Big Data and the Future of Privacy

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Short Overview

- Social Networks
  - Privacy Issues in Social Network
  - Big Data and Social Network Privacy
Introduction
Health Social Networks

The smarter way to find the best treatments.
Get access to millions of ratings comparing the real-world performance of treatments across 637 health conditions.

Sign up - it's anonymous and free.
Enter your email and create your password.

Choose a password
Remember me
Sign up

Your experience matters.
At PatientsLikeMe, you’ll find the resources and support you need to improve your own health. Ask questions, get answers, and help make healthcare better for everyone.

164,460 patients
1,000+ conditions

Your experience matters.

Because of PatientsLikeMe, we are better able to recognize warning signs and keep things in perspective. In short, PatientsLikeMe empowers us.

PatientsLikeMe has provided me with new friends—people who are experiencing the same problems as I am.

I joined because I didn’t want to feel alone anymore. Simply put, and I knew that I could be helpful by sharing my experience.

Become a member now and join the largest, most comprehensive network of people sharing their knowledge, experiences and support.

What our members love about DailyStrength:
• Making friends, journaling, tracking goals, sharing photos and hugs
• Active discussion boards, expert advice, treatment reviews
• Privacy tools to keep personal content protected

Popular Support Groups
• ADHD
• Alcoholism
• Anxiety
• Asthma
• Autism
• Depression
• Diabetes
• Dieting
• Menopause
• Migraines
• Miscarriage
• Multiple Sclerosis
Privacy?

- “right to control, edit, manage, and delete information about themselves and decide when, how, and to what extent information is communicated to others” (Alan Westin, 1967)
Privacy Attacks…

- Data not properly sanitized
- ... need privacy protection methods
“Sometimes we share aggregated information with third parties to help improve or promote our service. But we only do so in such a way that no individual user can be identified or linked to any specific action or information.” (Facebook privacy agreement)
Social Network Anonymization…
…and Information Preservation

- Anonymity is hard… preserving data quality is hard…
- Keeping the two in balance is even harder…

Applications of social media mining:
- Loyalty programs, direct marketing, advertising, churn prediction.
- Real-time surveillance of diseases’ spread
- Detect terrorist cells.
Social Network Privacy Types

Social Privacy
- local / user-centric

Institutional Privacy
- global / network-centric

Surveillance Privacy
- not-trusted data collector / not-authorized collection

Network Privacy
- anonymized data / query results
Social Network Privacy Types

Users

Social Privacy

Surveillance Privacy

Network Privacy

Social Network Privacy

Legislators

SN Sites
Big Data and Social Network Privacy

Challenges

- Store
- Cost
- Security
- Privacy
- Processing
Big Data and Social Network Privacy

- Challenges
  - Store
  - Cost
  - Security
  - Privacy $\rightarrow$ STORE
  - Processing
Big Data and Social Network Privacy

- Challenges
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  - Privacy ➔ COST
  - Processing
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Challenges

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SECURITY
Big Data and Social Network Privacy

- **Challenges**
  - Store
  - Cost
  - Security
  - Privacy
  - Processing