

# Identifying Human Faces

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# Identity Tags by Humans

- Objective: Tag each human face with his/her identity



- Challenge: Laborious if many photos



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- Solution: Mechanical Turk, CAPTCHA, etc.

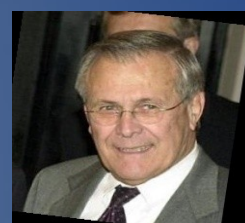


- Challenge: The labelers don't know the people

# Proposed Solution

- Who's who without names...

- Person A:

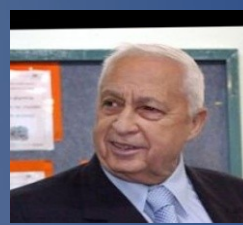


- Person B:



- For social networking applications, obtaining name maps (A, Donald Rumsfeld), (B, Ariel Sharon), etc. is not difficult and not tedious.

# User Input (Pairwise Equivalence)

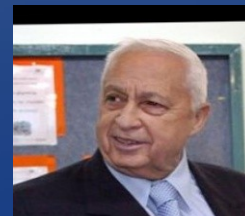
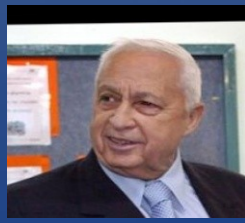


- User Input I: 1, 2, 2, 1, 3

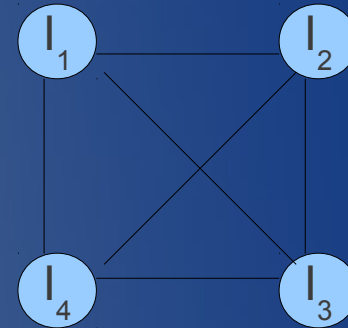
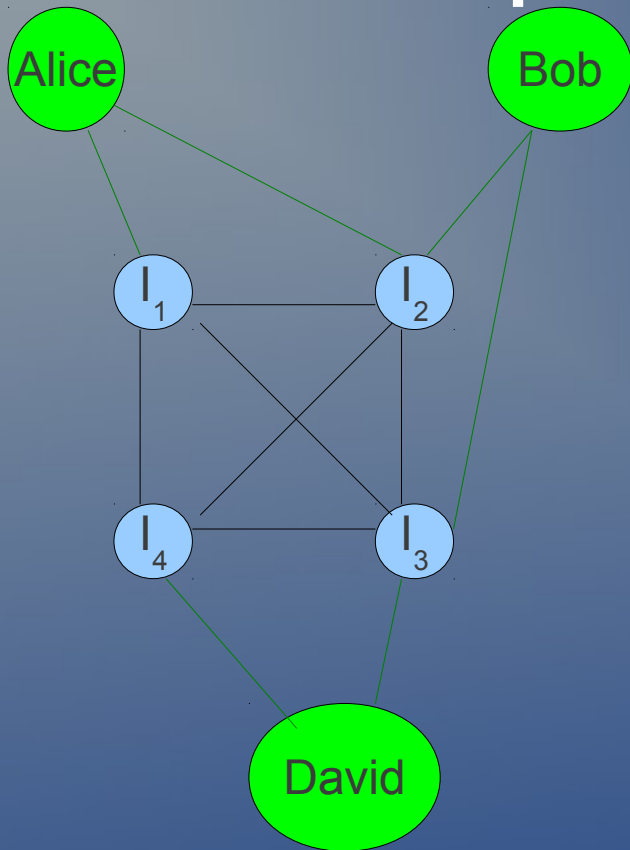


- User Input II: 1, 2, 3, 2, 3

# User Input



# Graph Cut vs Multicut



- Given green nodes
- Remove edges to disconnect green nodes

- Given: Specified pairs. Ex, (I<sub>1</sub>, I<sub>3</sub>), (I<sub>1</sub>, I<sub>2</sub>)
- Remove edges so each pair is disconnected

# Graph Cut vs Multicut

- Boykov, et al (2001)
- Optimality factor: 2
- Tree: Can be solved exactly.
- Vazirani (1996)
- Optimality factor:  $\log(k)$ .  $k$  is number of pairs.
- Hard even for trees of height 1 and unit caps (Vazirani, 1996)

