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## **EXPLANATION OF PIXIE-INSPIRED ALGORITHMS**

Pixie-Inspired Algorithms are real-time, graph-based recommendation systems approaches that perform random walks within a bipartite graph to find relevant recommendations. A bipartite graph is a graph whose vertices can be divided into two disjoint sets such that no two vertices in the same set are connected by an edge. Bipartite graphs are used in recommender systems because they are good at capturing detailed information about user-item associations. So by performing random walks across these bipartite graphs, pixie-inspired algorithms can explore several routes of user-item associations, which translates to relevant recommendations.

We have mentioned the term “random walk” several times already, so let us discuss exactly what this term means. A random walk is an arbitrary process where the next value of a given node is determined randomly by its current value and a constant mean. This process is done for a predetermined number of steps, and the reasoning behind this is that the nodes visited most frequently during these random walks represent items that are likely to be related. So we track how often an item is visited during the random walks and rank them by frequency. This method assumes that the closer two nodes are in frequency, the more relevant they are to each other.

One of the biggest real-world applications of Pixie-inspired algorithms is in the recommendation system at Pinterest. These systems deployed at Pinterest lead to over 50% more user engagement a significant increase. We also see Pixie-inspired algorithms being implemented in industries like e-commerce, online entertainment, and social media platforms.

## REFERENCES

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