

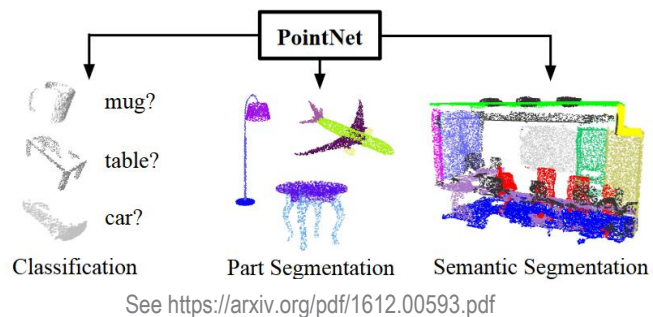
# BACHELOR OR MASTER THESIS

## Graph Representation Learning for 3D Models

Graphs structures are ubiquitous and highly relevant in a very broad range of applications, from drug discovery to pointcloud segmentation. Graph Neural Networks have emerged to enable data driven deep learning methods for this type of data. The focus of this thesis is learning latent representations of 3D models, that are represented as graphs or pointclouds. These latent representations should provide a meaningful summary of the 3D data, which is important for downstream tasks such as classification and segmentation. Both downstream tasks are highly relevant, e.g. to analyze a scene that was scanned by a LiDAR.

### YOUR RESPONSIBILITIES

- In-depth literature review in the fields of Graph Representation Learning and data driven methods for 3D CAD model classification
- Implementation and fine-tuning of Graph Neural Networks
- Evaluation of the methods on available datasets including feasibility study for the real-world application



### OUR OFFER

- continuous and thorough mentoring of the student
- highly motivated and fun team and constructive cooperation

### YOUR PROFILE

- high self-motivation and eager to contribute own ideas
- willingness to learn and the ability to work independently
- good programming skills in Python
- basic theoretical knowledge in Machine Learning
- very good knowledge of German or English

### APPLICATION

We look forward to receiving your PDF application to Alexander Naumann (anaumann@fzi.de). Please write a short, informal cover letter including the desired start date and add the following documents:

- curriculum vitae
- current transcript of records
- if applicable, further relevant certificates (internships, student jobs, etc.)

### FURTHER INFORMATION

- Start date: flexible
- Responsible Institute at KIT: Institut für Fördertechnik und Logistiksysteme (IFL) | Prof. Dr. Furmans
- Contact: Alexander Naumann ([www.fzi.de/mitarbeiter/alexander-naumann](http://www.fzi.de/mitarbeiter/alexander-naumann))
- For related offerings, please see <https://a-nau.github.io/thesis>