
JORGEN BANG-JENSEN, University of Southern Denmark

Finding an induced subdivision of a digraph

We consider the following problem for oriented graphs and digraphs: Given an oriented graph (digraph) H ; does it contain an induced subdivision of a prescribed oriented graph (digraph) D ? That is, can we find $|V(D)|$ distinct vertices $\{h_v | v \in V(D)\}$ in H such that for every arc uv of D there is an induced path P_{uv} from h_u to h_v in H and furthermore there is no arc in H between distinct paths $P_{uv}, P_{u'v'}$ (i.e., no arc with precisely one end on P_{uv} and the other on $P_{u'v'}$)? The complexity of this problem depends on whether H is an oriented graph or contains 2-cycles. We give a number of examples of polynomial instances as well as some NP-completeness proofs.