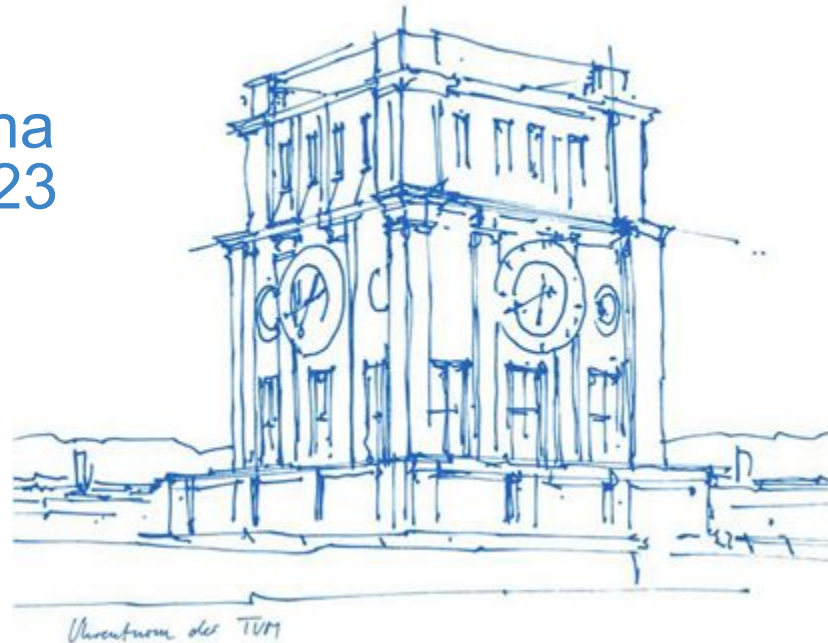
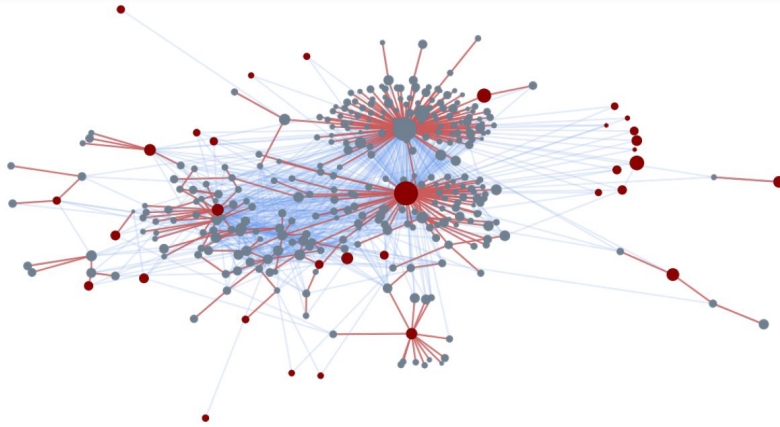


Seminar: Advanced topics in Graph Learning

Christian Koke, Abhishek Saroha
Preliminary Meeting: 3 July, 2023



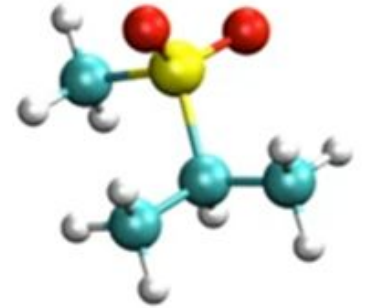
Why GNNs



A news story spreading on twitter

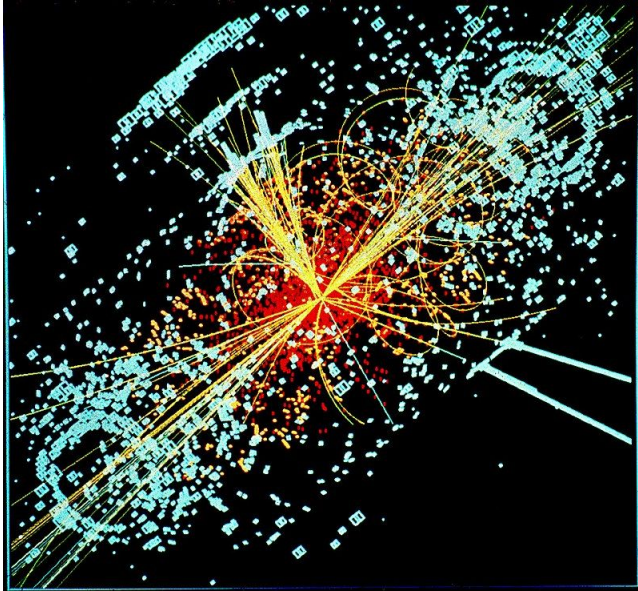


Google maps predicting traffic in NYC

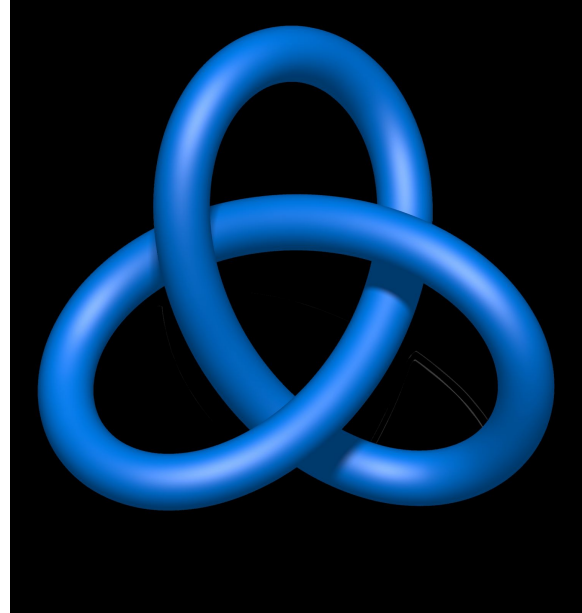


A molecular graph

Why GNNs



A high energy collision event at CERN



The trefoil knot

Organisation

Timeslot:

9:30 AM - 1:30 PM,
10-11 October 2023

Kickoff Meeting:

TBD (Likely Mid-August/Early-September)

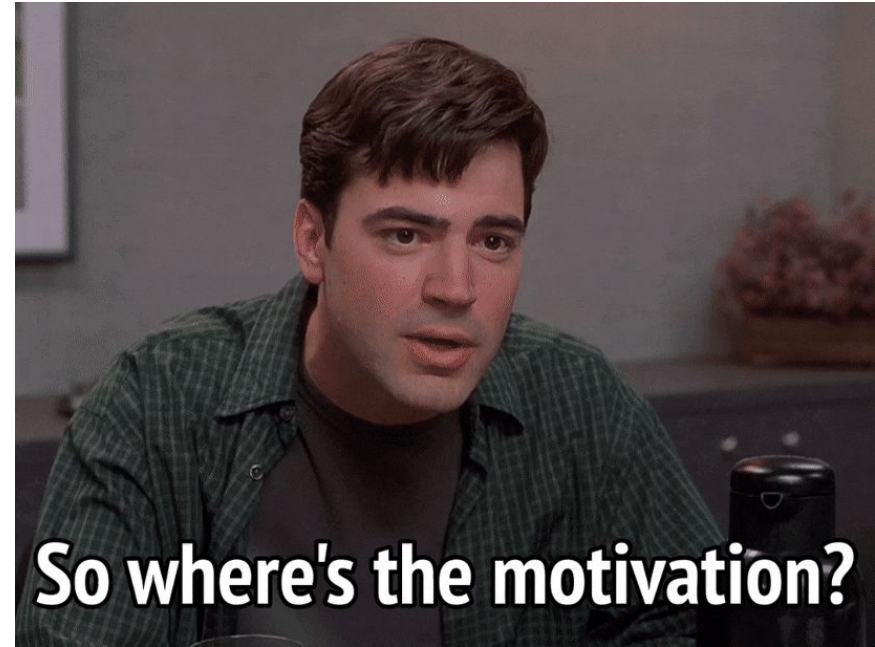
Place: Virtual via Zoom (Possibly Hybrid)

Course Webpage: TBA

Email: Christian.Koke@tum.de, Abhishek.Saroha@in.tum.de

What's in it for you?

- Getting familiar with all the latest trends and technologies in Graph Learning.
- Reading, understanding and presenting scientific publications.
- Preparing and giving a talk, along with a short report.
- 5 ECTS!!



Presentation

- 20 minutes talk + 10-15 minutes discussion
- number your slides
- do not make slides full of text, use visualizations
- You may focus on things you had problems understanding when first reading your paper in more detail
- cite the original author and conference/journal name, along with any other resource



Recommended structure

1. Introduction
2. Approach
3. Strengths and shortcomings
4. Brief Summary (Optional)

Report

- Overview and main contributions of the assigned topic
- Not a copy of your assigned material, focus on parts that you found interesting.
- Address the open questions left from the Q&A session.
- Length: 6 pages without references
- Use CVPR Latex template: http://cvpr2021.thecvf.com/sites/default/files/2020-09/cvpr2021AuthorKit_2.zip
- You can use the text editor of choice, but keep the style similar to the template. Suggested: Overleaf
- Submission Date: 15 Feb 2024 (Tentative)

Evaluation Criteria

- Attendance at each meeting is necessary! Contact us **beforehand** if you have other appointments.
- Participation (questions, discussions) influences the final grade.
- Presentation
 - a. Choose the main aspects and interesting subtopics
 - b. Understand them in every detail
 - c. It may be necessary to check related articles or text books
 - d. **Prepare the topic such that it is understandable to the other participants of the seminar**

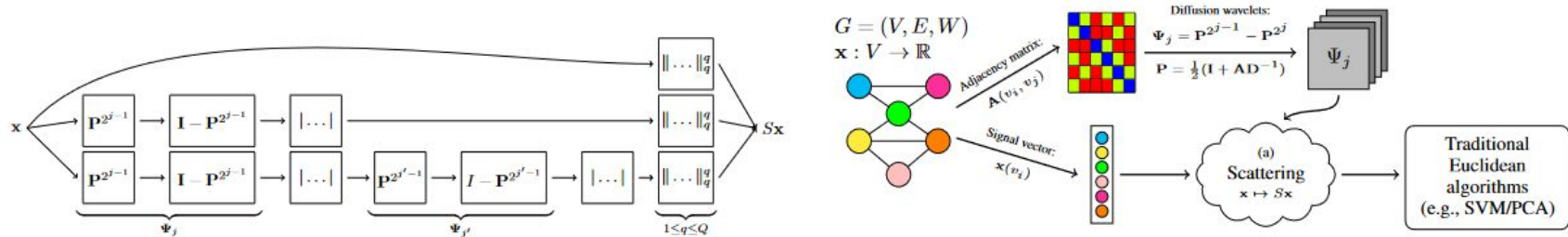
Possible Topics

- Foundations
- Promising new Architectures
- Domain specific networks
- ...

Paper Examples: Foundations

Geometric Scattering for Graph Data Analysis

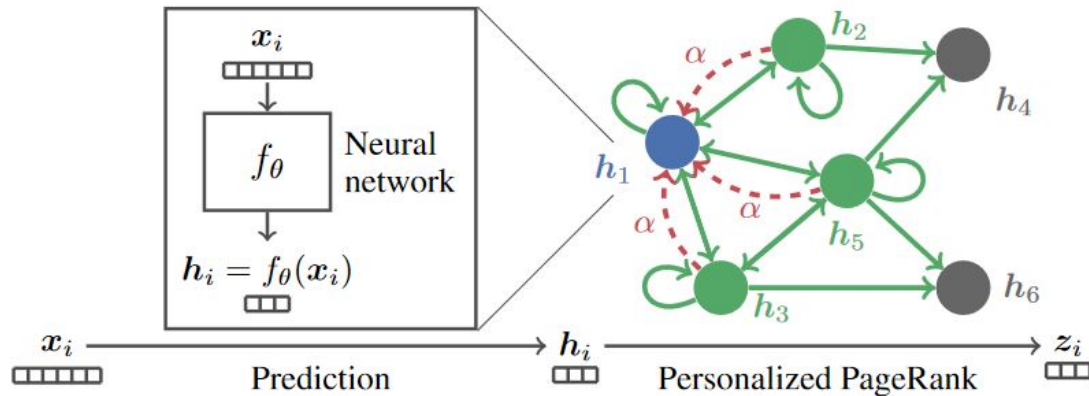
Feng Gao^{1,2} Guy Wolf³ Matthew Hirn^{1,4}



Paper Examples: Promising (new) Architectures

PREDICT THEN PROPAGATE: GRAPH NEURAL NETWORKS MEET PERSONALIZED PAGERANK

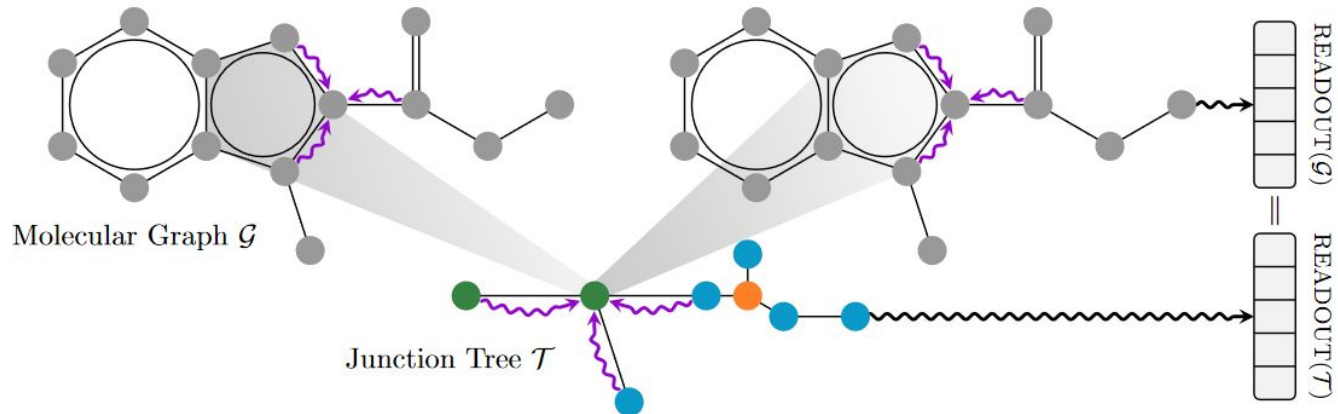
Johannes Gasteiger, Aleksandar Bojchevski & Stephan Günnemann



Paper Examples: Domain specific Networks

Hierarchical Inter-Message Passing for Learning on Molecular Graphs

Matthias Fey^{*1} Jan-Gin Yuen^{*1} Frank Weichert¹



Registration

- Computer Science & exchange students apply through the TUM Matching platform (matching.in.tum.de)
- There are 12 places in total
- Everyone present at the pre-meeting gets priority in the matching system, please post your **name, TUM-Kennung and email in the chat in one message**

Assignment of Topics

- A list of topics will be available on the course webpage in the upcoming weeks and will be discussed in the kickoff meeting.
- If you got assigned to this seminar, send us an email with your preferred **four** topics
- Topics will be assigned by first come first serve.
- If you want to present your own paper that is not on the list, please contact us during/after the kickoff meeting.

Summary

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