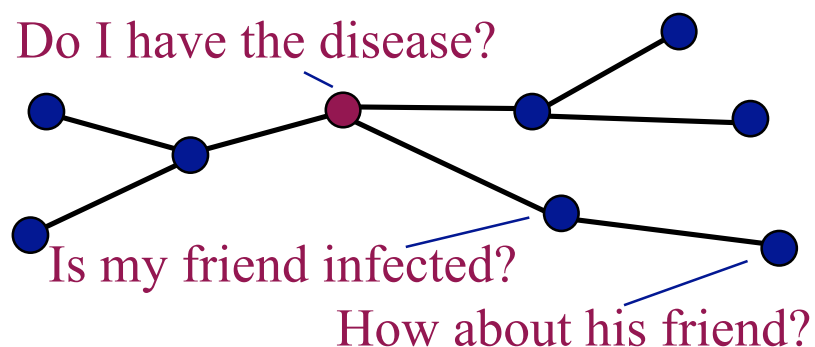# Privacy-Preserving Belief Propagation and Sampling

Michael Kearns, Jinsong Tan, and Jennifer Wortman
University of Pennsylvania (Poster T46)

Why do we need privacy?

Do I have the disease?

Is my friend infected?

How about his friend?

- What is the probability p that I have been infected?

- Can my neighbors help me calculate p **without revealing any other information**?

- Our solutions fuse tools from **learning** and **cryptography**
  - Inference in belief networks
  - Secure function computation

- The result is a **distributed protocol** that remains **faithful to the network topology**

- Need more details?
  - Call **1-800-MY-PRIVACY**
  - Or visit our **POSTER!!!**