A pixie-based recommendation system is one built on the foundations of graph traversal and the random walk algorithm. As with all recommendation systems, this recommendation seeks to identify relevant or enjoyable things to present to a given user. As opposed to directly comparing users or items, pixie-based systems build on random graph traversal to build a collection of recommendations efficiently and effectively.

By leveraging the advantages of a random walk, the algorithm can begin in a place that is known to be relevant to a given user. By starting in a known location, the random walker can build a network and visit nearby nodes that are likely to be relevant often. These nodes that are visited often, in turn, become recommendations for the user and, if they are what the user is looking for, can become starting points for the algorithm in the future.

One big example of this being implemented at scale would be Pinterest. Pinterest, in particular, is working with an incredibly large data set of both users and pins. This made implementing recommendation algorithms that ran efficiently a challenge. By representing boards and pins as a bipartite graph, it becomes a more straightforward challenge to find a recommendation system that works for this representation, which the random walker excels in.

source-https://medium.com/pinterest-engineering/introducing-pixie-an-advanced-graph-based-recommendation-system-e7b4229b664b