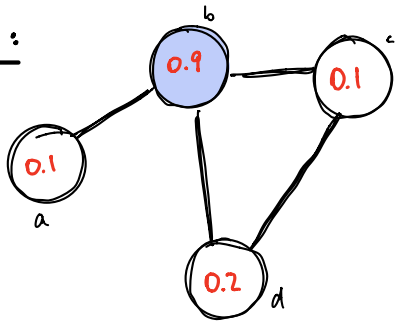
Graphs:



fraud probability

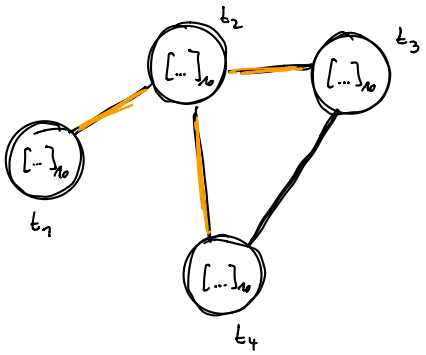
Message Passing / Label Propagation:

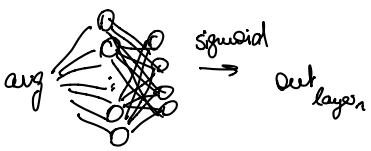
	a	b	c	d
a	0	1	0	0
b	1	0	1	1
c	0	1	0	1
d	0	1	1	0

$$\begin{pmatrix} 0.1 \\ 0.9 \\ 0.1 \\ 0.2 \end{pmatrix} = \begin{pmatrix} 0.9 \\ 0.4 \\ 1.1 \\ 1.0 \end{pmatrix}$$

S A New A

Graph Convolutional Neural Networks:



1. Collect neighbors embeddings
2. Aggregate embeddings (e.g. average)
3. Pass to NN → 

   ↳ one weight matrix per layer
   only one weight matrix for all nodes (shared matrix W)

Relational Graph Neural Networks

Tripples: (src, dst, type) e.g.: People follows
Tweets retweeted

Multiple weight matrices:
- each type its own matrix
- Self connection gets seperate weight matrix