

AI and Big Data Drive Fin-tech Innovation

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凡普金科 (原普惠金融)

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Who am I ?

- ★ Passionate engineer & hacker;
- ★ 6+ yrs of experience in ML & AI; i.e. Deep learning,
- ★ 10+ referred publications from top venue;
- ★ Education at USC, U of Amsterdam, TAMU etc;
- ★ Worked in USA, Hong Kong, now in China;
- ★ Currently, head of data science team ;

About Finup Group



- ★ Fin-tech company;
- ★ Founded in July 2013;
- ★ \$50m funding in Dec 2014;
- ★ 6000+ employees;
- ★ 130+ offline stores national-wide;



Outline

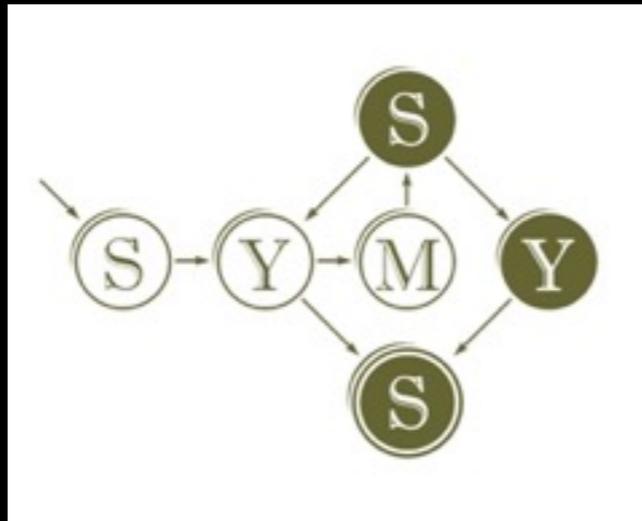
About AI

How AI helps detect fraud

How AI helps analyse financial data

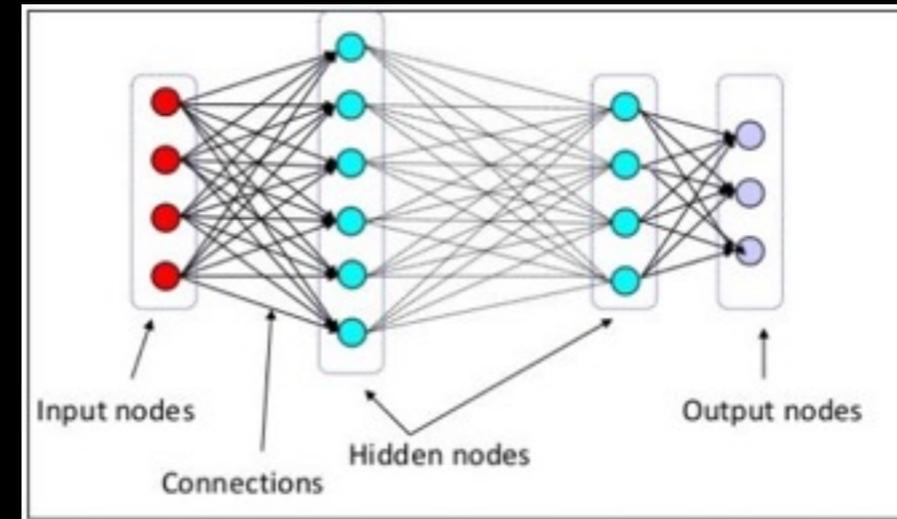
Two important branches of AI

Symbolic



VS

Connectionist

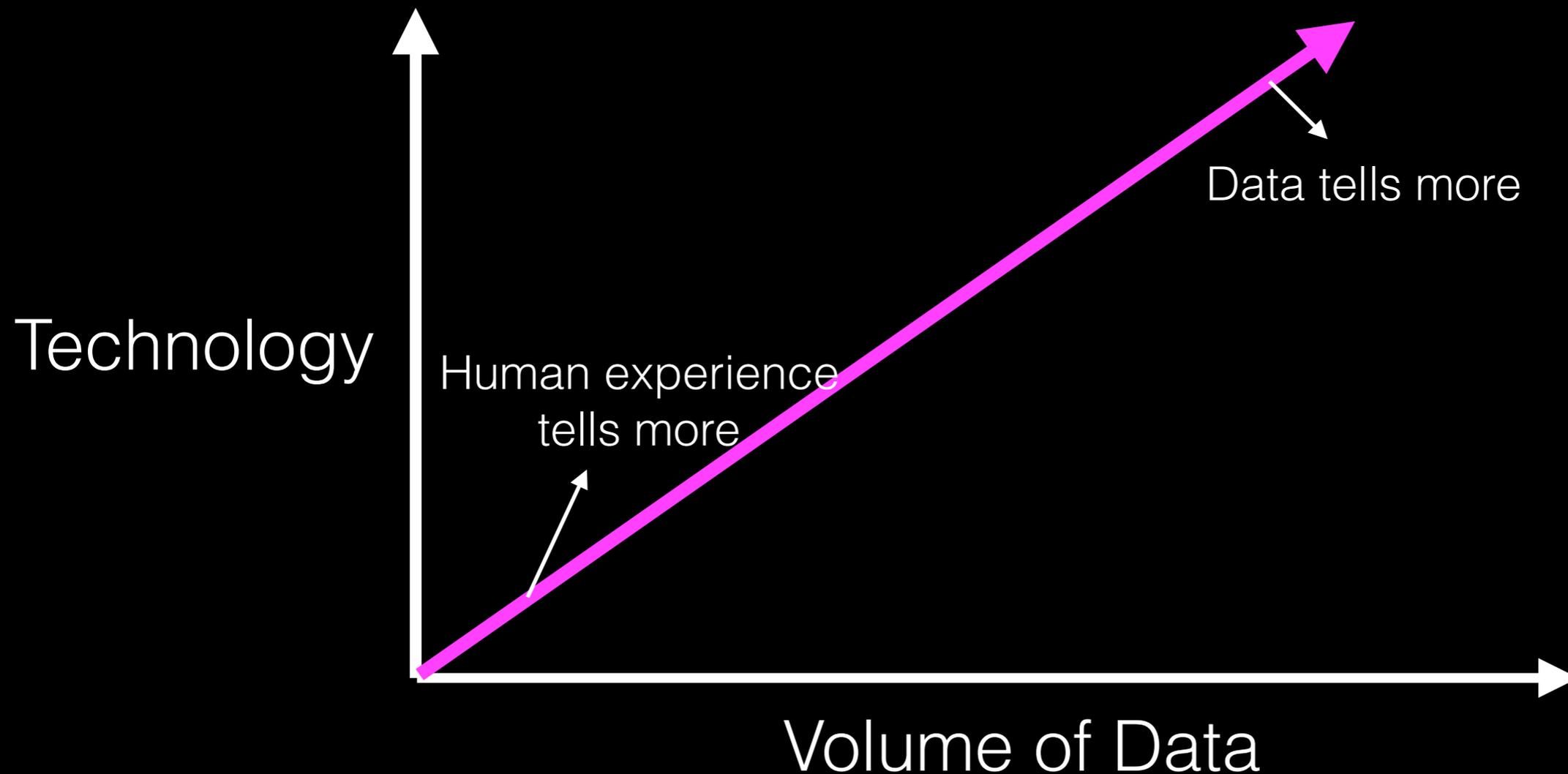


Rule-based

Probabilistic

What AI implies

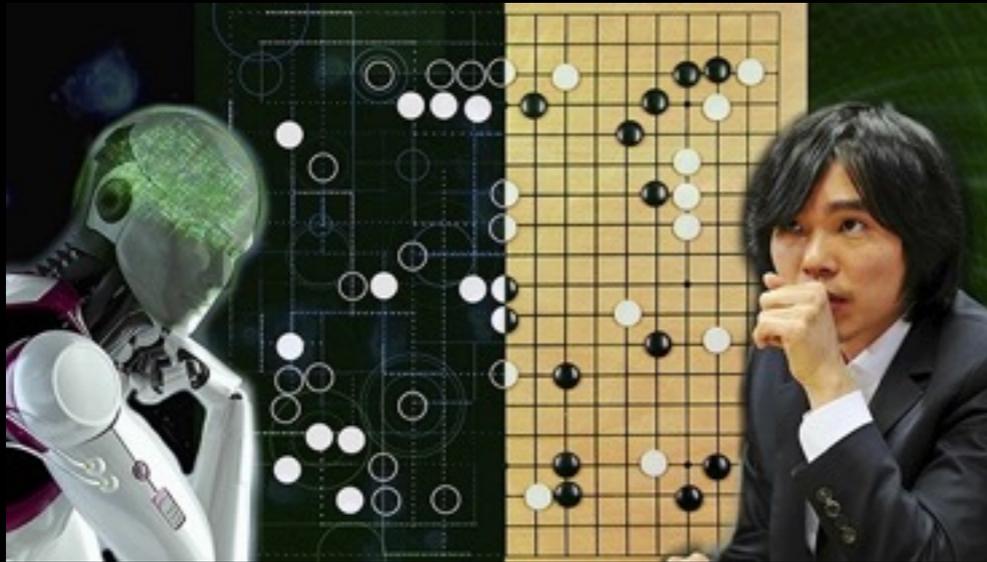
Use less prior experience, let data helps make a decision



| Thinking in AI

- ★ Re-think of product design
- ★ Re-think of system design
- ★

Artificial Intelligence



- ★ Machine Learning
- ★ Deep Learning
- ★ Computer Vision
- ★ Speech Recognition
- ★ Natural Language Processing

Applications in Fin-tech



- ★ Fraud Detection, Risk Model
- ★ Intelligent Debt Collection
- ★ Precision Marketing
- ★ Recommendation
- ★ Chatbot
- ★ Financial text analysis

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Challenges of fraud detection

- ★ Very Complex
- ★ Volatile
- ★ Group Fraud
- ★ ...

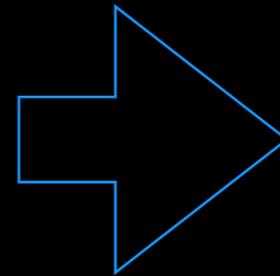
Simple cross check has limited power

Fraud detection using Graph Analytic Techniques

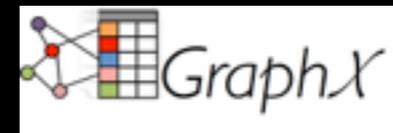
We hope to get deep understanding among connections, to find hidden risk factors



Billions of nodes and edges

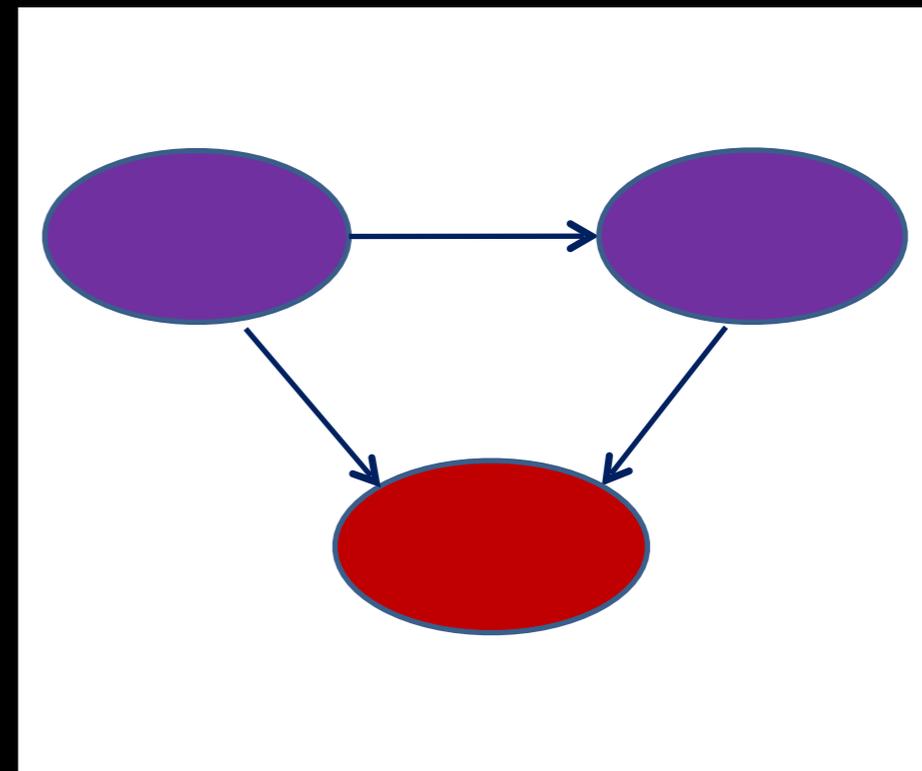
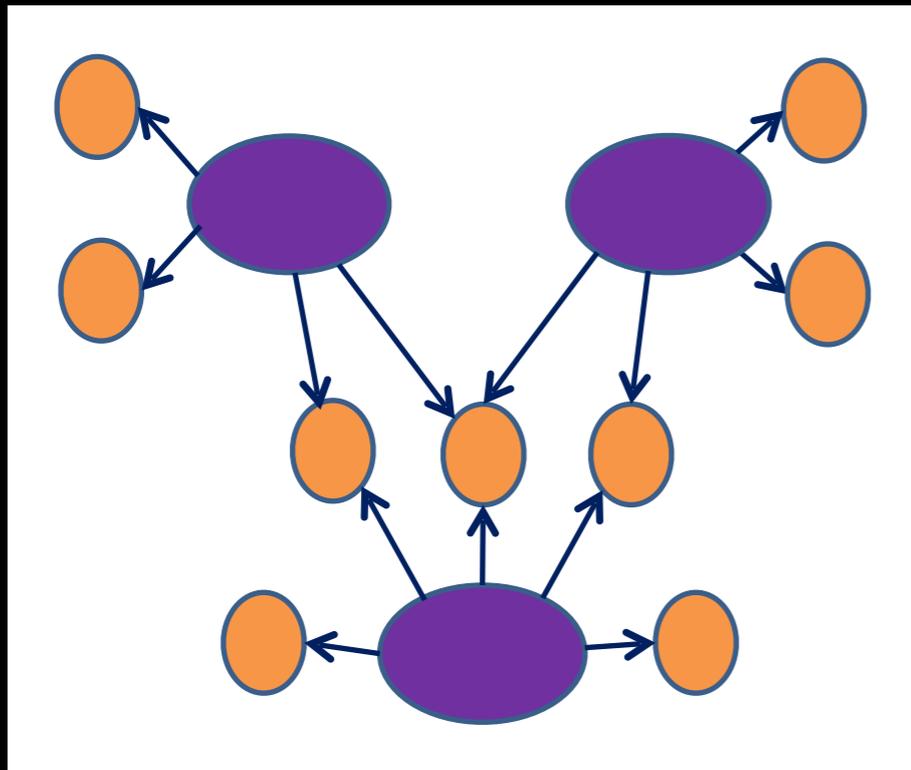


- ★ Semantic Network
- ★ NLP
- ★ Graph Analytics
- ★ Graph Database
- ★ Machine Learning
- ★ Logical Inference



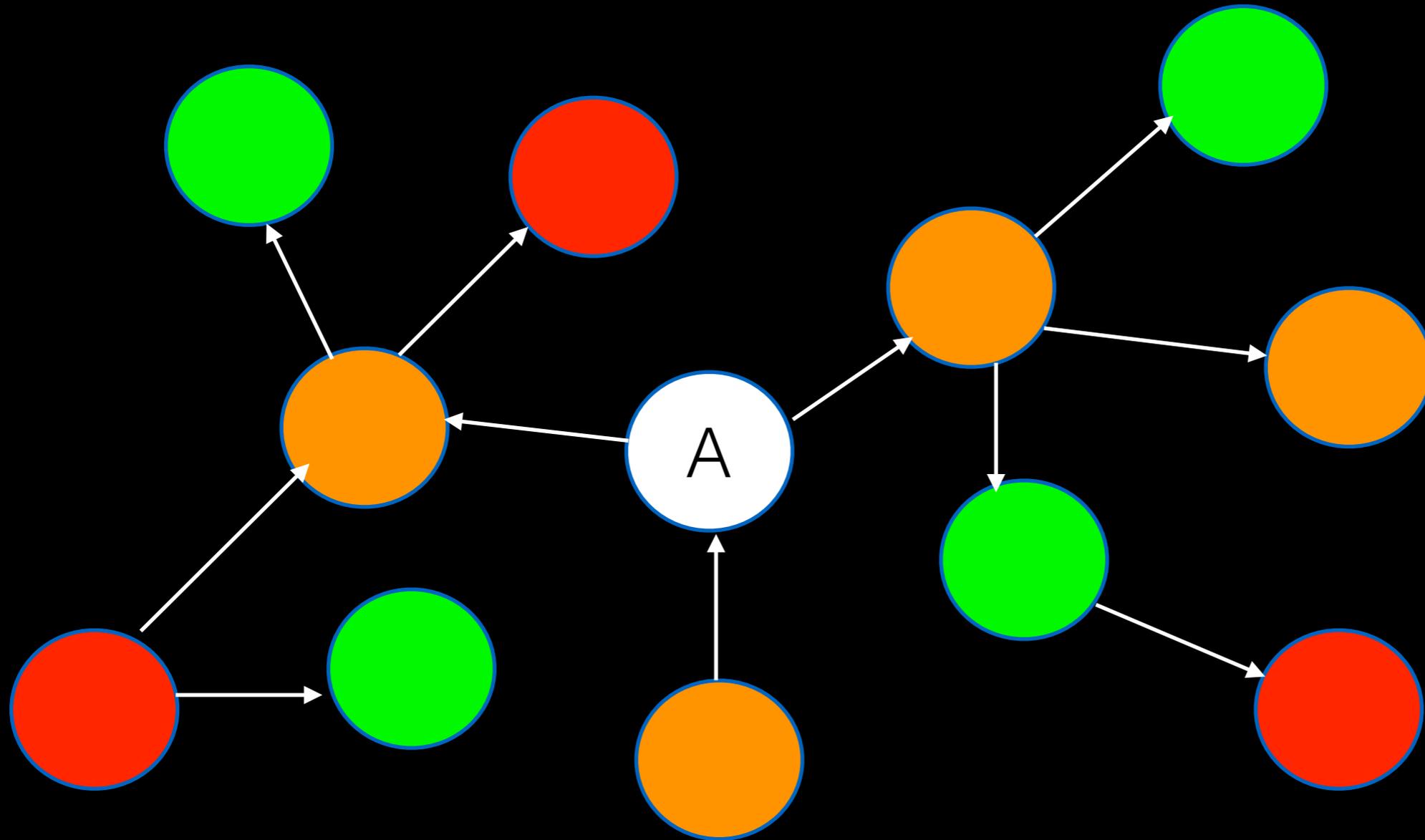
Simple Case - Rule based

We want to detect patterns like this...



Useful when we lack of samples

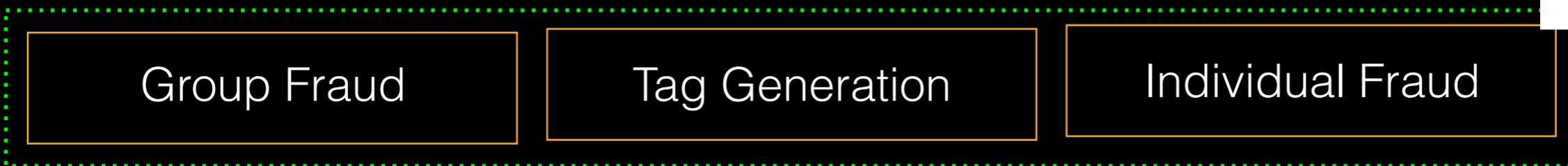
Advanced Case - Probabilistic



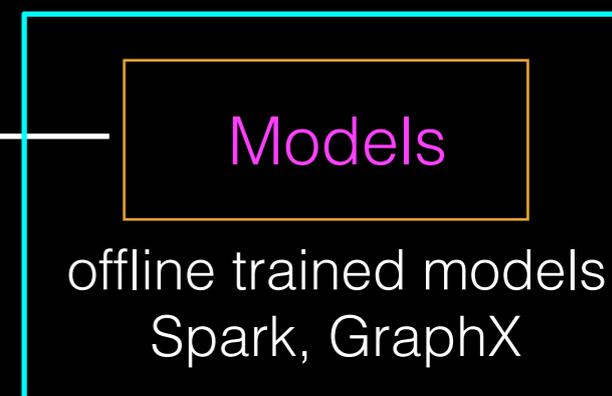
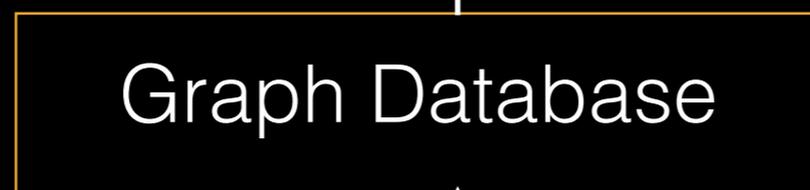
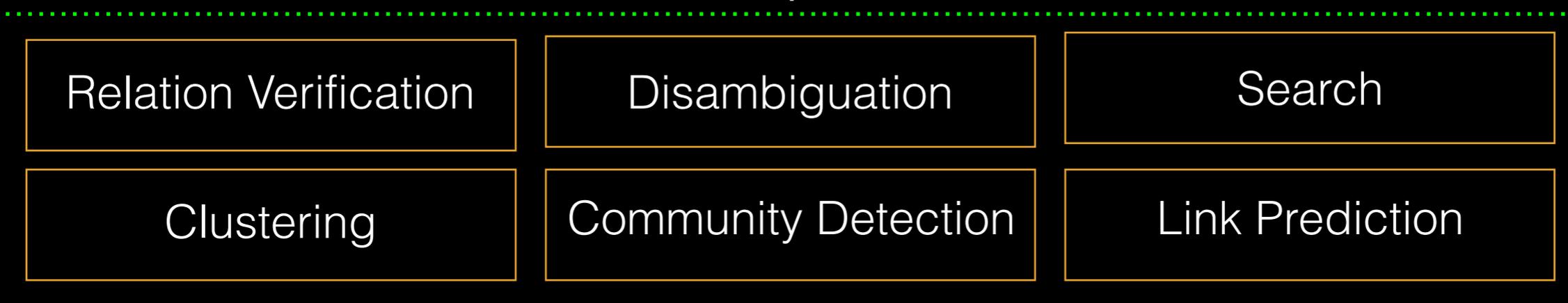
What is the probability of node A is fraud?
 $p(A=\text{fraud} | f(A), \text{nei}(A), \text{conn}(A))$

Deep Learning

online services



Graph Algorithms



Stream Processing

Entity&Relation Extraction



Looking Ahead

symbolic

Human expert (simple cross check
+ KG enabled deep cross check)
+ graph learning algorithm +
logical inference

Human expert (simple cross
check)

Deep Learning enabled
Probabilistic classification without
any human expert

Human expert (simple cross check
+ KG enabled deep cross check)



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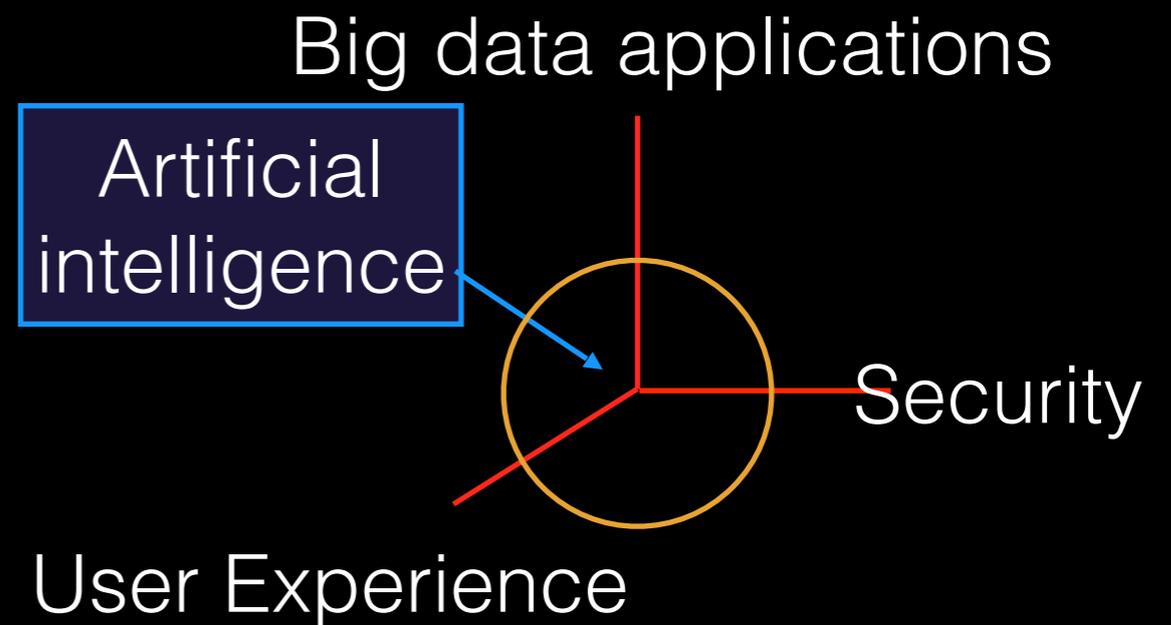
Digital Consulting

Directions

- ★ Intelligent Search&Analytics
- ★ Social Investment
- ★ Topical Investment
- ★ Quant Strategy
- ★ Robot-advisor

Mining large scale of unstructured data to find valuable information by using AI and big data techniques. Providing search, prediction and recommendation services

from 36氪研究报告



Intelligent Search & Analytics

services

Prediction (i.e stock)

Financial bot

Event Analysis

Sentiment/Trend Analysis

Recommendation (i.e. security, news)

Models

Financial Knowledge Graph

Time Series Analysis

Deep Learning

Machine Learning

Semantic Analysis

Processing

Dependency Parsing

Summary of Statistics

Correlation Analysis

Entity Extraction

POS

NER

Disambiguation

Data

Trading Data

Forum

News

Weibo..

...

i.e. Prediction (stock)



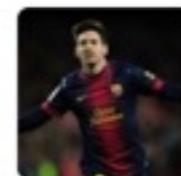
wechat: huiniutangu



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FINUP

让金融有温度

谢谢!



文哲

美国



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