

# Social Physics

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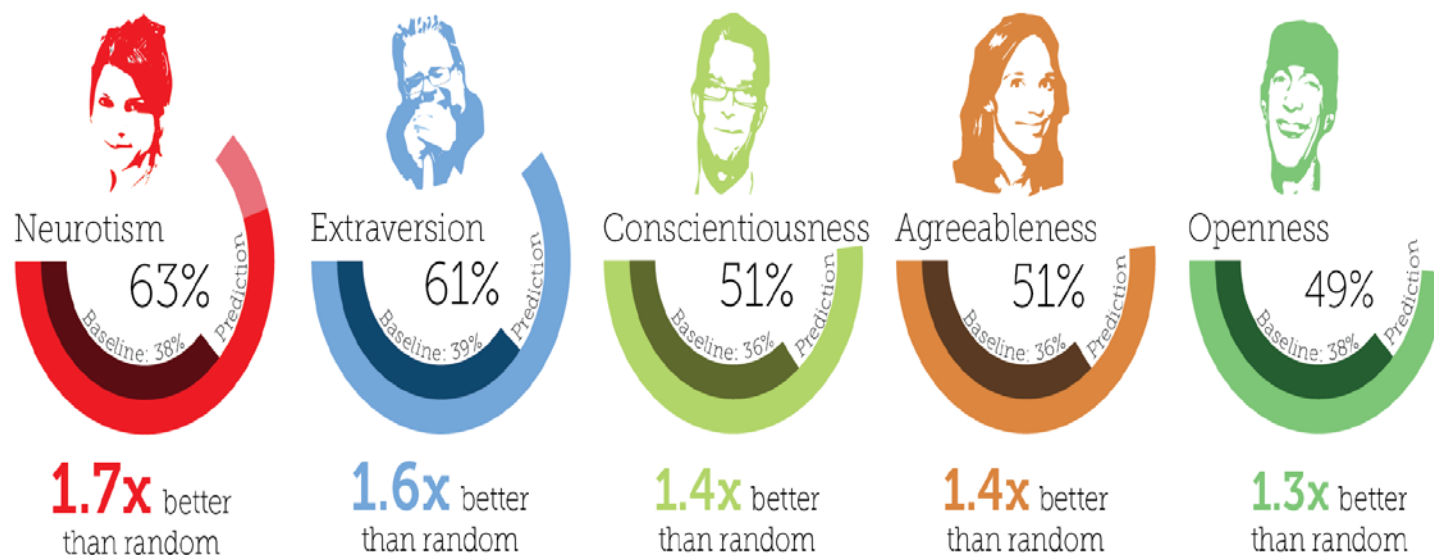
MIT Media Laboratory

UN Secretary General, World Economic Forum, NAE

# sociometric badges



# predicting personality using speaking pattern



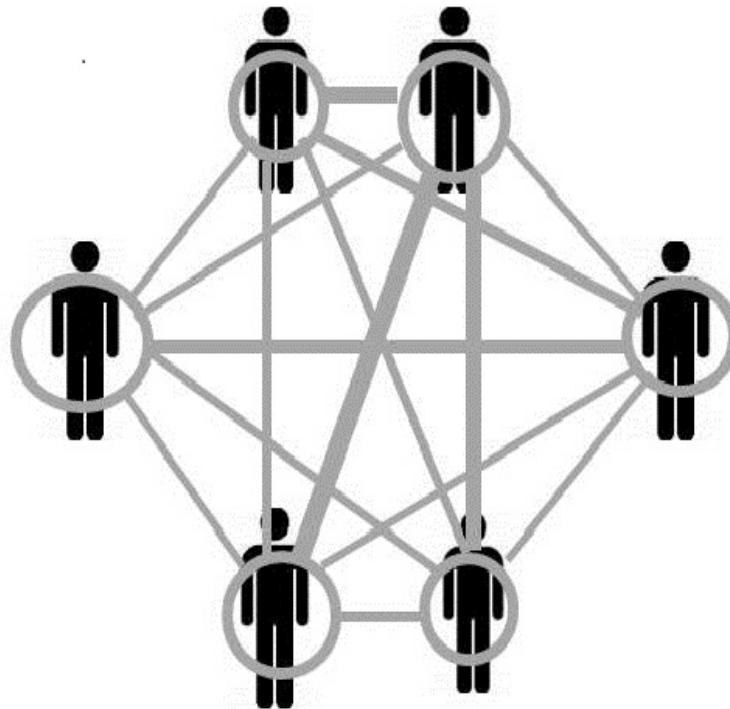
de Montjoye, Y. A., Quidbach, J., Robic, F., & Pentland, A. S. (2013). Predicting personality using novel mobile phone-based metrics. In *Social Computing, Behavioral-Cultural Modeling and Prediction* (pp. 48-55).

# role recognition from speaking pattern

Accuracy for major roles	Audio	Video	Both
Bailes' Social Roles: Protagonist, Supporter, Attacker	0.77	0.72	0.78
Bailes' Task Roles: Information Giver, Orienteer, etc	0.71	0.68	0.71

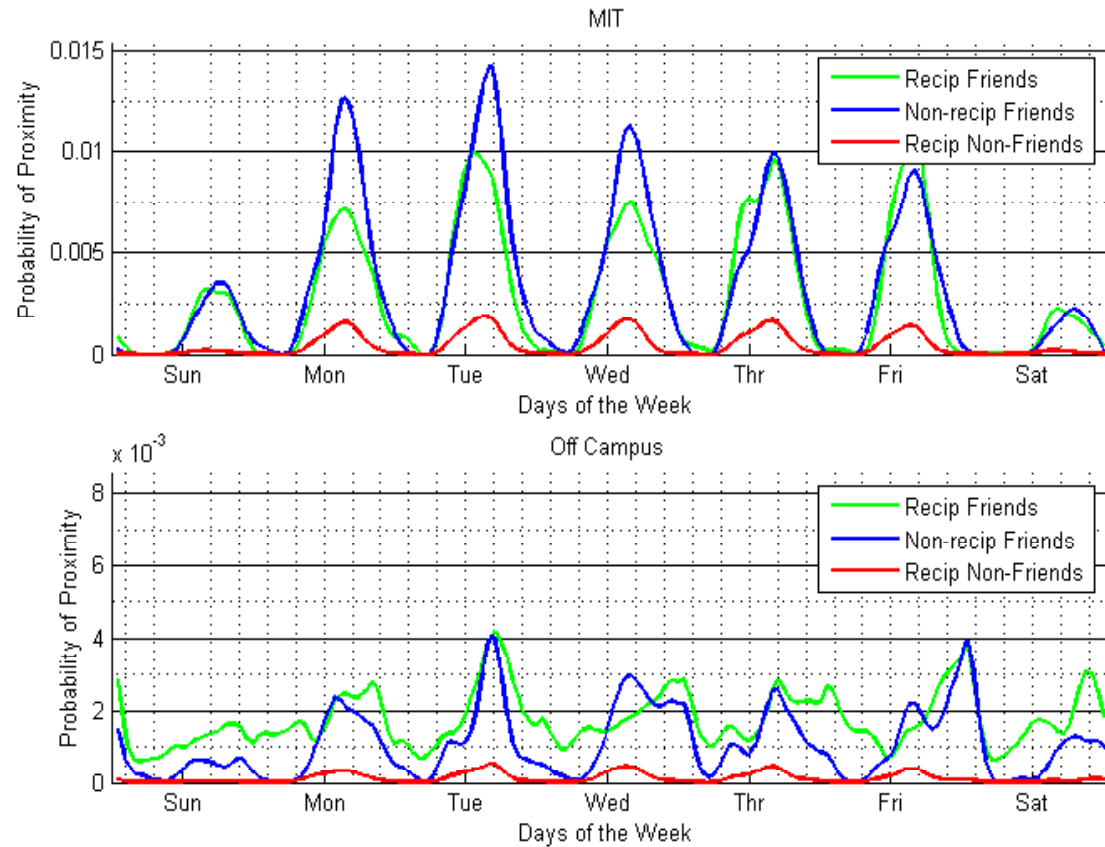
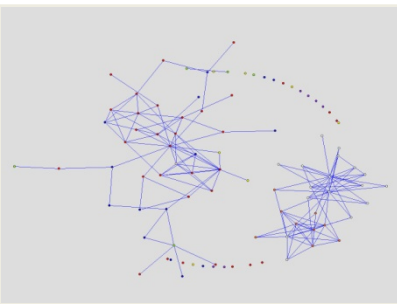
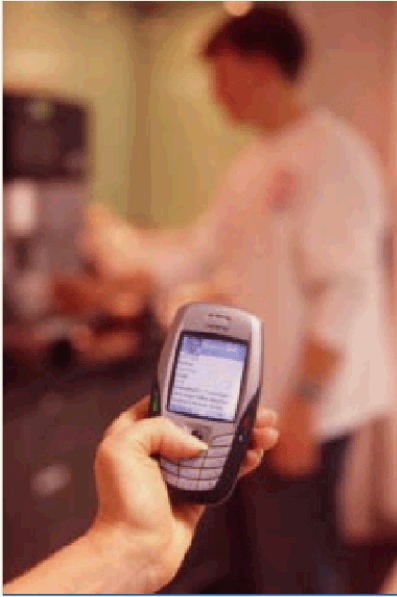
**speaking pattern as good as  
human observers with full video**

# collective intelligence



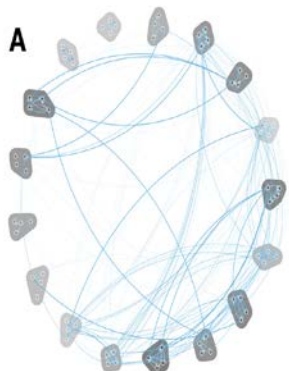
Science 2010

# mapping social networks

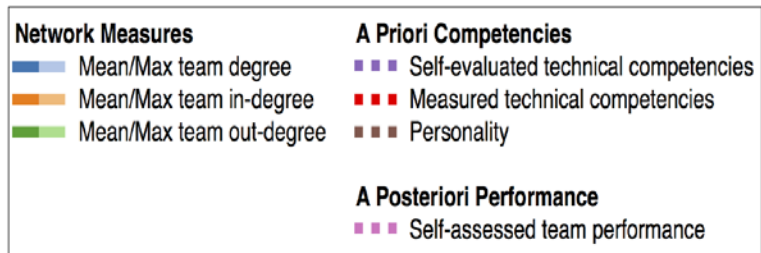
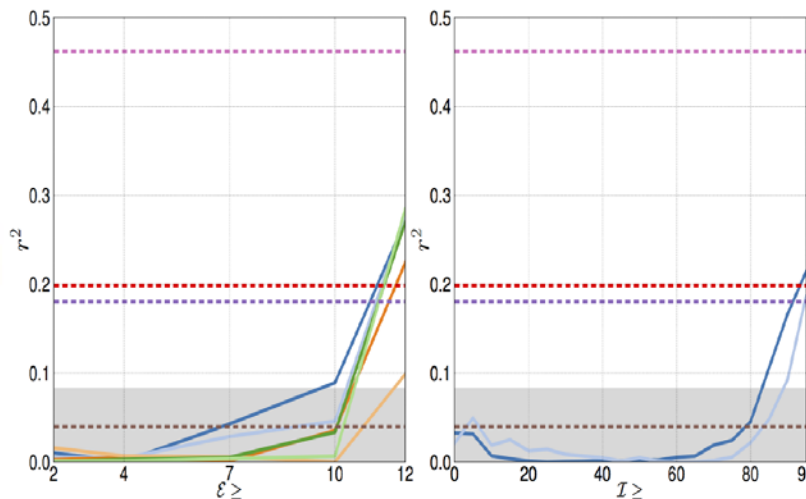
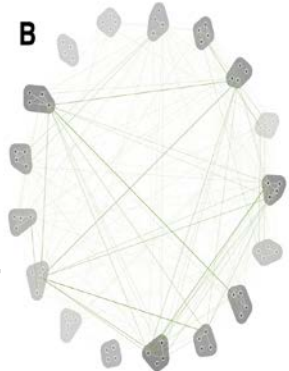


# Strength of Strongest Ties undergrad performance

instrumental



expressive

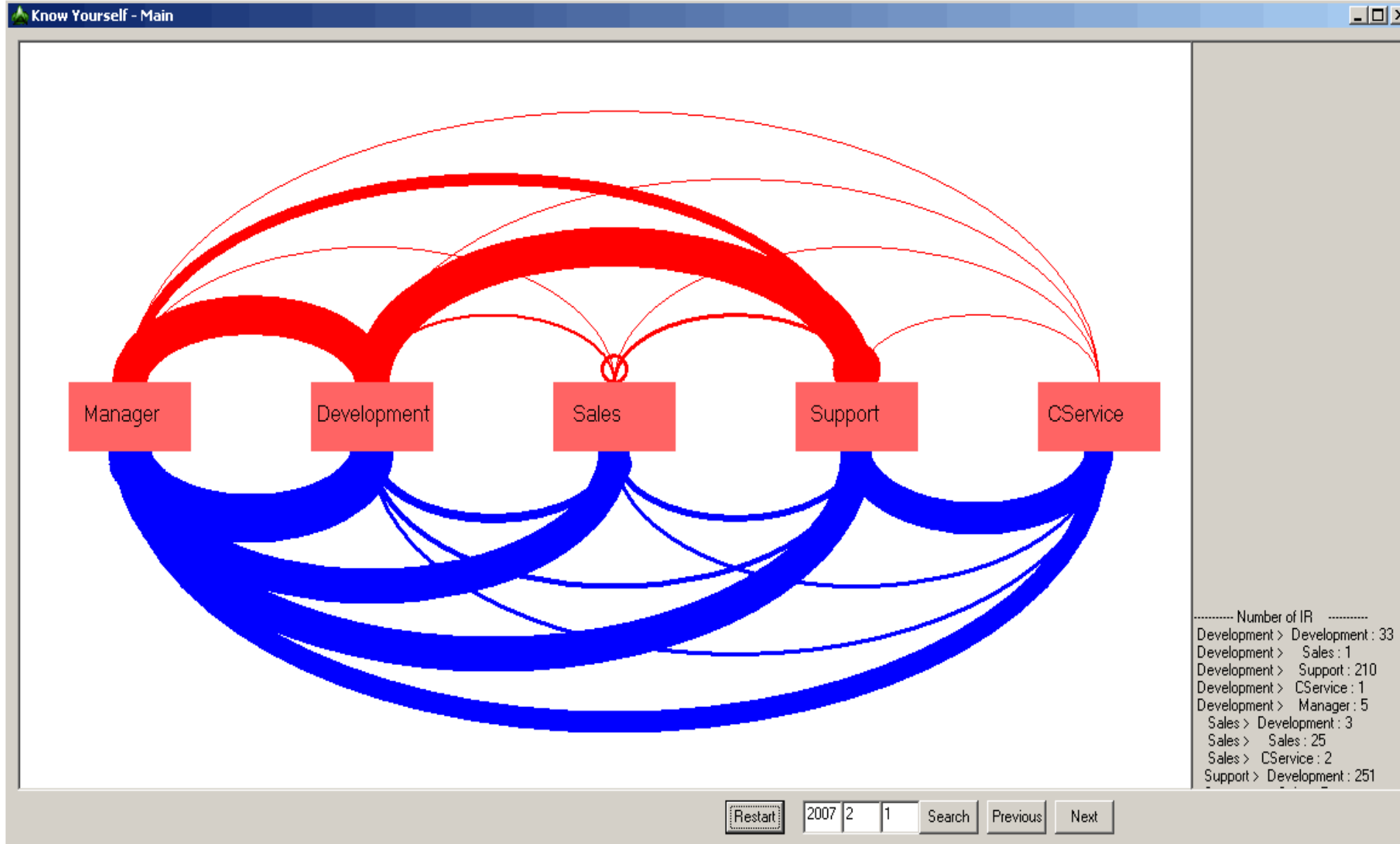


(left) Correlation between expressive tie strength and team performance. (right) Correlation between instrumental tie strength and team performance. For both expressive and instrumental ties, the position in the network of strong ties is more important than other a priori characteristics of the team, such as self-evaluated and measured proficiency or personality. The gray areas indicate values with  $p > 0.05$ .

- 3 assignments
- groups of 4 students
- self-reported (expressive) and sensed (instrumental) ties
- weak ties do not matter for team performance (grade)
- but the strongest ties have huge effect
- more than self-evaluated and measured technical competencies
- knowledge flow needs strongest ties within and between teams



# engagement, exploration, energy



HARVARD BUSINESS REVIEW MCKINSEY AWARD 2012



# drug discovery: engagement

- Results
  - People who **interacted more with their team** were **more productive**.
  - People who **interacted more with their team** were **happier**.
  - People who **interacted more with their team** have **less e-mail communication**.

Metric	10% Increase in Engagement
Productivity	4.8% Increase
Happiness	5.6% Increase
E-mail	17 Fewer Team E-mails/Week

# drug discovery: exploration

- Results
  - **High potentials talk to more people**
  - **High potentials are more central**
  - **Increased e-mail communication has a negative effect on productivity.**

Metric	10% Increase in Exploration Yields
Potential	6.8% Increase
Productivity	10.4% Increase



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