Online Stochastic Matching – Prophet inequalities and how to beat them

Stochastic matching is matching in graphs under uncertainty. Here uncertainty mainly comes from mainly two situations. When the edges in the graph have some associated probability of occurrence or each vertex has some probability of occurrence. We also assume occurrence of each edge or vertex is stochastically independent of other. In this talk, we introduce the problem of stochastic matching in online paradigm, how they model different real life scenarios incorporating uncertainty and how we design algorithms for some of its variants. Along the way we shall explore the notion of prophet inequalities, how they are employed to design algorithms and how we can even beat them in certain cases.