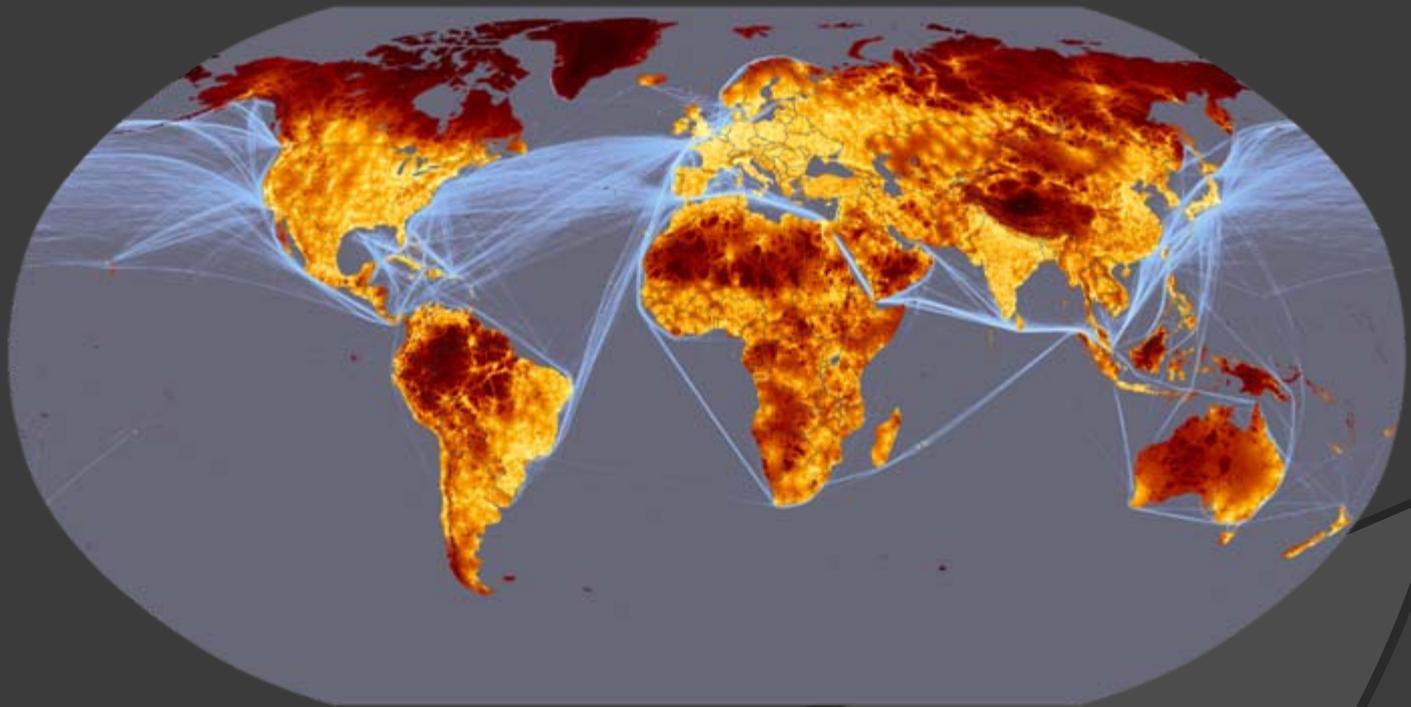


Reality Mining and Health Science

Alex Pentland, MIT



The **Sociometric** Badge captures interactions with others

- Proximity
- Location
- Face-to-face interactions
- Social signals
- NOT words



Technology Review Top 10
Emerging Technologies

Sociometric
Solutions
Organizations for Humans

FunF Open Sensor Platform

Location, motion, proximity,
comms, audio, etc



Surveys

Email and Web



Apps

Google, Qualcomm, Motorola,
Samsung, P&G, Best Buy
And World Economic Forum

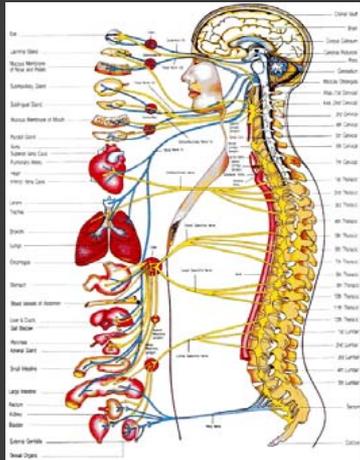


Purchasing
Behavior

Ahrony, Pan, Pentland

Honest Signals In Social Species

INTEREST

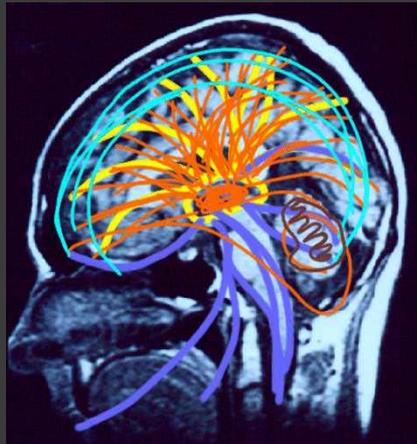


autonomic



ACTIVITY

ATTENTION

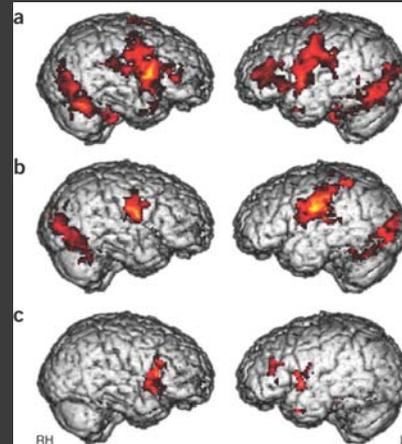


thalamic attention



INFLUENCE

EMPATHY

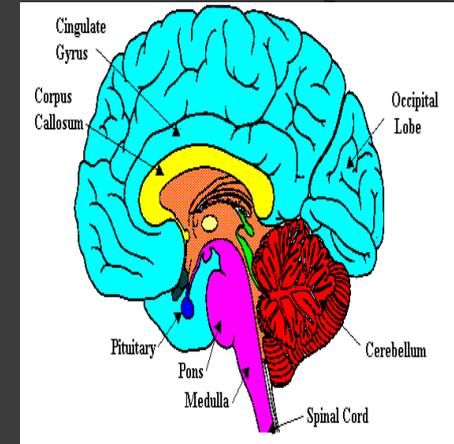


mirror neurons



MIMICRY

ACTION

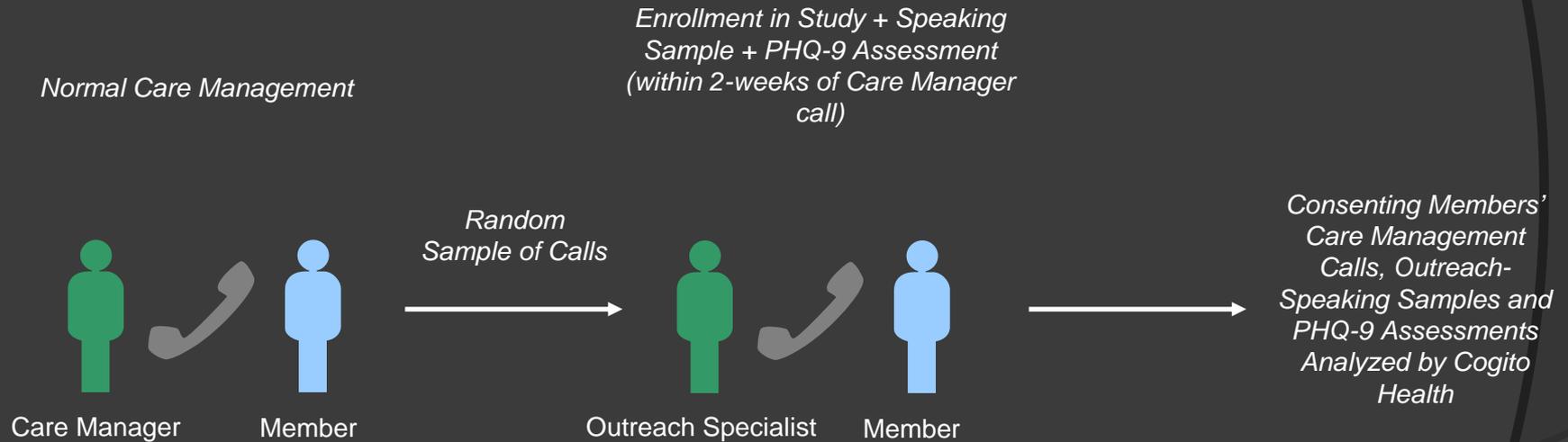


cerebellar motor



CONSISTENCY

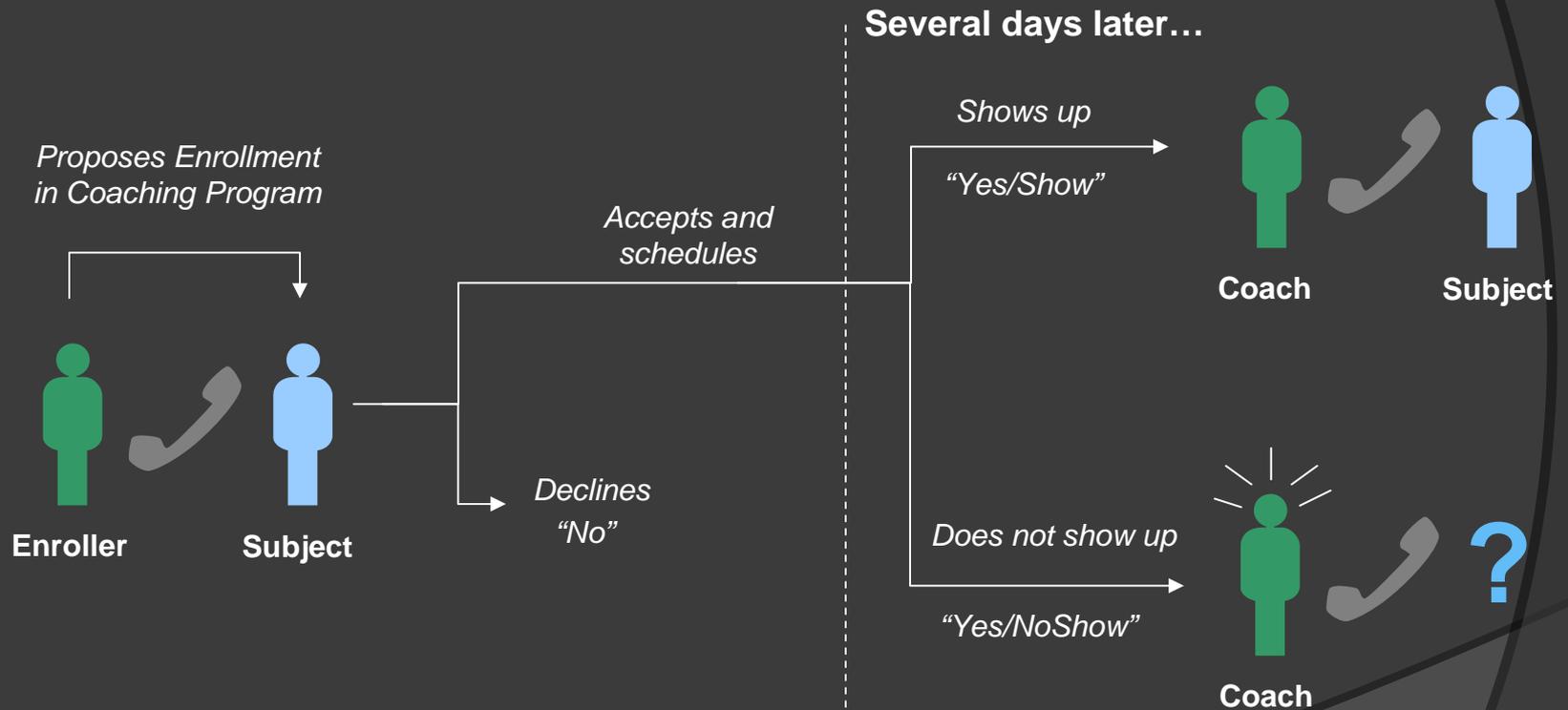
Screening For Depression



77% accuracy in commercial operation

Cogito Health, Inc

Compliance



79% accuracy in commercial operation

Cogito Health, Inc

Automatic Assessment from Behavior

mobility, call patterns, motion, etc

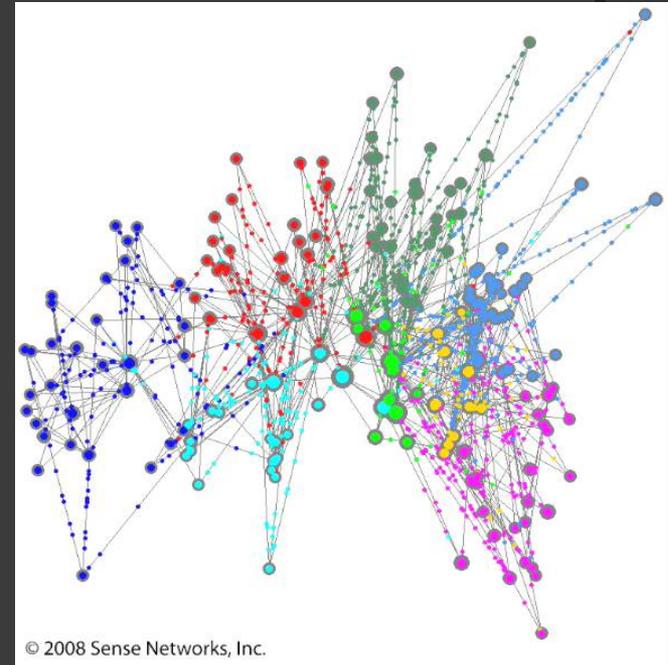


- Flu, GI problems, stress
- Quality of life

Now: Gingerd.com

Behavior Patterns

The Next Google - cover Newsweek

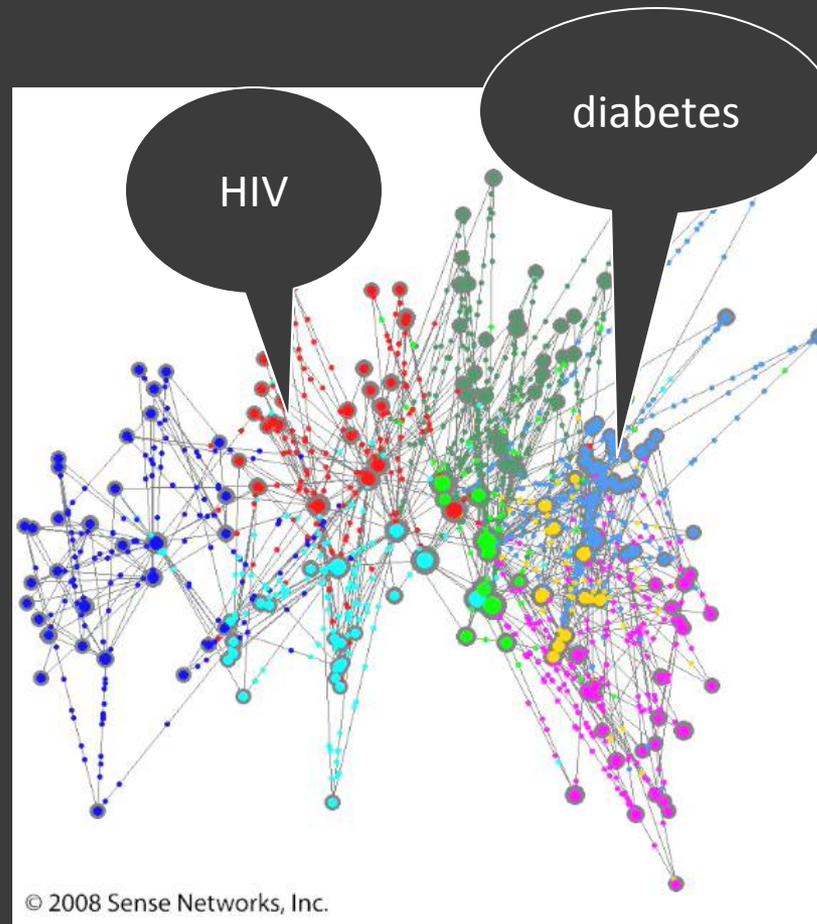


Jebara, ..., Pentland

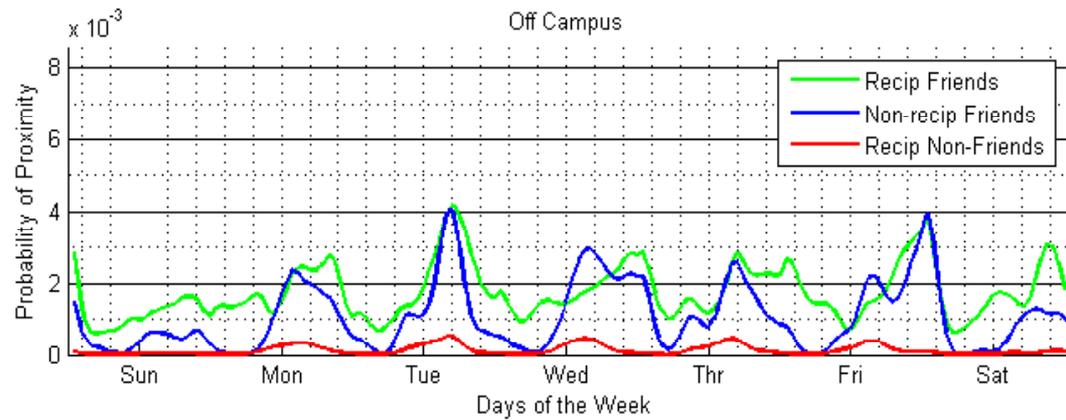
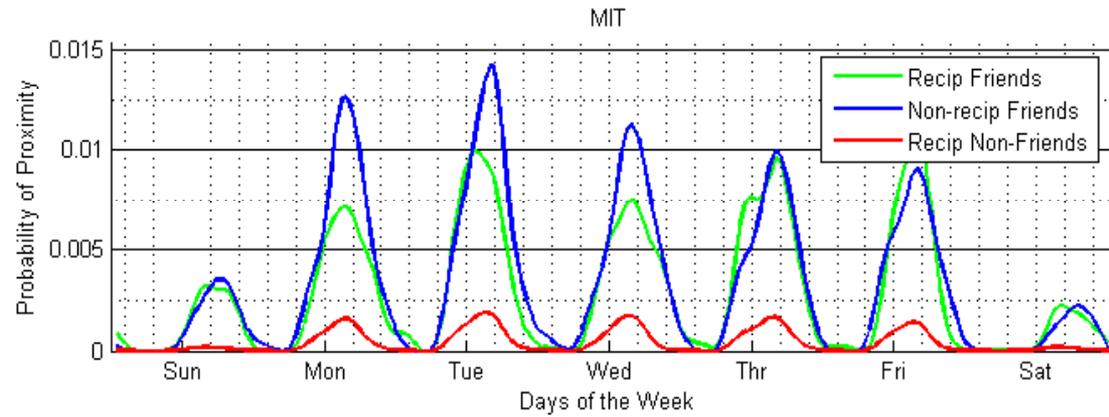
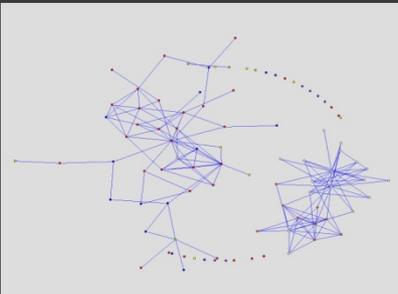
Sense Networks

Patterns of Health

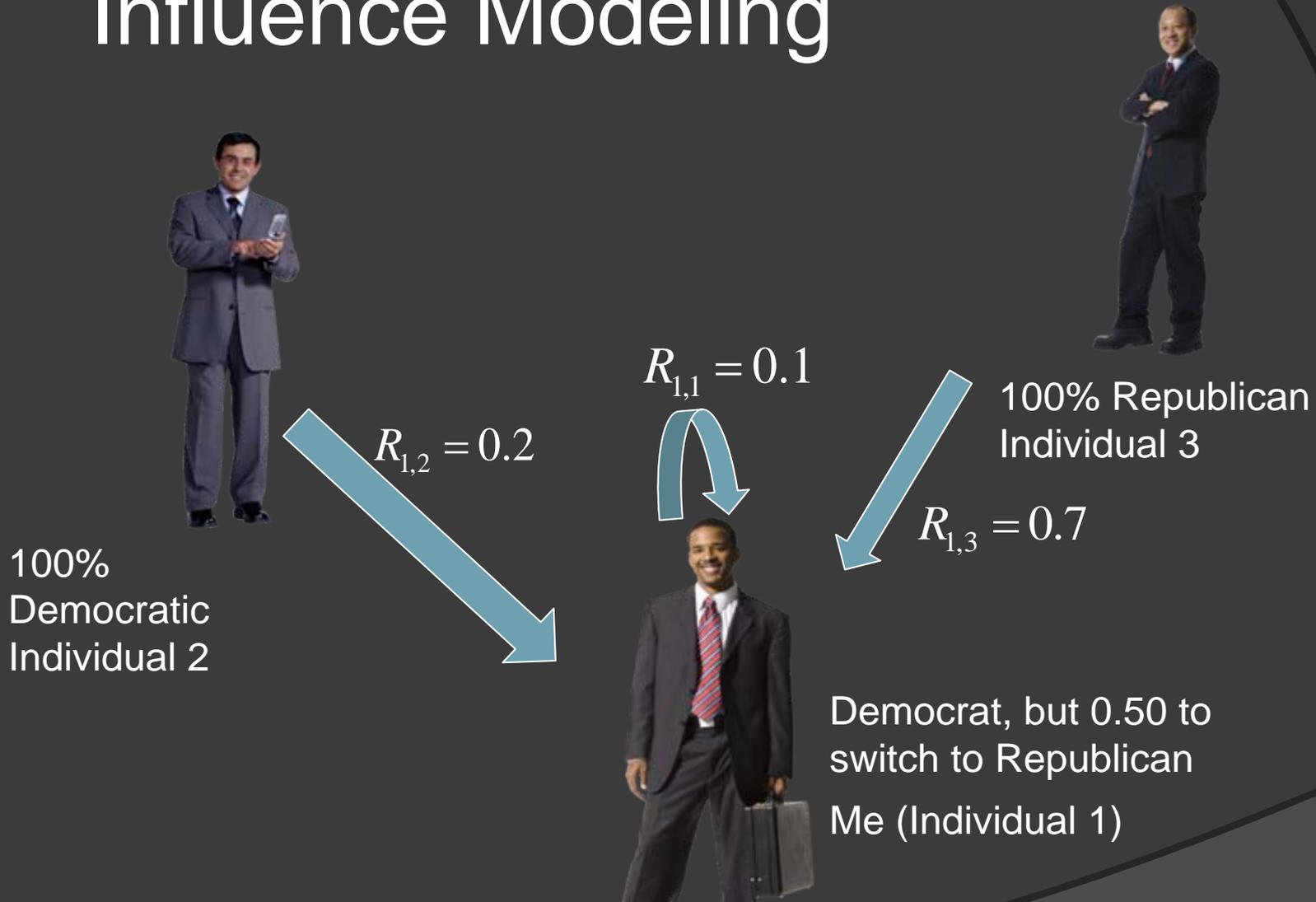
The Next Google - cover Newsweek



Mapping Social Networks



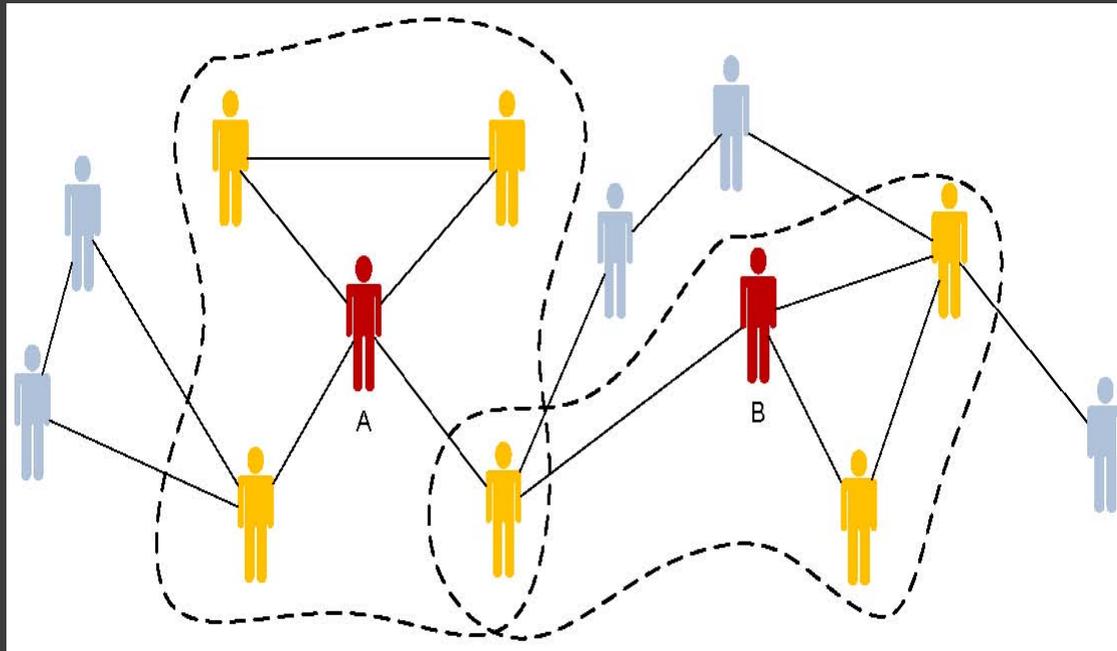
Influence Modeling



$$\text{Prob}(h_t^{(c')} | h_{t-1}^{(1)}, \dots, h_{t-1}^{(C)}) = \sum_{c \in \{1, \dots, C\}} \underbrace{\mathbf{R}_{c', c}}_{\text{tie strength}} \times \underbrace{\text{Prob}(h_t^{(c')} | h_{t-1}^{(c)})}_{\text{cond. probability}}$$

USE CASE 1:

Shaping Behavior using Social Network Information

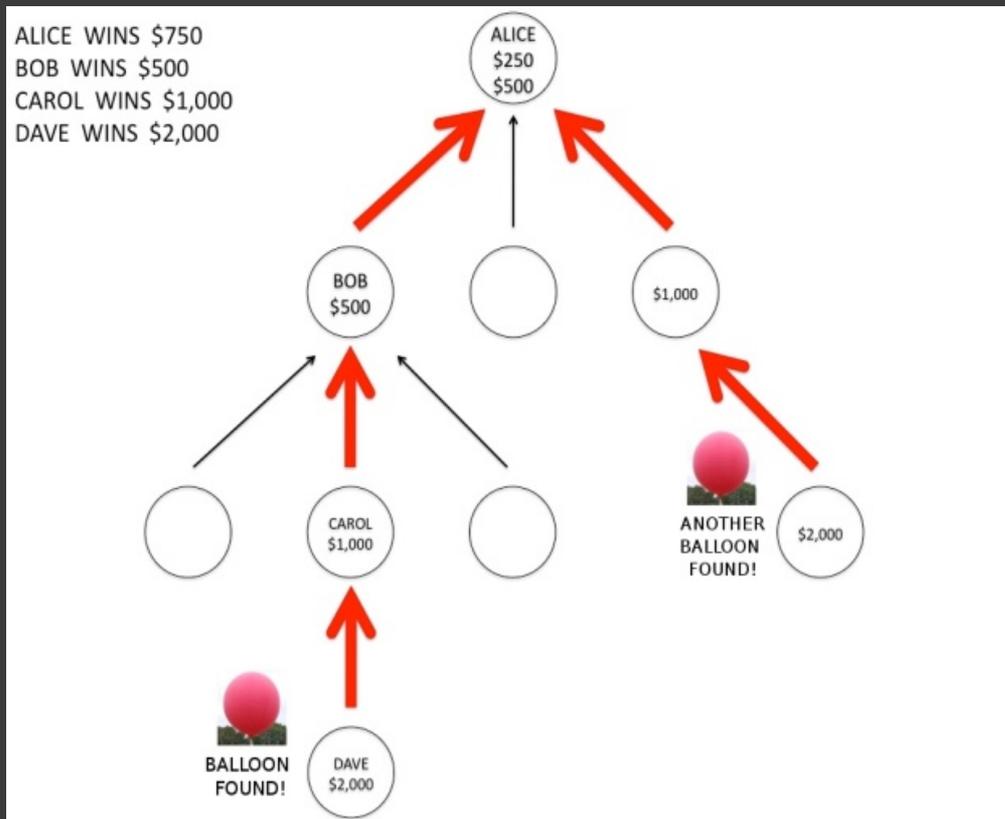


Twice as efficient as standard incentive mechanisms

Mani, Rahwan, Pentland

USE CASE 2:

'Optimal' resource discovery using social network information



40th Anniversary of the Internet Grand Challenge



For more information see: <http://hd.media.mit.edu>

Acknowledgements

- Influence Models & more: W. Dong, W. Pan, T. Jebara,
- Social Pressure: A. Mani, I. Rahwan,
- FunF: N. Aharony, W. Pan, C. Ip, C. Kidd, Y. Montejoy
- Sociometric Badges: B. Waber, D. Olguin, T. Kim
- Network Influence: A. Madan, W. Pan

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<http://media.mit.edu/~pentland>

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Forbes, 8/10,
Mining Human Behavior