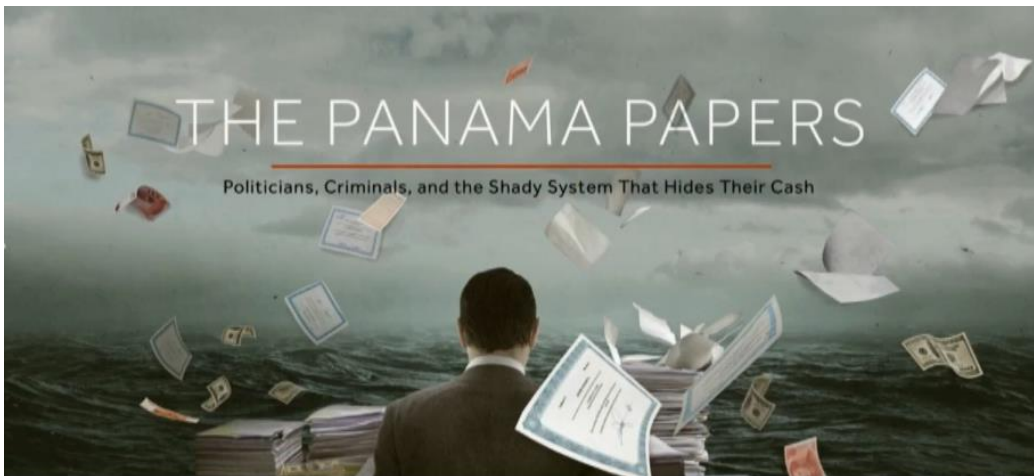# Graph databases: The best kept secret for effective AI
Emil Eifrem, Neo4j

Neo4j CEO explains why connected data is the key to more accurate, efficient and credible learning systems. Using real world use cases ranging from space engineering to investigative journalism, he will outline how a relationships-first approach adds context to data - the key to explainable, well-informed predictions.

ICIJ Pulitzer Price Winner 2017

NEWS

TECH

Russian trolls went on attack during key election moments

by Ben Popken / Feb.13.2018 / 11:04 PM ET


```
$ MATCH (t:Troll)-[:POSTED]->(tw:Tweet)  WHERE t.user_key IN ["ten_gop", "march_for_trump"] MATCH (tw)-[:HAS_TAG]-(ht:Hashtag) RETURN *
```

Common Graph Use Cases

Walmart — Real-Time Recommendations

Itaú — Fraud Detection

hp — Network & IT Operations

CISCO — Master Data Management

airbnb — Knowledge Graph

UBS — Identity & Access Management
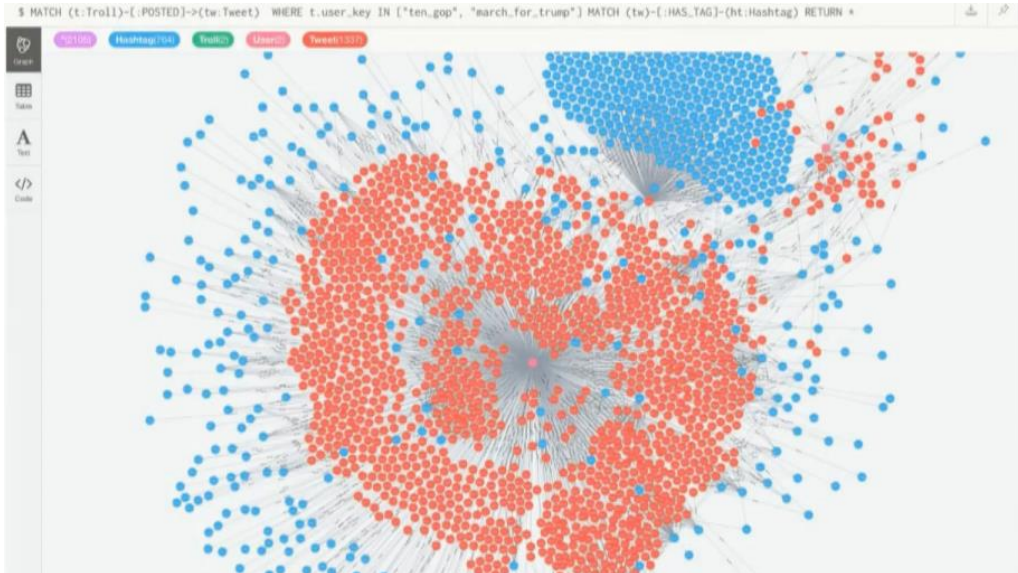
Real-time recommendations using customer purchase data for retailers.
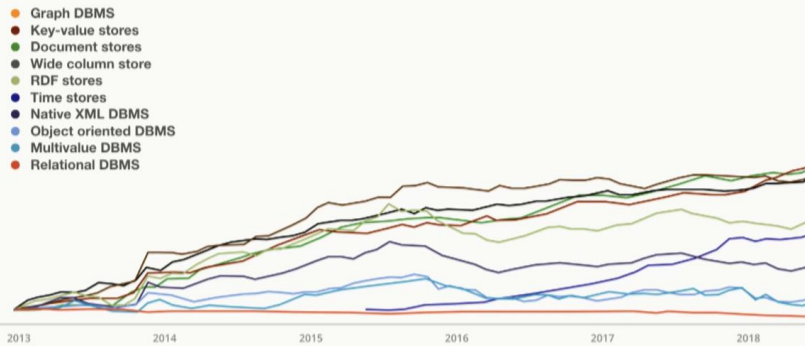
Popularity of Graphs
DB-engines Ranking of Database Categories

- Graph DBMS
- Key-value stores
- Document stores
- Wide column store
- RDF stores
- Time stores
- Native XML DBMS
- Object oriented DBMS
- Multivalue DBMS
- Relational DBMS

2013   2014   2015   2016   2017   2018

76%
FORTUNE 100
have adopted or piloted Neo4j

Finance — 20 of top 25

Software — 7 of top 10

Logistics — 3 of top 5

Retail — 7 of top 10

Airlines — 3 of top 5
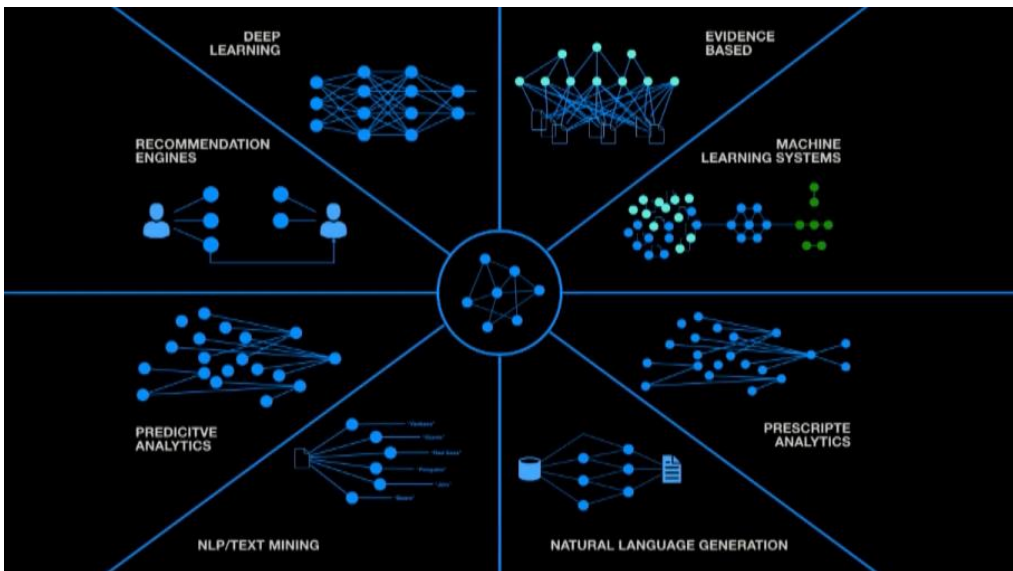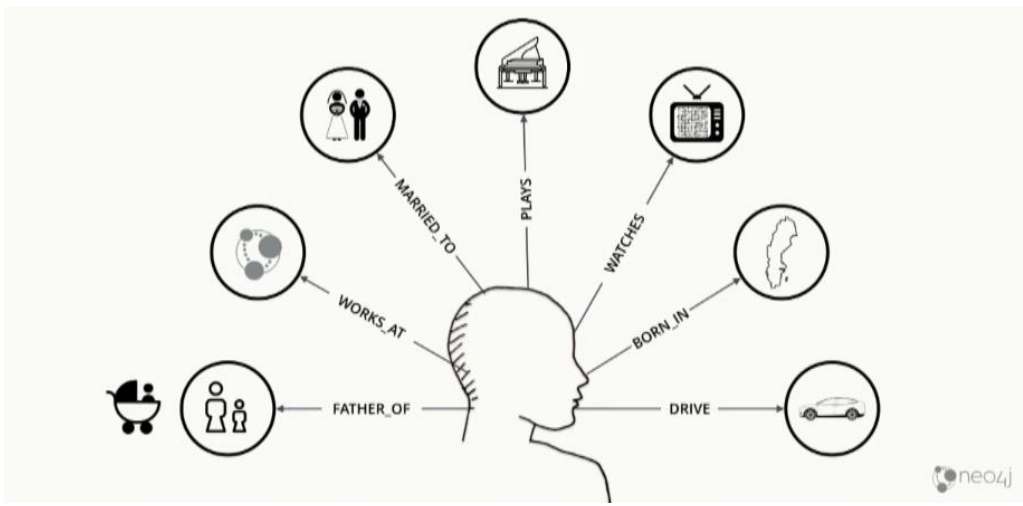
Telco — 4 of top 5

Hospitality — 3 of top 5

There are companies like Google, Paypal, AirBnB that have entered their market and reshaped them along graphs with connections between their data.

AI & Graphs

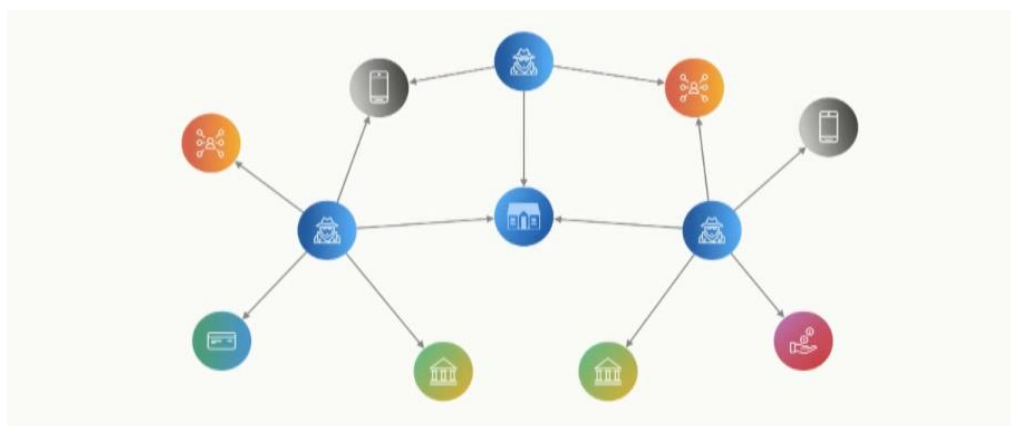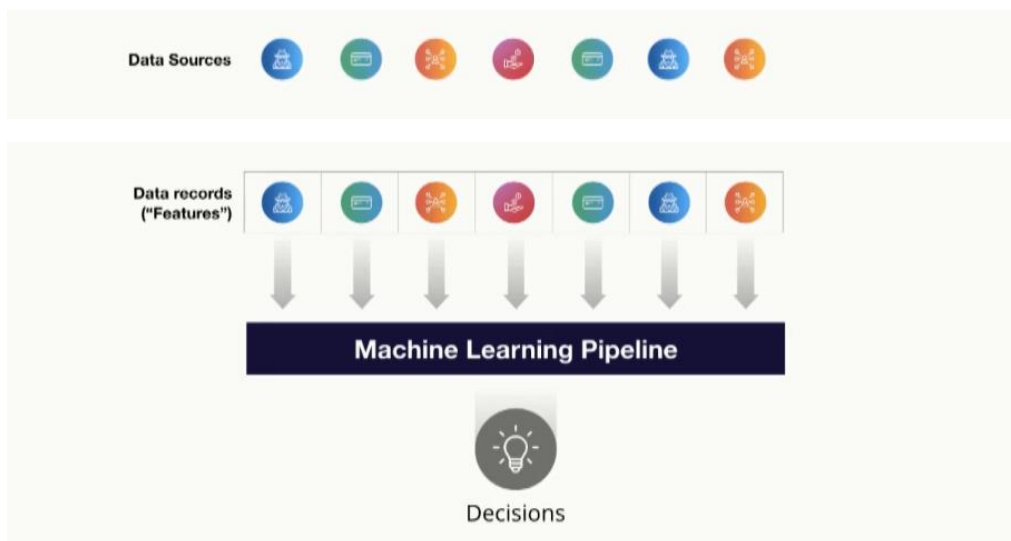These are the categories of A.I, they are all described as graphs with connections

Knowledge Graphs give you context about your data

But the real world looks like above, we need to train our ML models using connections for better predictions

"Increasingly we're learning that you can make **better predictions about people** by getting all the information from their **friends and their friends' friends** than you can from the **information you have about the person themselves**"
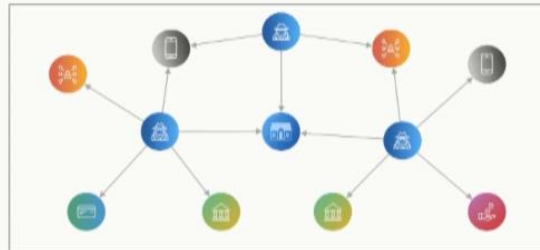
— Dr. James Fowler
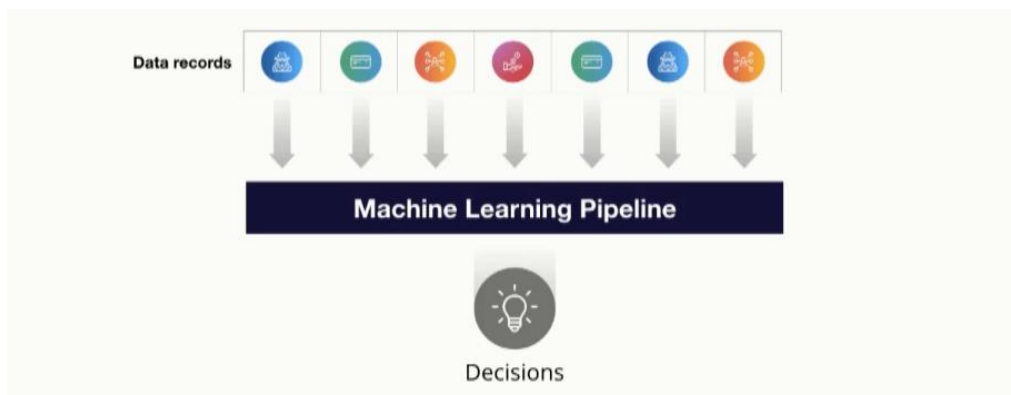
Feature Extraction
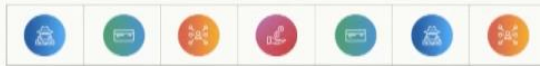
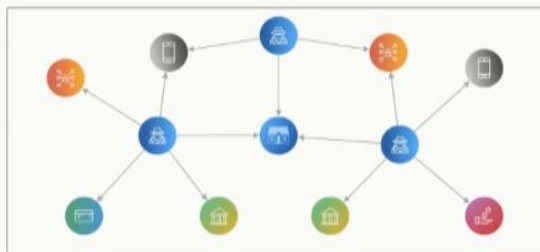We need to change from the above

Machine Learning Pipeline

Better Decisions

Connected Feature Extraction

Four Pillars of Graph-Enhanced AI

1. Knowledge Graphs
Context for Decisions

2. Connected Feature Extraction
Context for Accuracy

3. Graph Accelerated AI
Context for Efficiency

4. AI Explainability
Context for Credibility

http://neo4j.com