



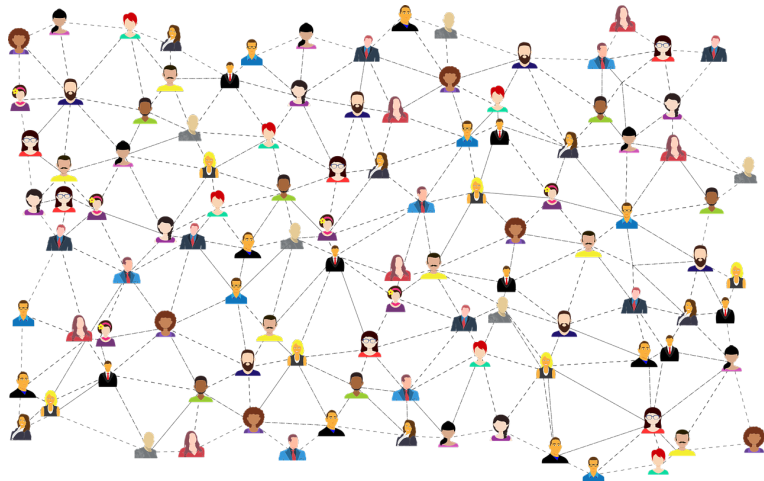
MA/SA:

Graph Labeling Schemes

Imagine you want to repeatedly query a huge graph, e.g., a social network or a road network. For example, you might want to find out whether two nodes are connected, or if they are neighbors, or what the distance between the two nodes is. Since the graph is so large, you distribute it among multiple servers in your data center. Therefore, you would like to choose a label for each node in the graph, such that you can answer these questions about pairs of nodes only by looking at the labels of these two nodes. And of course, you want these labels to be as short as possible. Such an assignment of labels is called a *labeling scheme*.

For an introduction into labeling schemes and some examples see Chapter 14 of the Principles of Distributed Computing lecture [1] or Chapter 1 of this master thesis [2].

Labeling schemes can be examined for many different types of graph, e.g., trees or planar graphs. In this thesis, you will look for new and improved labeling schemes for certain graph classes.



Requirements: Strong motivation to work on a theoretical topic as well as the ability to work independently. Prior knowledge in graph theory or theoretical computer science in general is a plus. We will have weekly meetings to discuss open questions and determine the next steps.

Interested? Please contact us for more details!

Contacts

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References

- [1] Labeling Schemes. Chapter 14. Principles of Distributed Computing. <https://disco.ethz.ch/courses/podc/lecturenotes/chapter14.pdf>
- [2] Labeling schemes for trees - Overview and new results. Esben Bstrup Halvorsen. Master Thesis. 2013. <http://esben.bstruphalvorsen.dk/papers/master-cs.pdf>