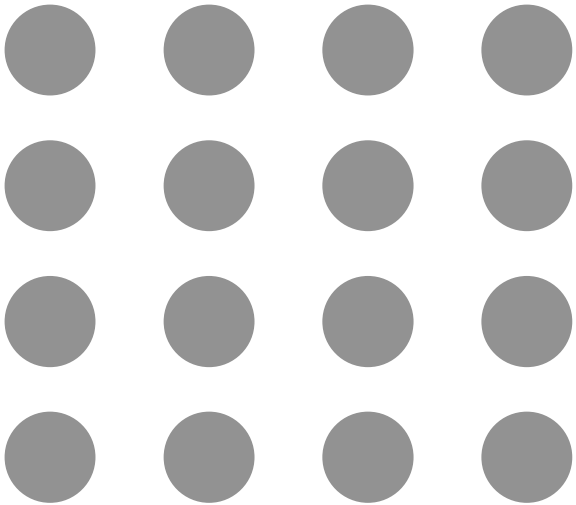
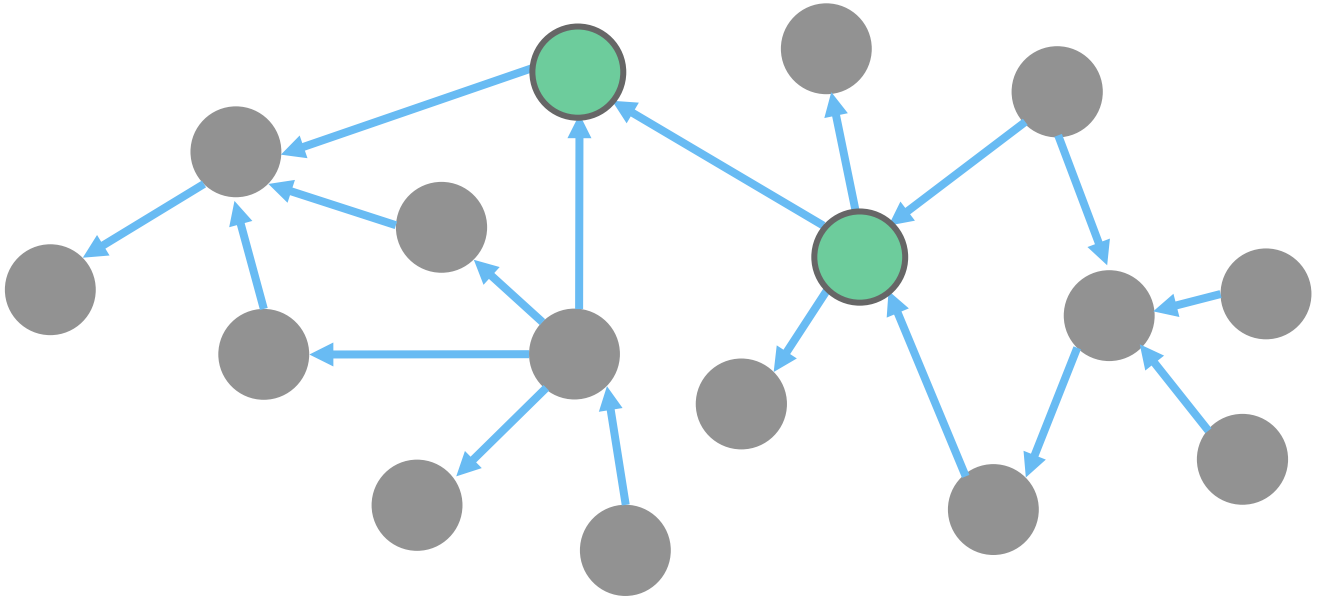
Neo4j for Graph Data Science™

Introduction

It’s Not What You Know



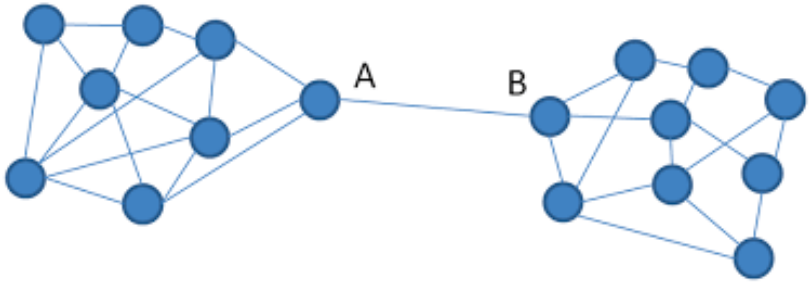
It’s Who You Know And Where They Are



Whose pay will increase the most?

Photo by Helena Lopes on Unsplash

Network Structure
is highly predictive of pay and promotions



- People Near Structural Holes
- Organizational Misfits

“Organizational Misfits and the Origins of Brokerage in Intrafirm Networks” A. Kleinbaum
“Structural Holes and Good Ideas” R. Burt

Relationships and Network Structure

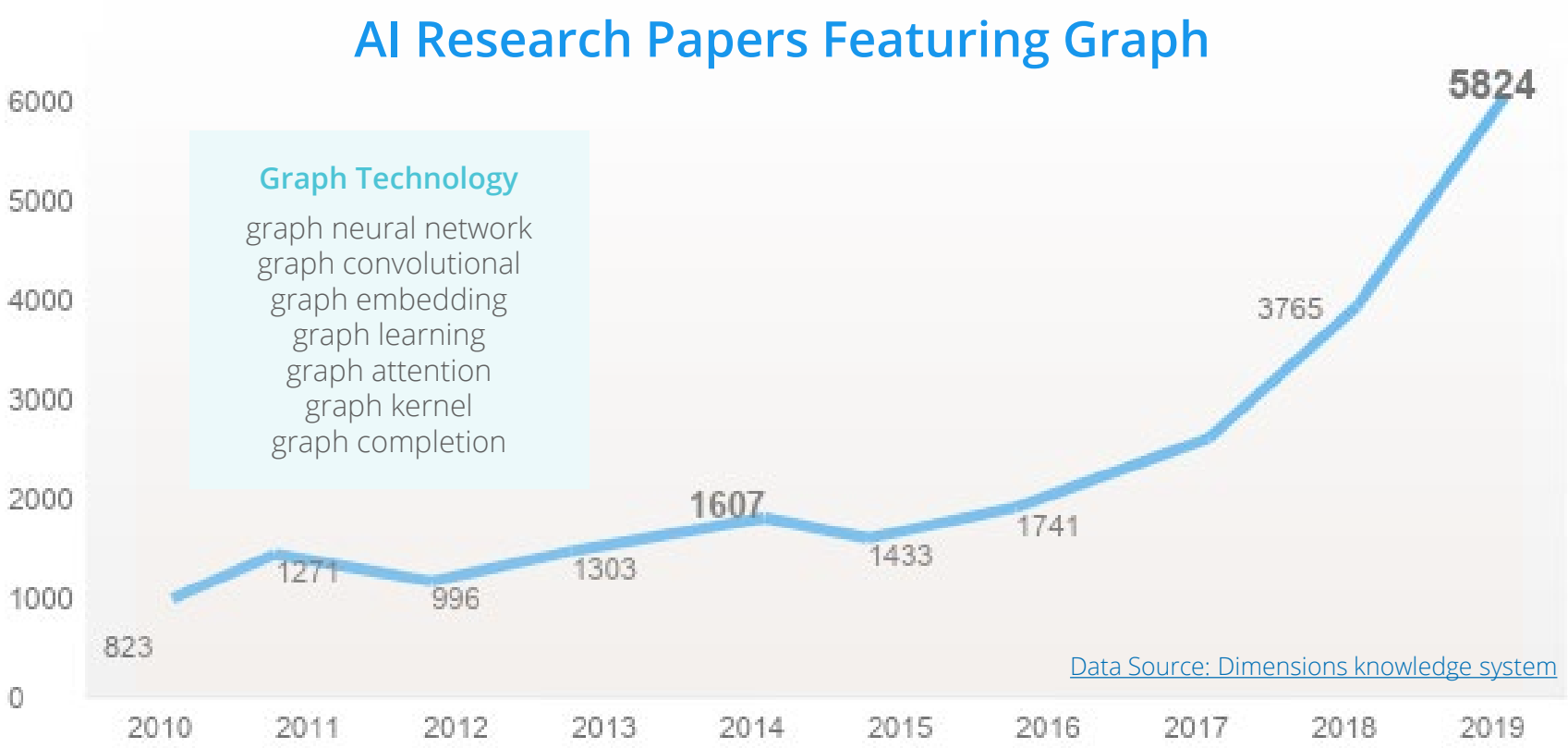
Strongest Predictors of Behavior & Complex Outcomes

"...**jumping from ladder to ladder** is a more effective strategy, and that lateral or even downward moves across an organization are more promising in the longer run . . ."

It’s a counter-intuitive notion

Which is why graph data science is so powerful

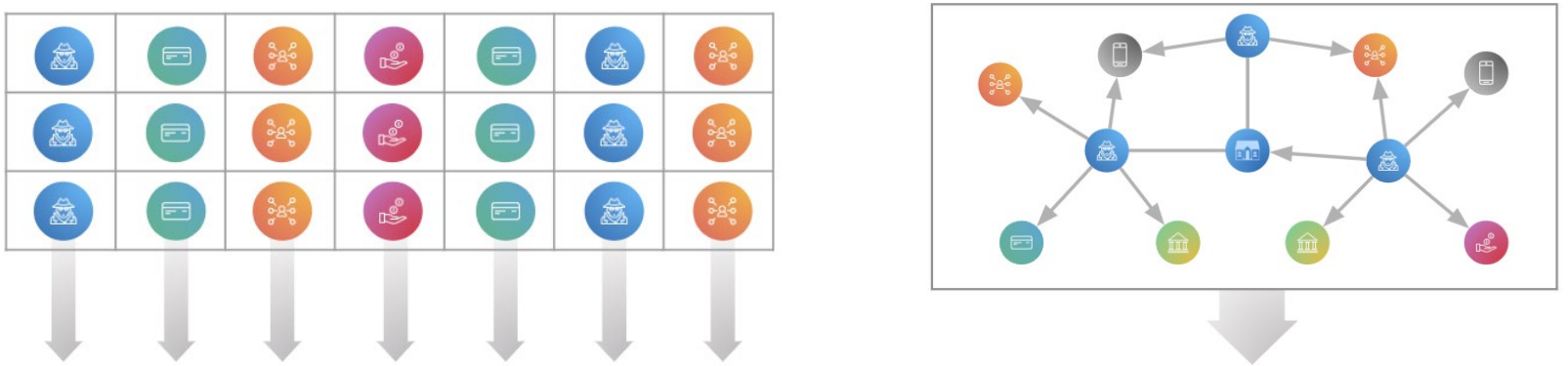
Graph Is Accelerating AI Innovation



Better Predictions with Graphs

Using the Data You Already Have

- Current data science models ignore network structure
- Graphs add highly predictive features to ML models, increasing accuracy
- Otherwise unattainable predictions based on relationships



Machine Learning Pipeline

Relationships and network structures are highly predictive and underutilized

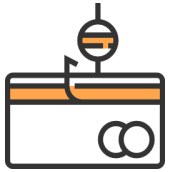
– and already in your data.

Graph are a natural way to store and use this predictive information, but different than what you're doing today.

Graph Data Science Applications

Just a few examples...

Fraud Detection



Disambiguation & Segmentation

Personalized Recommendations

Life Sciences

Churn Prediction

Search & Master Data Mgmt.

Predictive Maintenance

Cybersecurity

Top Graph Data Science Applications

in Financial Services and Banking

Fraud

Marketing

Customer Journey

- First party & synthetic identity fraud
- Fraud rings
- Money laundering
- Disambiguation
- Recommendations
- Customer segmentation
- Churn prediction

Top Graph Data Science Applications

in Healthcare and Life Sciences

Discovery

Patient Care

Regulatory Compliance

- Drug repurposing
- Knowledge graph completion
- Risk identification & spread
- Patient journey
- Personalized care
- Contact tracing

Top Graph Data Science Applications

in Marketing and Supply Chain

Market-To

Supply Chain

Logistics

- Disambiguation
- Recommendation
- Customer segmentation
- Logistics and routing
- Predictive fulfillment
- Risk identification

Improving Analytics, ML & AI Across Industries

AstraZeneca Patient Journeys

- Early intervention project with 3 yrs of visits, tests & diagnosis with 10's of Bn of records
- Finding similarities in patient journeys
- Graph algorithms for identifying communities & best intervention points

Meredith Marketing to the Anonymous

- Mostly anonymous users across devices and sites with ever changing cookies
- 4.4 TB: +14 Bn nodes +20Bn relationships
- +160 Mn rich, unique profiles created
- 612% Increase in visits per profile

Financial Fraud Detection & Recovery

Top 10 Bank

- Almost 70% of Credit Card fraud was missed
- Synthetic Identities were biggest challenge
- +1B Nodes and +1B Relationships to analyse
- Graph analytics with queries & algorithms help find $10's of millions of fraud in 1st year

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