FID3018 - Opposition Report
Opposition to Ahmed Emad's presentation

Lodovico Giaretta
lodovico@kth.se

March 2021

1 Summary

The seminar introduced the topic of heterogeneous graph representation learning, presenting three relevant papers in the area. The seminar was interesting and insightful, with the presenter providing his own takes on the pros and cons of each paper discussed.

2 Choice of Papers

The following three papers were presented:

1. Fu T. et al., *HIN2Vec: Explore Meta-paths in Heterogeneous Information Networks for Representation Learning*, CIKM 2017

2. Wamg X. et al., *Heterogeneous Graph Attention Network*, WWW 2019

3. Yang C. et al., *MultiSage: Empowering GCN with Contextualized Multi-Embeddings on Web-Scale Multipartite Networks*, KDD 2020

The choice of papers is very sound, showcasing radically different architectures published over several years to tackle the same basic task, that is, obtaining useful node embeddings from heterogeneous graphs.

The topic is very relevant, given the importance and prevalence of heterogeneous graph-structured data collected by modern big data architectures. It is also well-suited to the audience, most of which has some background in graph representation learning, as the sub-topic of heterogeneous graphs is unfortunately not as well-known, with most of the high-profile papers only dealing with homogeneous graphs.

3 Presentation

The presentation was very well-structured, following the same flow for each paper and therefore allowing the audience to easily draw comparisons and understand similarities

and differences across the approaches. The inclusion of the personal takes of the presenter, pertaining to the pros, cons, similarities and differences of the approaches, were very appreciated. These takes provided key insights that would otherwise be missed by those listeners who did not have time to read the papers and familiarize with the topic and the datasets.

However, the presentation also had some pitfalls. First, the discussion of the third paper was more limited compared to the others. It would have been interesting to have some more takes on this quite different approach. Second, both the presentation and the follow-up discussion seemed a bit vague in certain points, with a noticeable lack of certain low-level details. It was probably the intention of the presenter to keep the seminar simpler on the technical level and therefore accessible to a wider audience. However, given the presence of several listeners with experience in the field, a slightly more rigorous technical discussion would probably have been appreciated.

FID3018 - Opposition Report

Opposition to Filip Cornell's presentation

Lodovico Giaretta
lodovico@kth.se

March 2021

1 Summary

The seminar introduced the topic of few-shots learning and its connection to graph representation learning, presenting three relevant papers in the area. The seminar was interesting, insightful and well-delivered and the presenter showed ability to discuss the topics, perform connections and suggest improvements during the discussion.

2 Choice of Papers

The following three papers were presented:

1. Garcia V. et al., *Few-shot Learning with Graph Neural Networks*, ICLR 2018

2. Zhang C. et al., *Few-shot Knowledge Graph Completion*, AAAI 2020

3. Zhang S. et al., *Few-Shot Audio Classification with Attentional Graph Neural Networks*, ISCA 2020

In addition to the clear focus on the topic of few-shot learning, these papers share another characteristics: their connection to graph representation learning. In the first and third paper, graph neural networks are used to encode the relationships between different samples and therefore achieve few-shots learning in image and audio classification, respectively. In the second paper, the task itself consists in predicting links in a knowledge graph.

On one hand, this selection of papers provides an opportunity to highlight the general principles and cross-domain relevance of few-shot learning, and the different ways in which it can intersect the field of graph representation learning. This can be useful given that most of the audience has experience in graph representation learning but little to no background in few-shots learning.

On the other hand, the different application domains of the selected papers and the extreme architectural difference between the second paper and the others make it harder

to draw comparisons between them and to derive general conclusions or directions from the seminar. Indeed, given the background of most of the audience, most of the interesting discussion following the presentation focused on the architecture of the second paper. It would maybe have been interesting to analyze other papers related to that.

3 Presentation

Despite the challenges of the paper selection, the presenter delivered a very smooth, straightforward talk, driving the audience from the general concept of few-shot learning to the fine details of each paper architecture. The initial, general introduction of few-shot learning and its comparison with semi-supervised learning and active learning was very appreciated, as it allowed the listeners without a few-shots learning background to familiarize with the topic and clear any doubts on its relationships with other similar techniques.

In the discussion that followed the talk, the presenter showed an ability to connect the contents of his presentation to other, relevant topics, in particular in the area of graph representation learning. He also demonstrated a critical spirit towards the papers and discussed with the audience several potential pitfalls, unclear architectural choices and potential directions for future improvements.