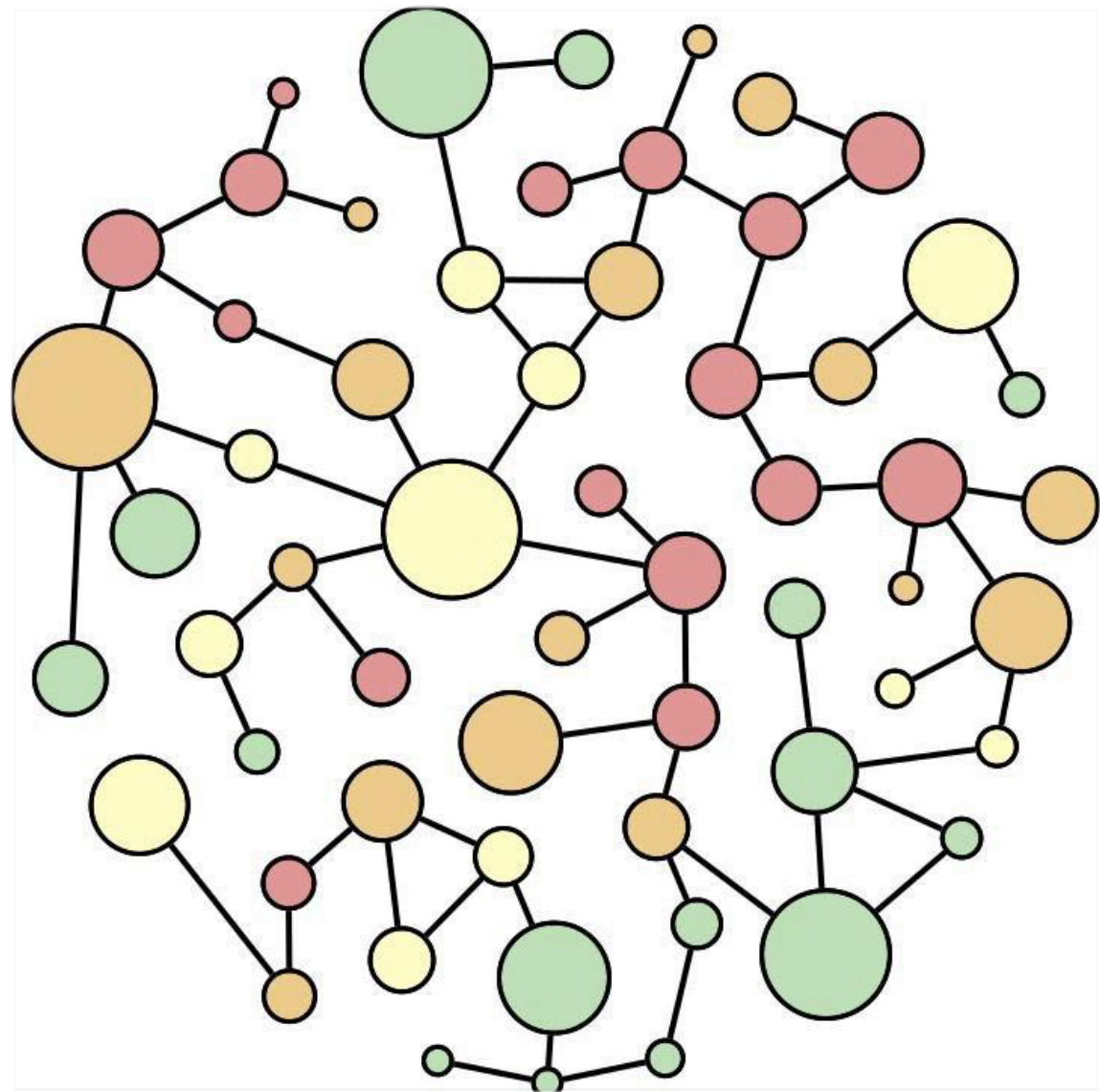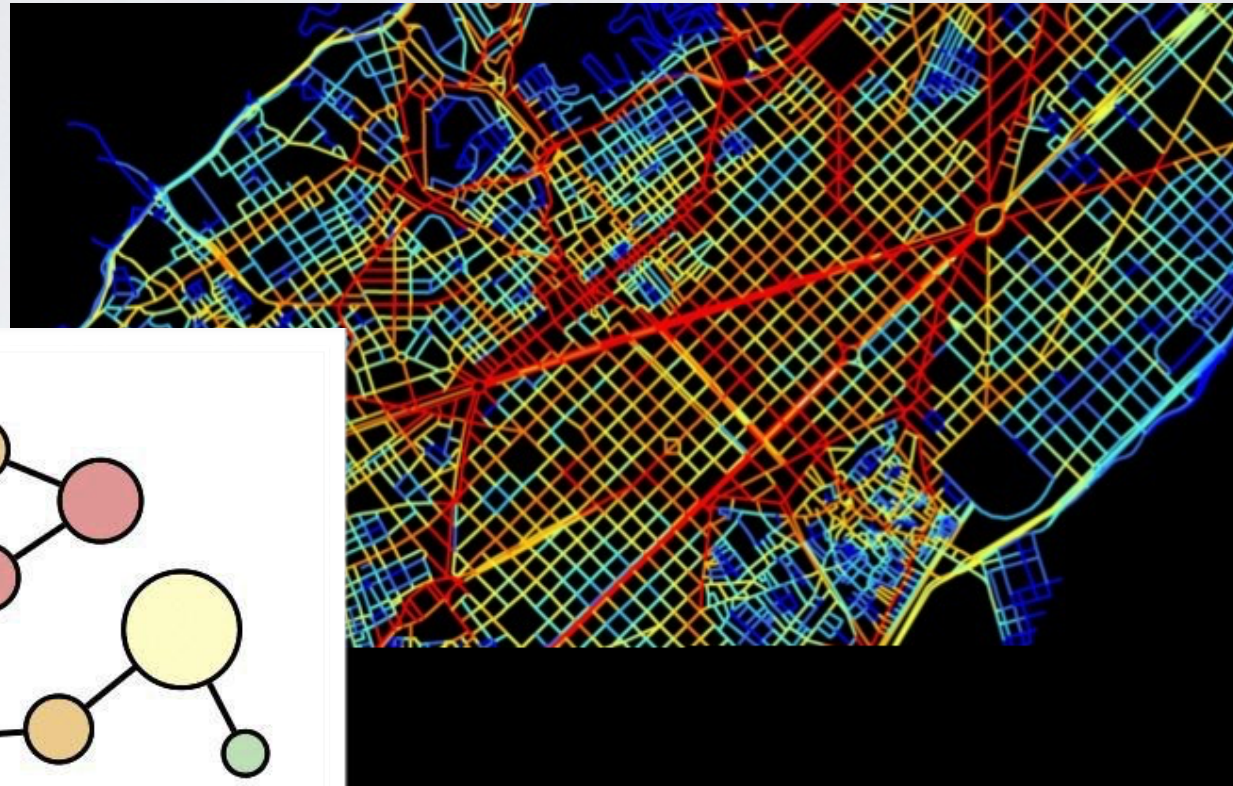# GRAPH EMBEDDING

An introduction

DISCLAIMER

- I'm not an expert in Graph embedding !

- It is "my" vision:
  ‣ Someone from "Network Science"
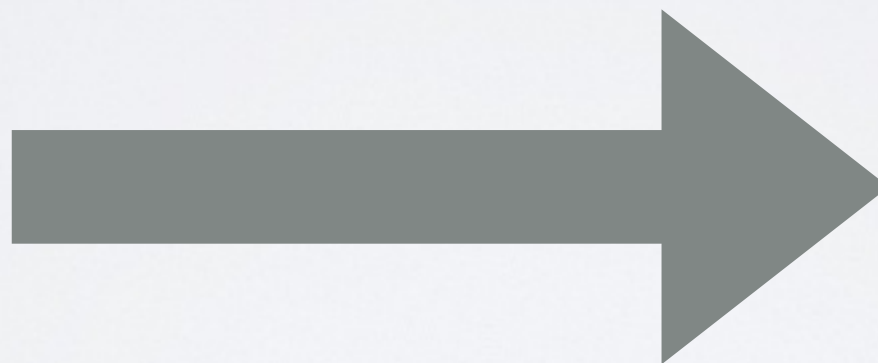 ‣ Who see Graph Embedding arriving from the Machine Learning Community

WHAT IS
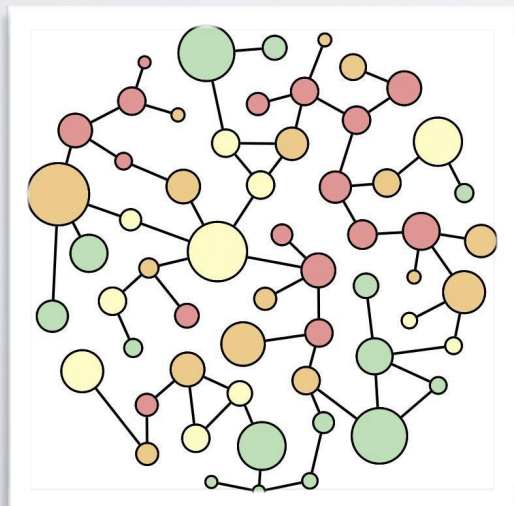# GRAPH EMBEDDING ?

GRAPHS / NETWORKS

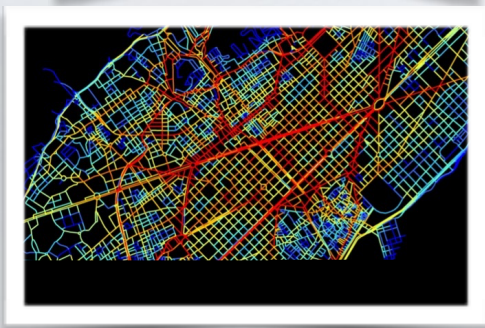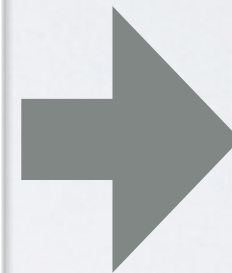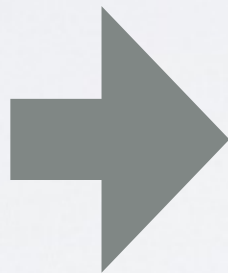# GRAPHS / NETWORKS

Ad Hoc
Network Algorithms

Link prediction
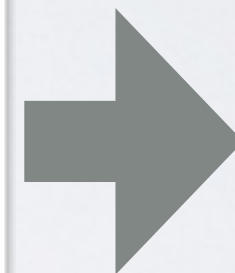
Community detection
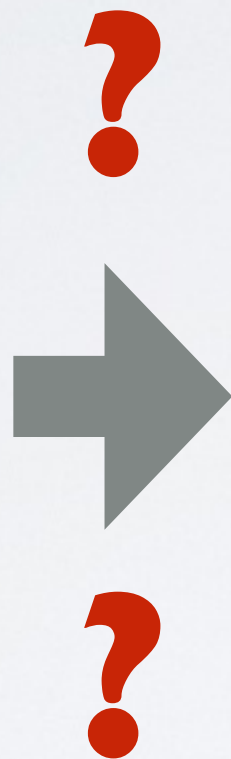
Graph reconstruction

Node classification

…

MACHINE LEARNING
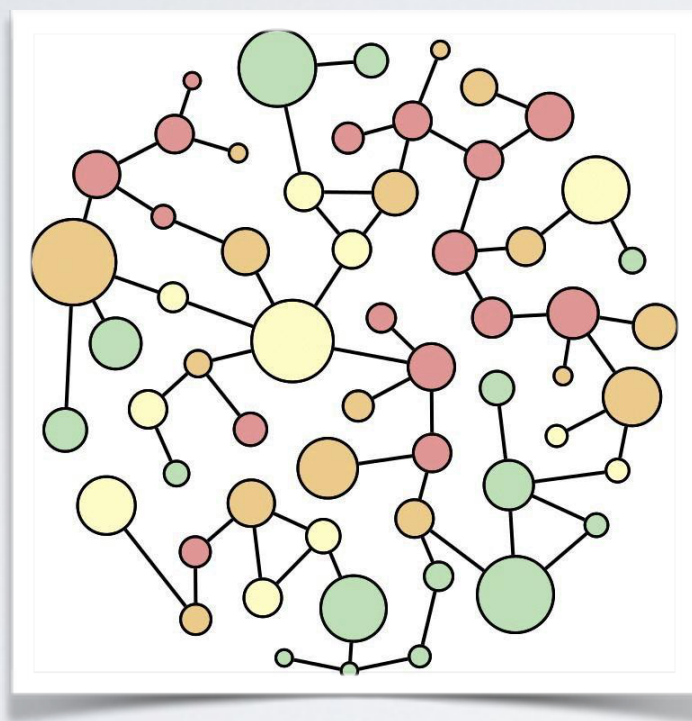
Features as vectors
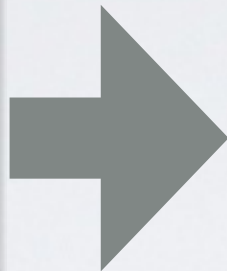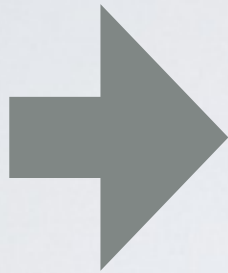

Prediction

Classification

Clustering

…

Prediction

Classification

Clustering

…

Graph embedding
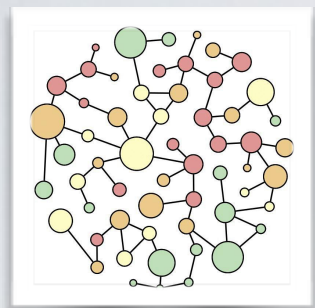
Graph embedding

Machine Learning
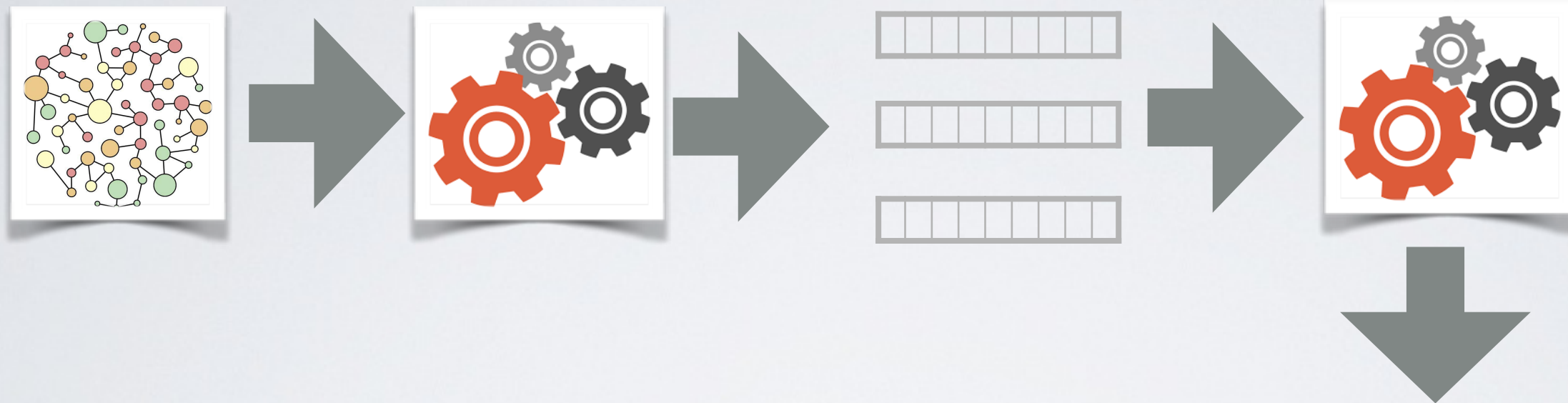
Link prediction
Graph reconstruction = Prediction

Community detection = Clustering

Node classification = Classification

...

...

WHY DOES GRAPH EMBEDDING MATTERS ?

WORD EMBEDDING
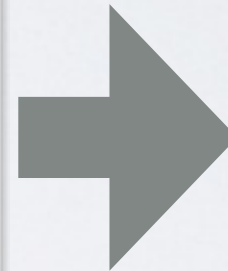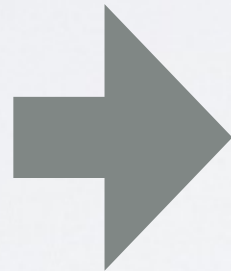
WORD EMBEDDING

Word2vec, Skipgram, …

GRAPH EMBEDDING

- Word embedding: a revolution in Natural Language Processing

- Graph embedding: a revolution in Network Science/Graph Analysis?

- How to do it?

- How well does it works?

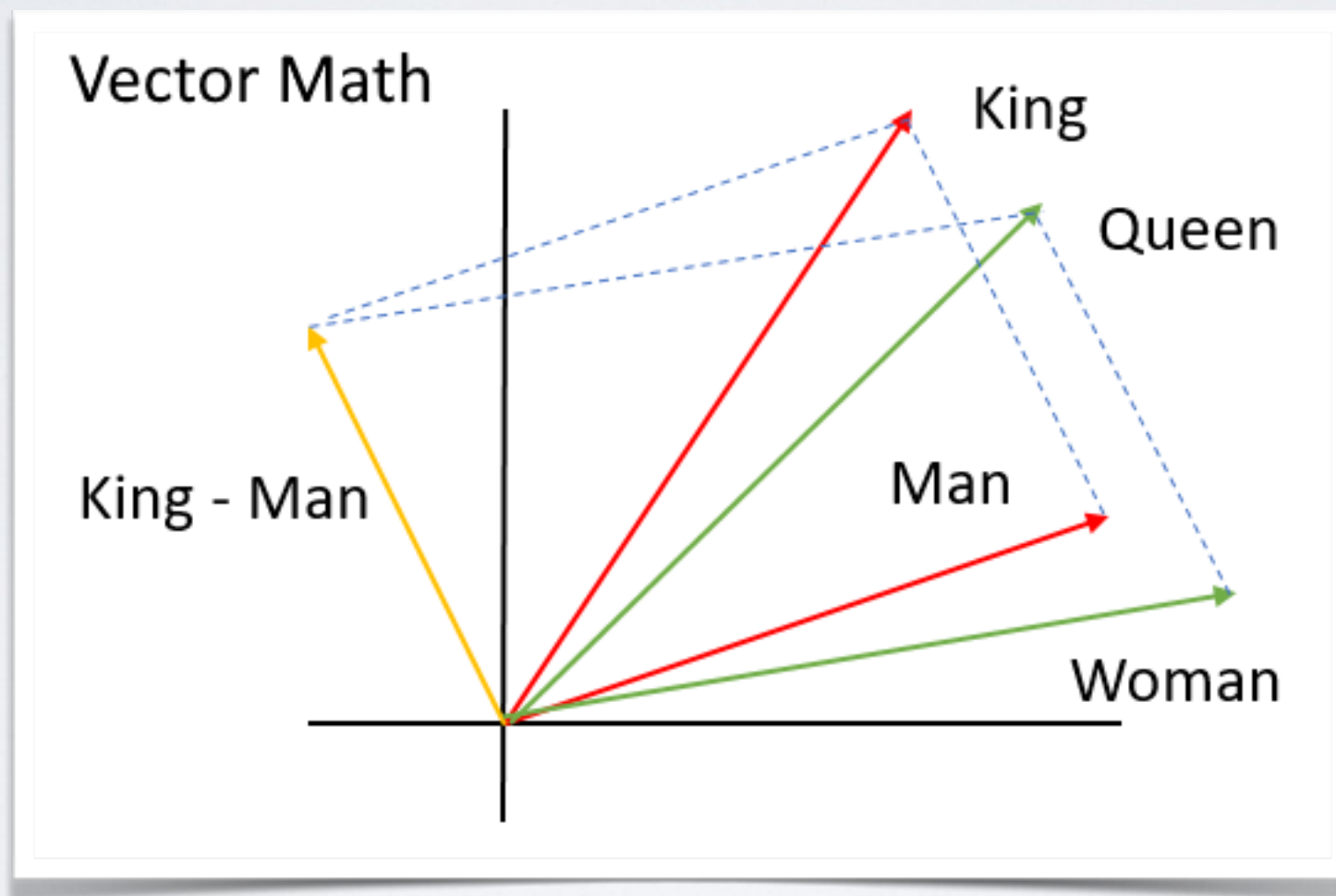| Schedule	Speaker	Title
9:00 9:30		Welcome - Breakfast
9:30 9:45	Organizers	Introduction
9:45 10:45	Fatemeh Salehi Rizi Universität Passau	Exploiting Graph Embeddings for Graph Analysis Tasks
10:45 11:00		Coffee break
11:00 12:00	Aleksandar Bojchevski Technical University of Munich	Uncertainty and Robustness of Graph Embeddings
12:00 12:30	Rémi Vaudaine Université de Lyon (LHC)	What network properties are really captured by graph embeddings?
12:30 13:30		Lunch
13:30 14:30	Anton Tsitsulin Hasso Plattner Institut, Universität Potsdam	Similarities and representations of graphs
14:30 15:00	Sébastien Lerique Université de Lyon (LIP/INRIA)	Joint graph-feature embeddings using GCAEs
15:00 15:30	Sandra Mitrovic (Visio) KU Leuven	Graph Embeddings in Practice: A Telco Churn Prediction Use Case
15:30 16:00		Coffee break
16:00 16:30	Robin Brochier Université de Lyon (ERIC)	Global Vectors for Text-Enhanced Networks
16:30 17:30	Benjamin Piwowarski CNRS (LIP6/Sorbonne Universités)	Gaussian Embeddings for Relational Data
17:30 18:00	Rémy Cazabet Université de Lyon (LIRIS)	On link prection and graph embedding