FID3018 Opposition Report 5

For Stefanos Antaris's session

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The topics of the session covered different problems temporal GNNs and Reinforcement learning in the session three main papers was discussed while the first two of them are similar in concept, the third is not:

- Streaming Graph Neural Networks
- Learning Temporal Interaction Graph Embedding via Coupled Memory Networks
- End-to-End Deep Reinforcement Learning based Recommendation with Supervised Embedding

In the first paper a new Dynamic Graph Neural Network model was proposed, which can model the dynamic information as the graph evolving. Which overcomes the outcomes of the previous static graphs. The second paper was quite a novel one. They proposed a novel framework named to learn node representations from a sequence of temporal interactions to overcome the drawbacks of learning node embeddings in the context of static, plain or attributed, homogeneous graphs. The third paper is not algorithmic one it mostly towards the architecture of how to apply Reinforcement Learning based Recommendation with Supervised Embedding in production

The presentation took exactly the required time, in an unprecedent achievement in the course i believe. The quality of the presentation was very good. The slides are easy to watch, the figures are high in resolution and the equations are clear in general, the talk was organized in an easy to grasp way. The presenter also provided a common introduction section where he could show a brief introduction to the field, group the papers together, what to expect from the discussed papers and the drawbacks for each.

The presentation highlighted the main contributions in each paper. The presenter gave a very good exposure if the technical details of individual papers and showed solid understanding. In the QA session, the presenter managed to address the questions put forward by the audience successfully.

Ma, Yao, Ziyi Guo, Zhaocun Ren, Jiliang Tang, and Dawei Yin. "Streaming graph neural networks." In *Proceedings of the 43rd International ACM SIGIR Conference on Research and Development in Information Retrieval*, pp. 719-728. 2020.

Zhang, Zhen, Jiajun Bu, Martin Ester, Jianfeng Zhang, Chengwei Yao, Zhao Li, and Can Wang. "Learning Temporal Interaction Graph Embedding via Coupled Memory Networks." In *Proceedings of The Web Conference 2020*, pp. 3049-3055. 2020.

Liu, Feng, Huifeng Guo, Xutao Li, Ruiming Tang, Yunming Ye, and Xiuqiang He. "End-to-end deep reinforcement learning based recommendation with supervised embedding." In *Proceedings of the 13th International Conference on Web Search and Data Mining*, pp. 384-392. 2020.