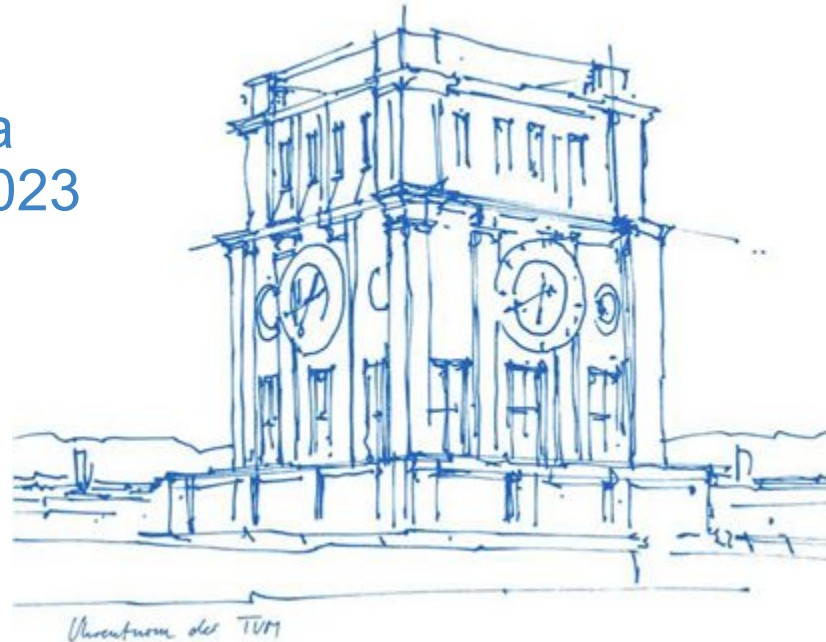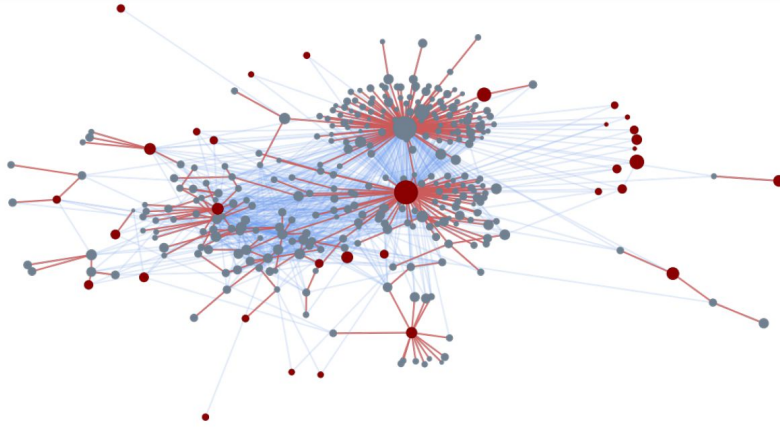# Seminar: Advanced topics in Graph Learning

Christian Koke, Abhishek Saroha
Preliminary Meeting: 2 February, 2023
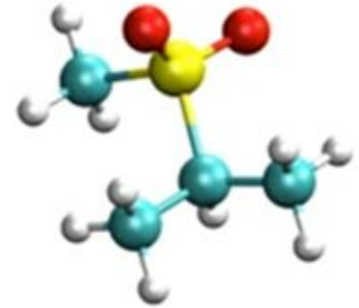
Why GNNs

A news story spreading on twitter
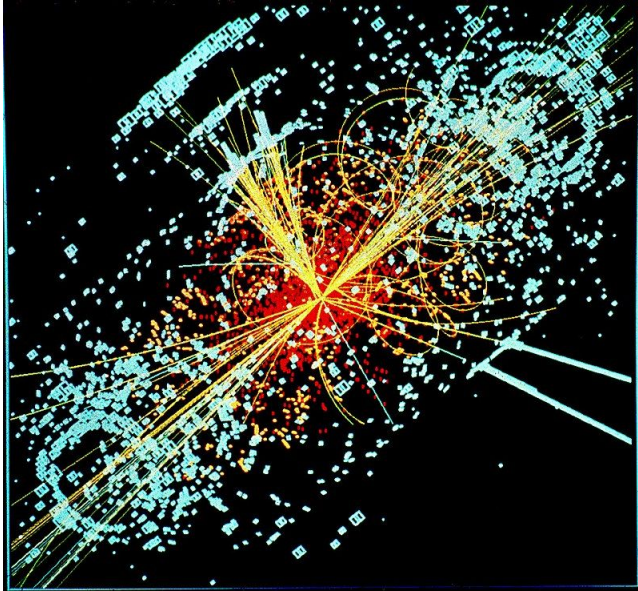
Google maps predicting traffic in NYC

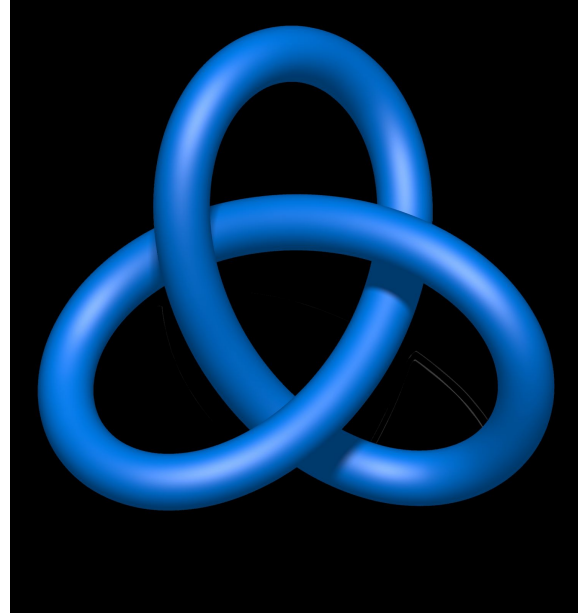**A molecular graph**

Why GNNs

A high energy collision event at CERN

The trefoil knot

Organisation

Timeslot:

       9:30 AM - 1:30 PM,
        4-5 April 2023

Kickoff Meeting:

       10:30 AM
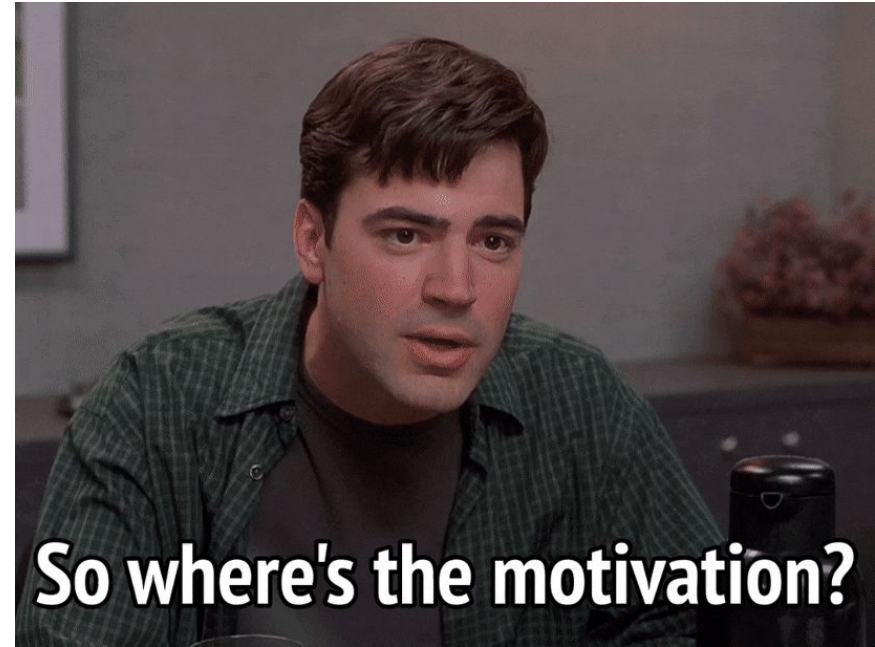   1 March, 2023

Place: Virtual via Zoom

Course Webpage: https://vision.in.tum.de/teaching/ss2023/graphlearning_ss2023

Email: graphlearning-ss23@vision.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!!

So where's the motivation?

Gif source:
https://thumbs.gfycat.com/HardtofindThinDouglasfirbarkbeetle-size_restricted.gif

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 Aug 2023 (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
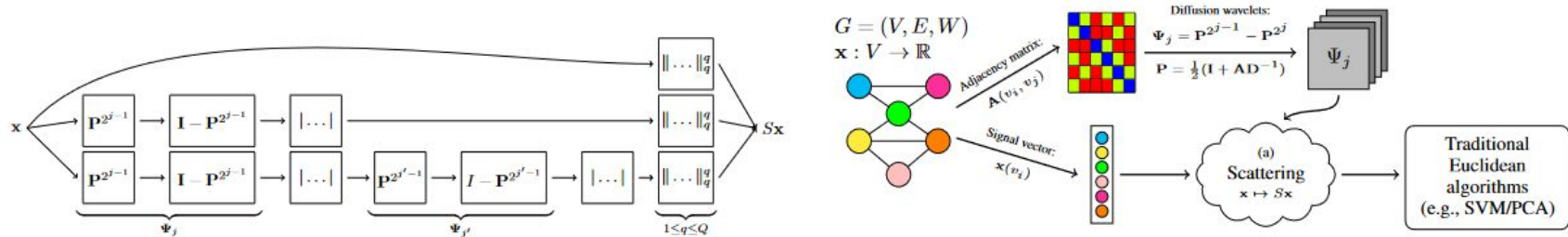   d. **Prepare the topic such that it is understandable to the other participants of the seminar**

Possible Topics

- Foundations

- Promising new Architectures

- Domain specific networks

- …

Paper Examples: Foundations

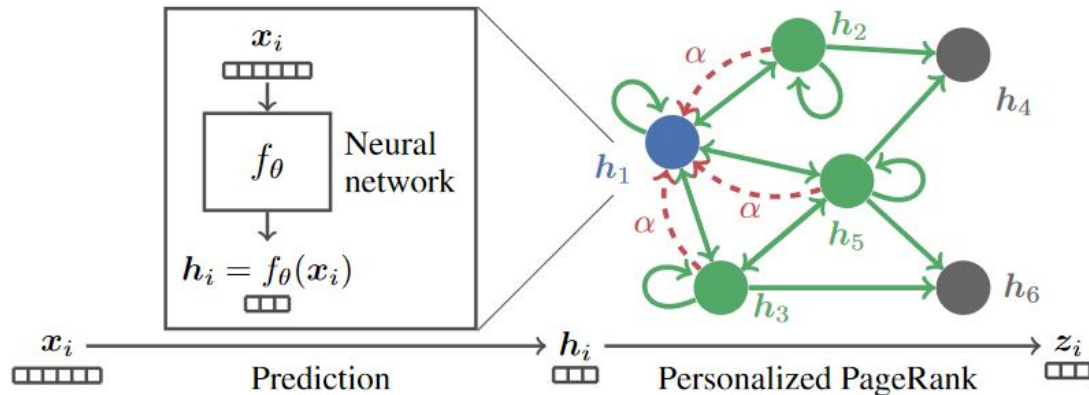**Geometric Scattering for Graph Data Analysis**

Feng Gao [1,2]   Guy Wolf [3]   Matthew Hirn [1,4]

Paper Examples: Promising new Architectures

PREDICT THEN PROPAGATE: GRAPH NEURAL NETWORKS MEET PERSONALIZED PAGERANK
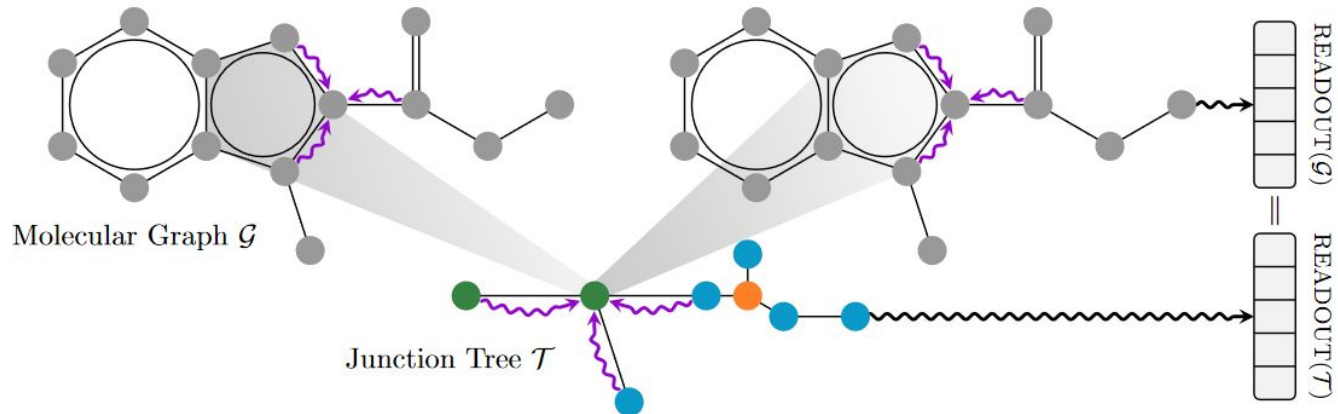
Johannes Gasteiger, Aleksandar Bojchevski & Stephan Günnemann

Paper Examples: Domain specific Networks

Hierarchical Inter-Message Passing for Learning on Molecular Graphs

Matthias Fey [* 1]   Jan-Gin Yuen [* 1]   Frank Weichert [1]

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 to graphlearning-ss23@vision.in.tum.de 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

Timeslot:

      9:30 AM - 1:30 PM,
       4-5 April 2023

Kickoff Meeting:

      10:30 AM
       1 March, 2023

Place: Virtual via Zoom

Course Webpage: https://vision.in.tum.de/teaching/ss2023/graphlearning_ss2023

Email: graphlearning-ss23@vision.in.tum.de