Best choice&GuseinZade problem for directed and undirected paths

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We consider the following on-line decision problem. The vertices of a path (directed or undirected) are being observed one by one in some random order by a selector. At time t the selector examines the t-th vertex and knows the graph induced by the t vertices that have already been examined. The selector's aim is to choose the currently examined vertex maximizing the probability that it belongs to some previously chosen subset of vertices. Optimal stopping times for three particular subsets are given. For a directed path the subset consists of the two top vertices. For an undirected path the first subset consists of the two extreme vertices and the second one of two pairs ending a path on both sides. For the path of cardinality n either the probability of the right choice according to the optimal algorithm or its numerical approximation is given.
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