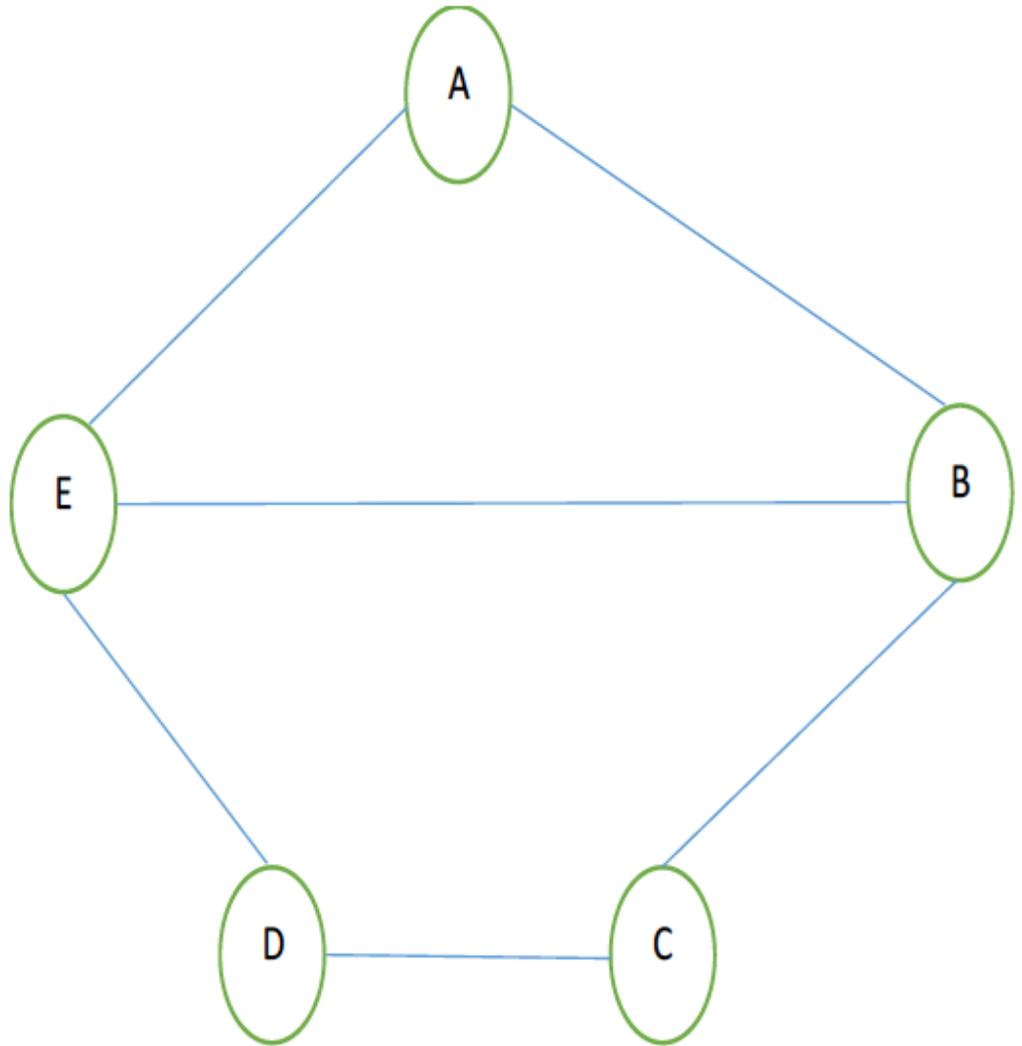


Bipartite Networks (A Primer)

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One-mode
network



Types of Networks

One-mode
networks: one
type of node

Bipartite
(two-mode)
networks: two
types of nodes

Edges only
connect nodes
from different
groups

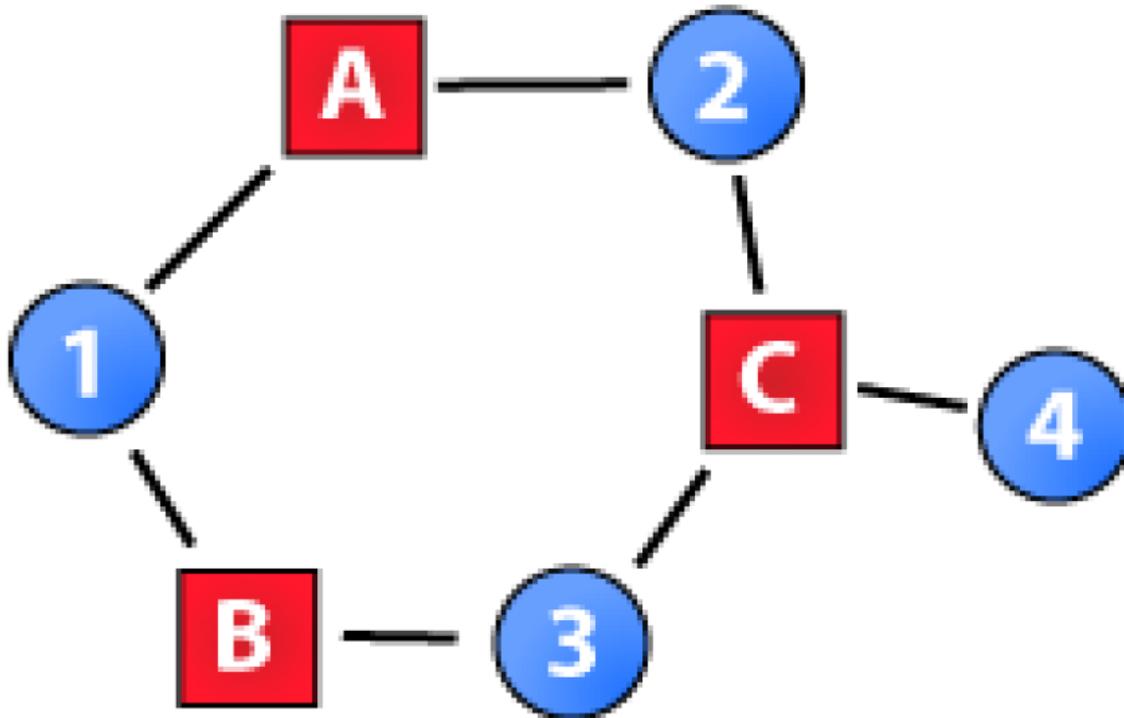
Definition of Bipartite Network

Nodes are divided
into two distinct sets

Links occur only
between the two sets

No connections
within the same set

Bipartite (two-mode) network



Example: Students and Courses

Students \rightarrow Courses

- Student A \rightarrow Math

- Student B \rightarrow Physics

- Student C \rightarrow Math,
Chemistry

Other
Real-World
Examples

Authors – Papers

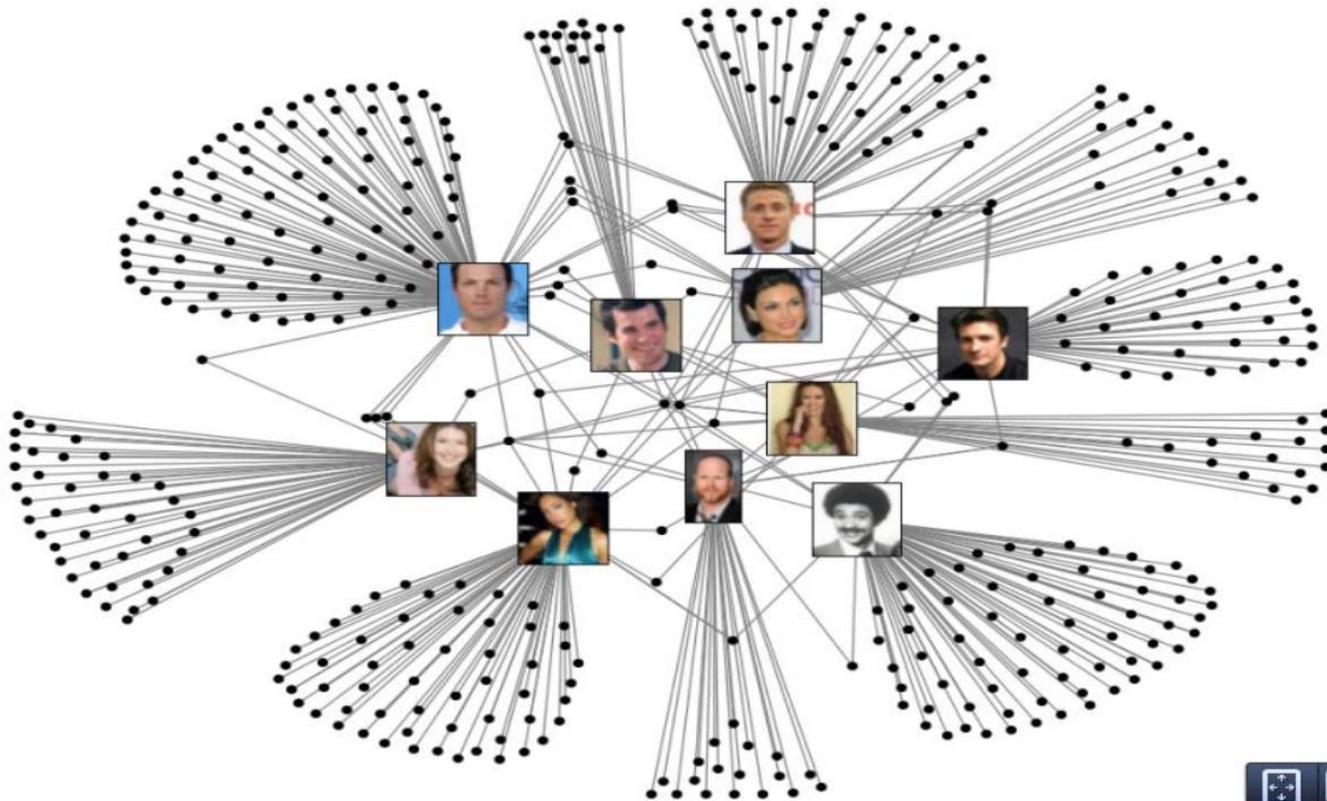
Actors – Movies

Users – Products

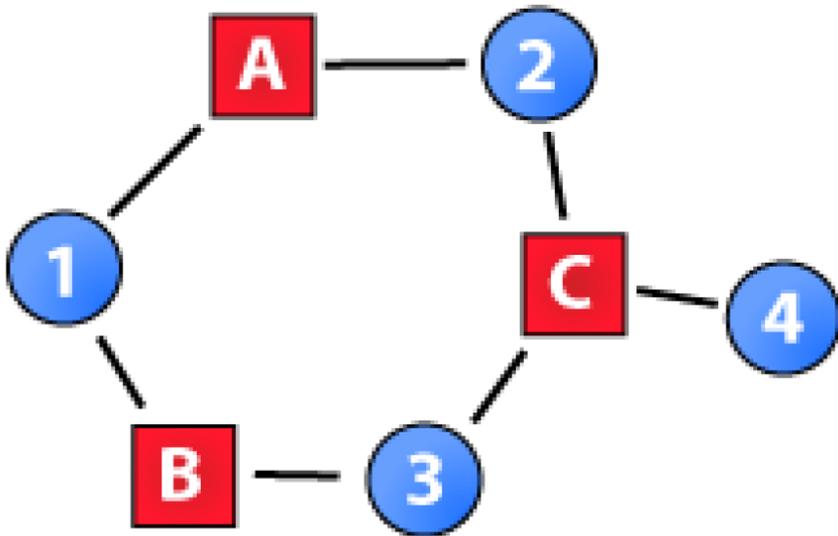
Patients – Doctors

Real example

Between actors and movies



Data structure of bipartite network



	1	2	3	4	A	B	C
1					1	1	0
2					1	0	1
3					0	1	1
4					0	0	1
A	1	1	0	0			
B	1	0	1	0			
C	0	1	1	1			

Why Bipartite Networks Matter

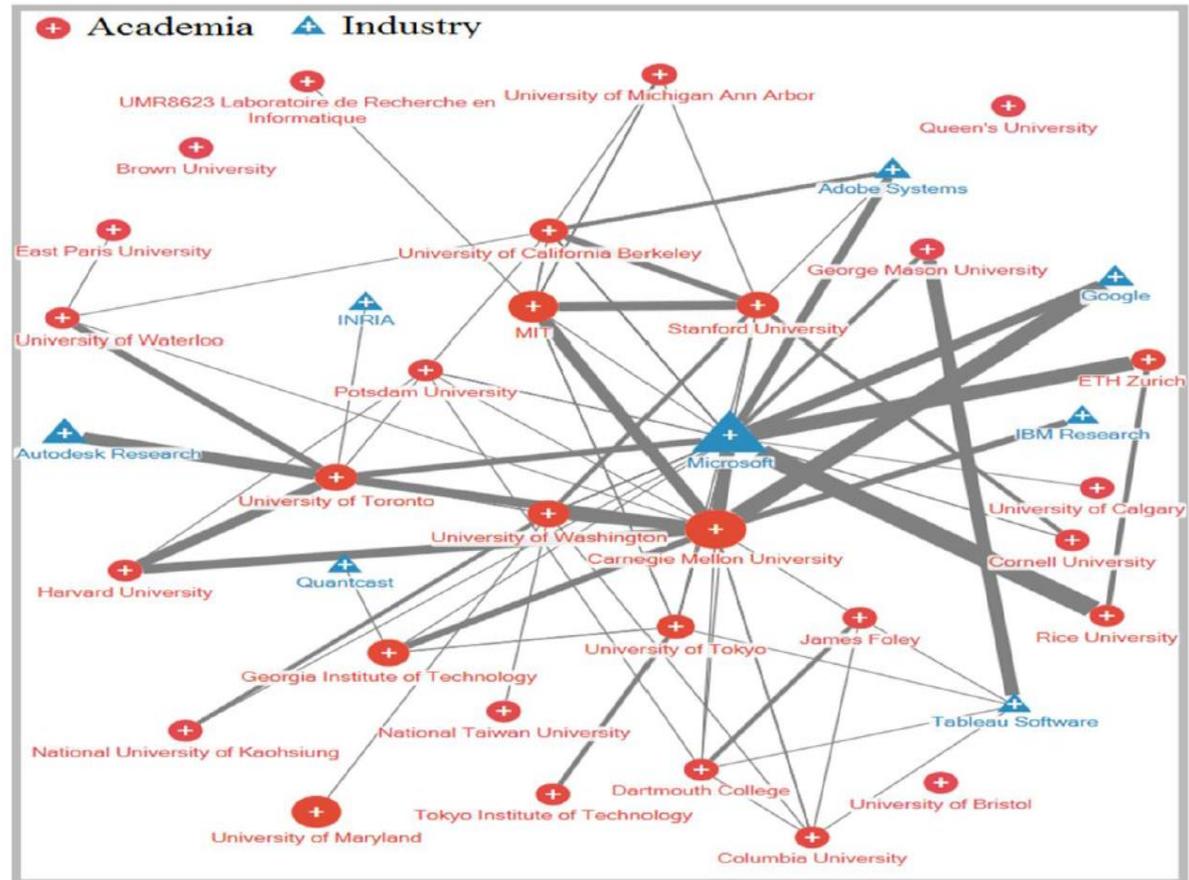
Represent affiliation relationships

Help analyze participation and collaboration

Useful in recommendation systems

Application of bipartite network: Between Universities and Companies in R & D

Application



Summary

Bipartite networks
contain two node sets

Edges only connect
across groups

Widely used in many
research fields