FACULTY OF DATA AND DECISION SCIENCES
MAKING SENSE OF IT

Some fancy title: followed by some more text

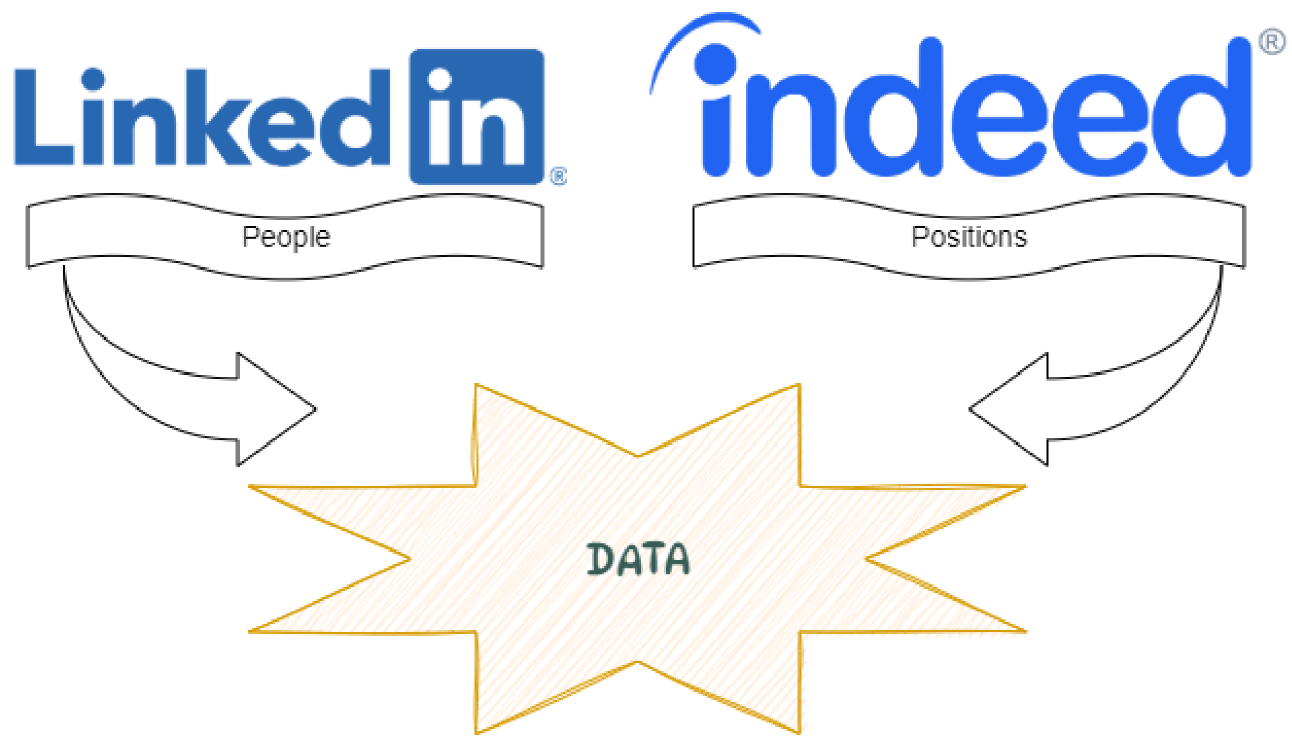
Sergiy Horef [1] Veronika Sorochenkova [1] Diana Morgan [1]

[1]Technion: Faculty of Data and Decision Sciences

TECHNION
Israel Institute of Technology

Data Collection

We augmented the provided LinkedIn Profiles data by scraping Indeed listings of job positions.

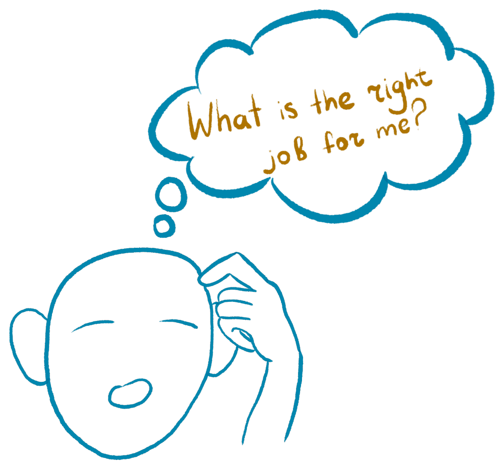


Problem Definition

🔍 **Traditional job-matching is broken**—keyword-based systems miss context, and simple filters overlook great candidates.

🤖 **GNNs unlock deeper connections**, understanding how skills, experience, and job roles truly relate.

🎯 **Better matches mean better hires**, reducing mismatches, saving time, and improving job satisfaction for everyone!



What Is a GNN?

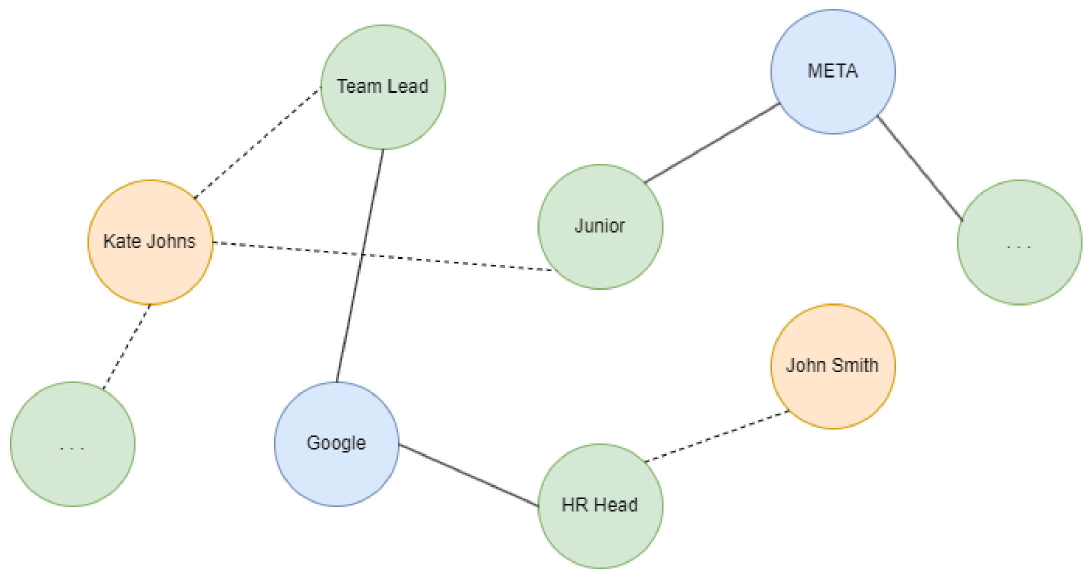
Graph Neural Networks (GNNs) capture relationships in interconnected data. By aggregating information from neighboring nodes, they learn representations of complex, non-Euclidean structures. Ideal for tasks like social networks, molecular modeling, and recommendation systems, GNNs leverage structural and contextual insights for robust predictions, improved generalization, and scalable machine learning. 🚀

Works For Us!

Traditional machine learning models struggle with **non-grid data** where relationships matter as much as individual features. In job matching, employees and experiences form a **complex network of connections**, not just isolated data points. Graph Neural Networks (GNNs) excel in such scenarios by capturing **interdependencies** between candidates, job listings, and qualifications —making GNNs the perfect tool for the job!

First Attempt

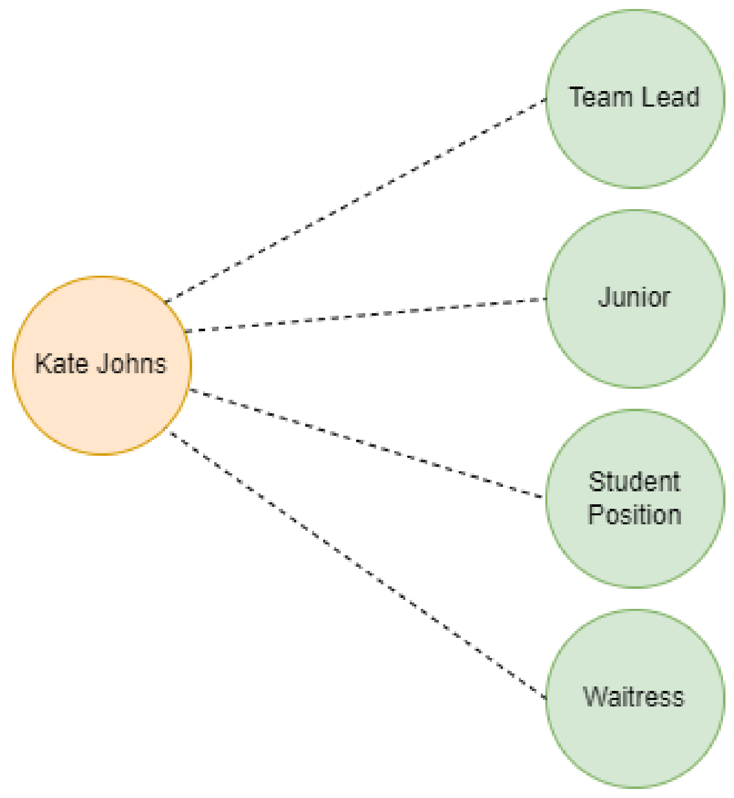
Let's build a Graph...



Too many Nodes, too many Connections. Way beyond our computational capabilities...

Simplify And Try Again

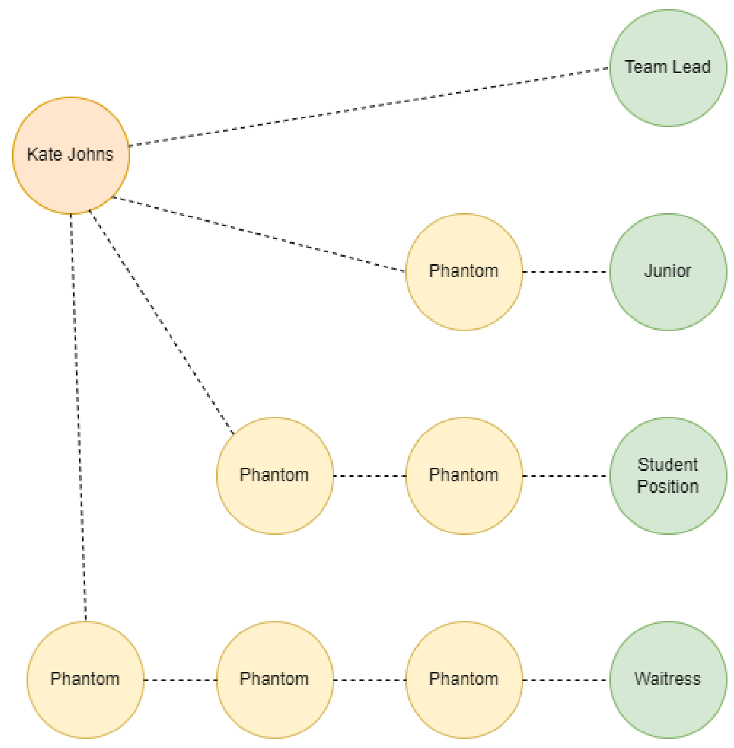
Let us concentrate on one person at a time...



Person is an aggregation of their skills and their experiences.

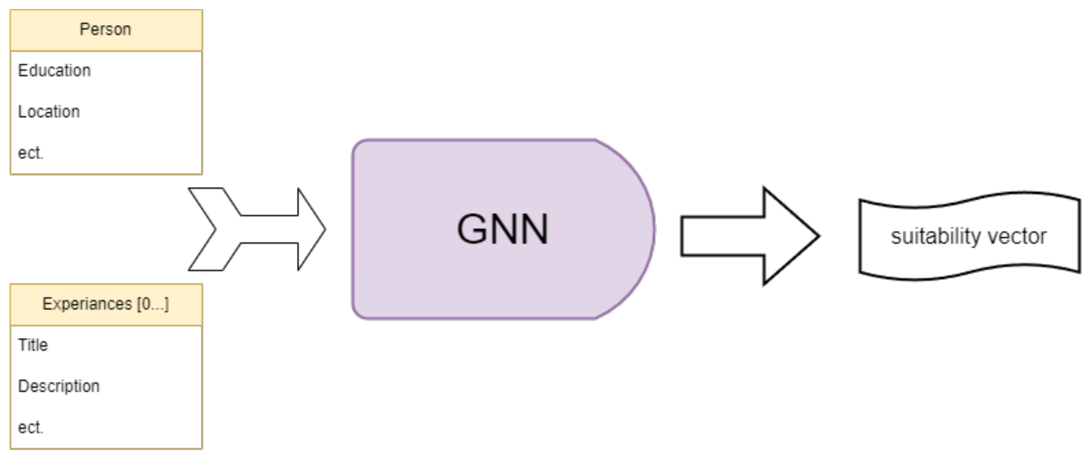
Priorities

But shouldn't we put greater stress on recent experiences?



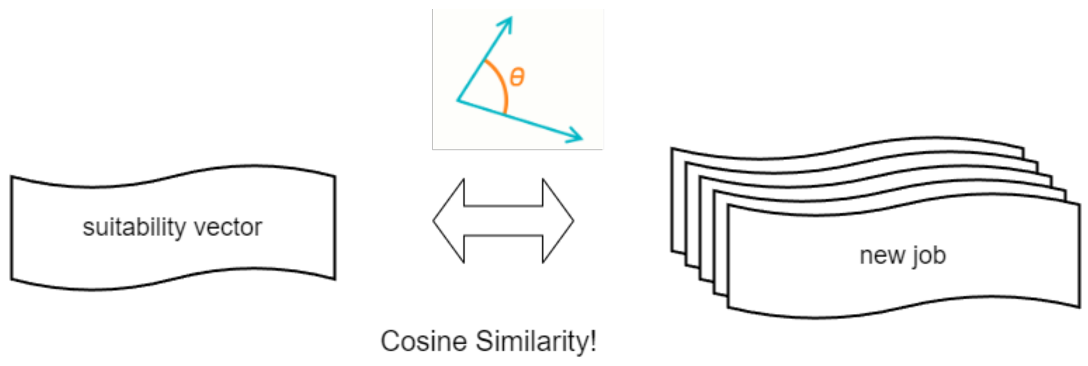
Add phantoms to slow down data propagation!

We get embedding vectors this way!



Similarity!

What remains is to find new posting most similar!



Happy Job Hunting!