

## Algorithms and Uncertainty

Summer Term 2021

Tutorial Session - Live Tasks 5

### Exercise 1:

We have seen the Steiner Tree problem as well as the Set Cover problem in the lecture - both in its online versions. We are now interested in creating a link between the two. Therefore, we consider Steiner Trees in directed graphs.

- (a) Show that the unweighted offline version of Set Cover (i.e. all sets have a cost of 1) is a special case of the directed offline Steiner Tree problem.
- (b) Can your construction from (a) also be used when considering the online version? If yes, why? If no, which problems do occur and are there possibilities to overcome these?