks 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.

This special session aims to bring researchers across disciplines to share their innovative ideas on learning with graphs and leverage existing methodologies across several application domains. This special session will also serve as a common ground to build collaborations, share datasets, and inspire machine learning on graphs research in areas 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 on Graphs". All accepted papers must be presented by one of the authors, who must register. Detailed instructions for submitting papers can be found at [How to Submit](#) .

**Paper Publication:**

Accepted papers will be published in the ICMLA 2020 conference proceedings (to be published by IEEE).

**Important Dates:**

Submission Deadline: August 16, 2020

Notification of Acceptance: September 4, 2020

Camera-ready papers & Pre-Registration: October 1, 2020

**Special Session Organizers**

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