

many real-world networks are naturally dynamic and are characterized by frequent updates. The updates are often transient and could even be infinite, which puts the applicability of conventional link prediction algorithms in jeopardy. In addition to that, rich node attributes are prevalent and often have a strong connection with the network topology, and they may also change adaptively over time. It remains a daunting task to support the link prediction on such dynamic attributed networks in an online fashion due to some unique challenges. In this paper, we study the novel problem of streaming link prediction on dynamic attributed networks and propose a sophisticated link prediction framework - SLIDE. In particular, we leverage a cost-effective matrix sketching technique to make a summarization of the current observed data by making only one pass of the data, and the sketching matrix, in turn, is used to infer the missing links. Theoretical analysis indicates that our method achieves a similar performance as a cost offline method which stores all historical data. We also perform empirical experimental evaluations on real-world datasets, the results imply that SLIDE not only can predict the missing links more accurately but also is much more computationally efficient than competitors.

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