

Social Networking Research @ LSIR



ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE

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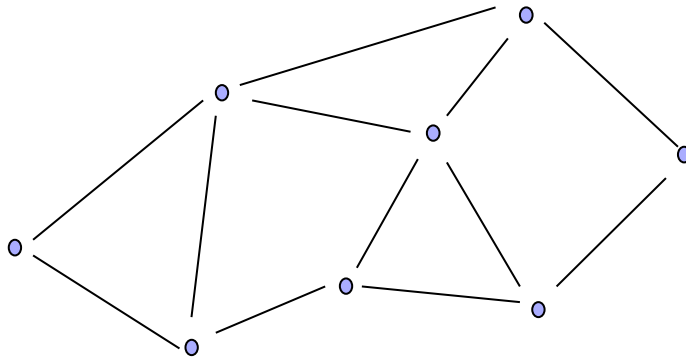
Distributed Information Systems Laboratory
EPFL



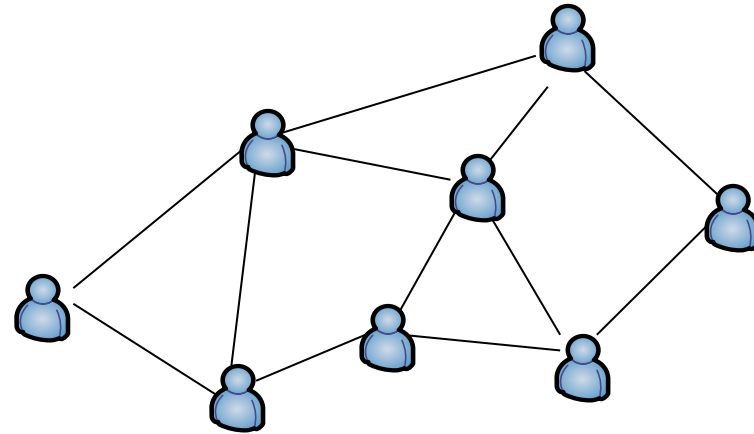
LSIR

- Distributed Information Systems Laboratory
 - Laboratoire de **S**ystèmes d'Information **R**épartis
 - <http://lsir.epfl.ch/>
- Headed by Prof. Karl Aberer
- Key research areas:
 - Sensor data management
 - P2P Systems
 - Reputation-based trust
 - Emergent semantics
 - ...

Local trust



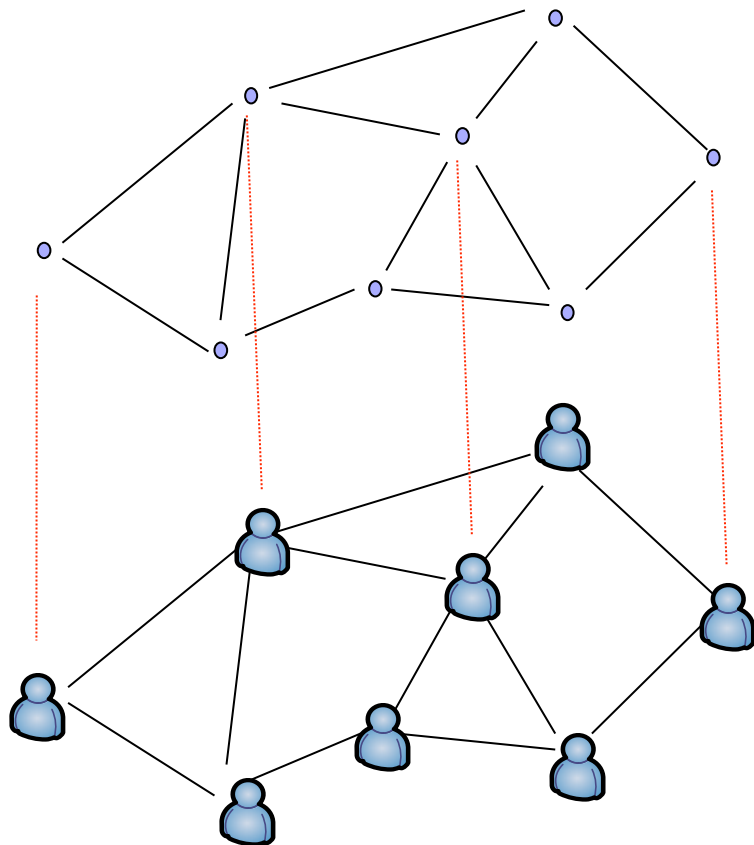
Computer system:
trust emergent, transient



Social networks:
longer-lasting trust

- Traditional P2P computing
 - Trust has to be built over time
 - Trust is transient
- **Idea: take advantage of existing trust between humans**

Friend-to-Friend (F2F)



- Connect to friends' computers only
 - Reliable, stable identities
- Take advantage of social trust
 - Cooperation more likely



Can social networks help BitTorrent?

■ CoTorrent

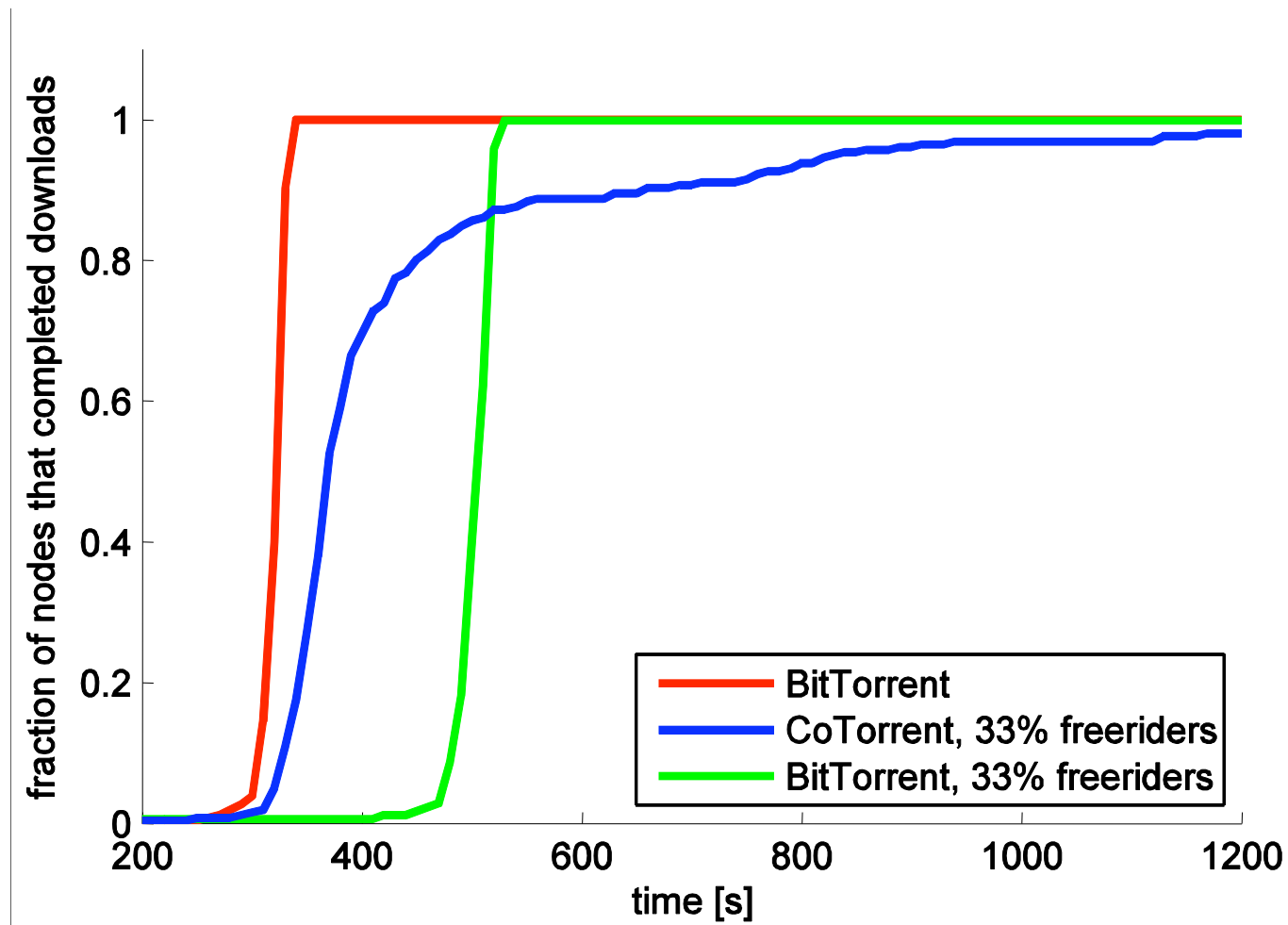
- A BitTorrent on top of a social network
- Protocol unchanged
- Friends' computers added to the peer list**

■ The problems:

- Freeriding
- BitTorrent's Tit-for-Tat ineffective

■ Core assumption:

- Friends are less likely to freeride than strangers discovered through trackers



- **Social network alone is an efficient content distribution medium**

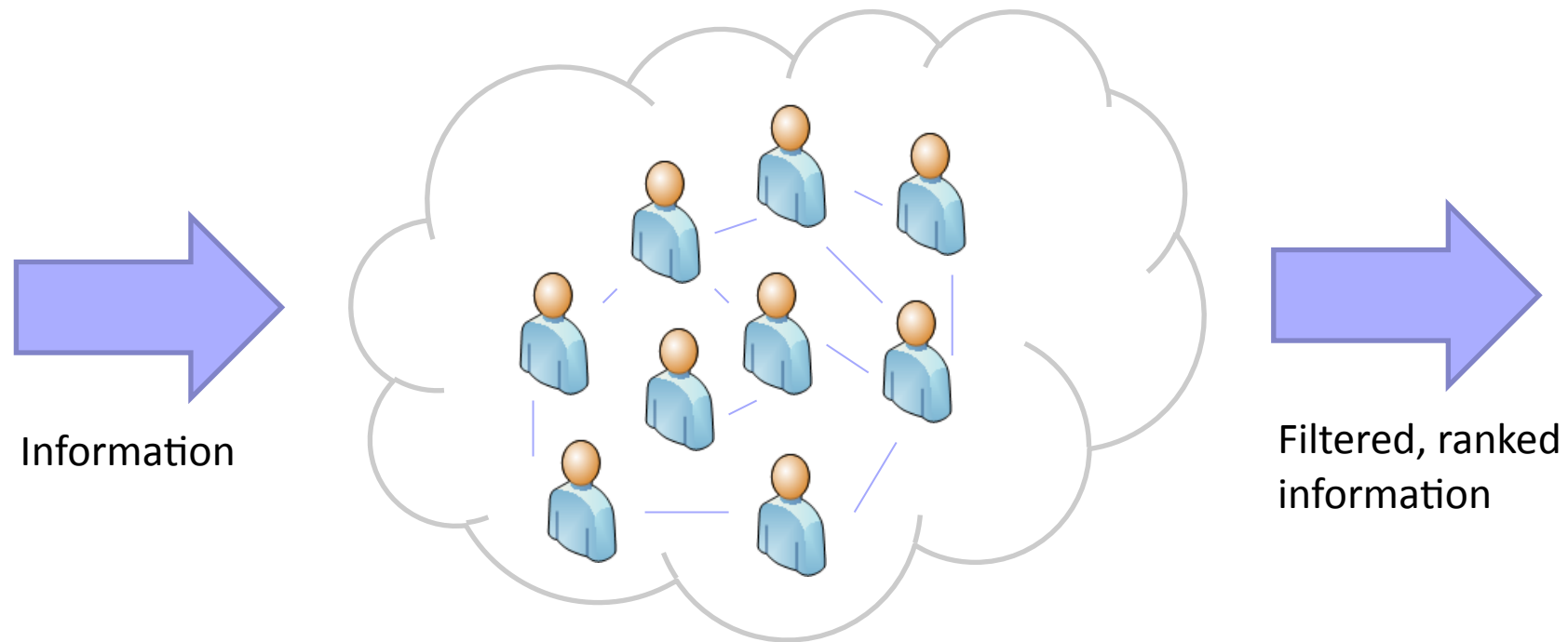
- Though: long-tail problem → fixed by a hybrid BitTorrent/CoTorrent



CoTorrent Results

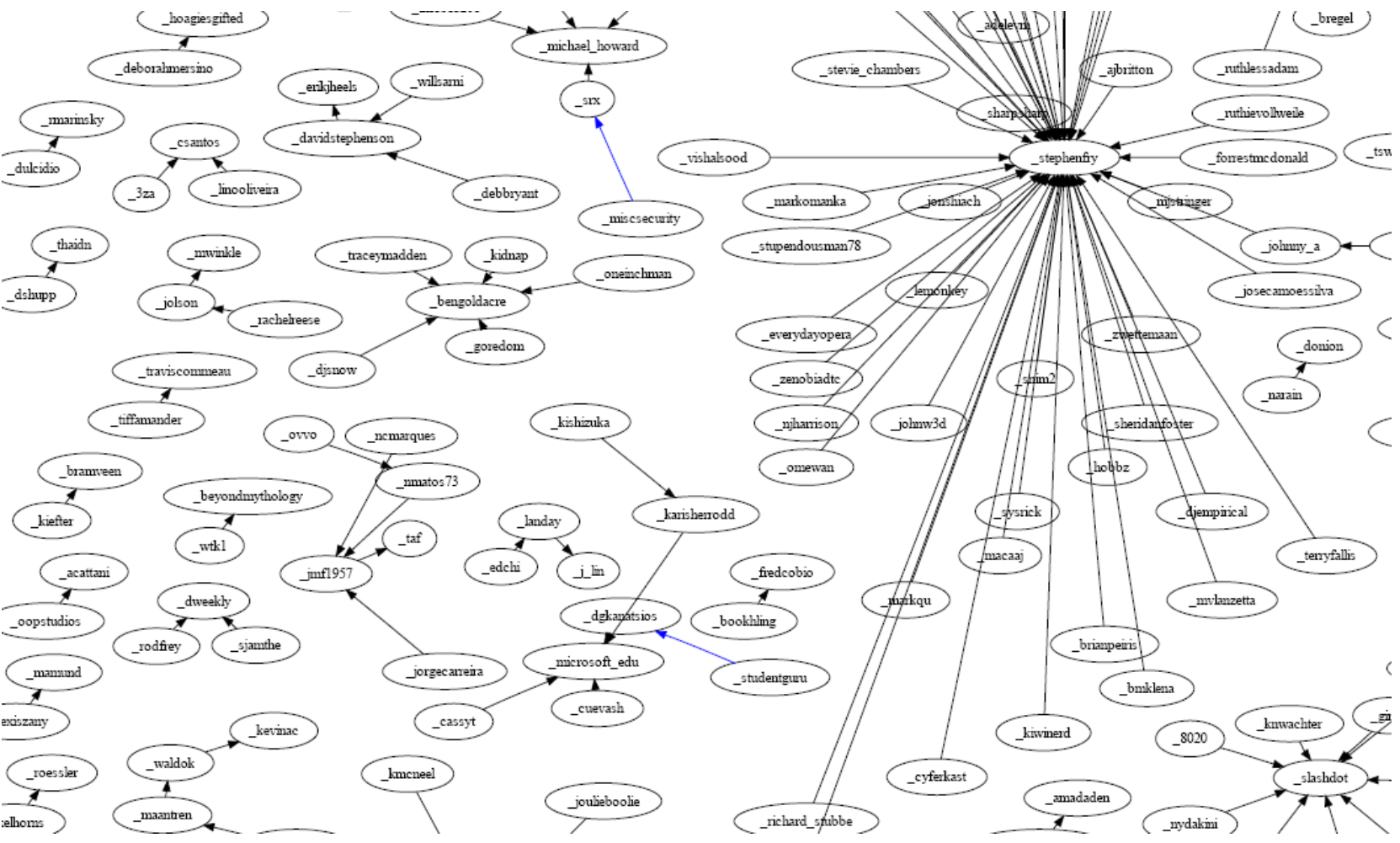
- Social network alone an efficient content distribution medium
- Social network helps BitTorrent
 - Increased robustness to freeriding
- Benefits of theF2F approach to content distribution:
 - Authenticated connections
 - Increased privacy

Filter 2.0 - social information filtering



- Information: some discrete items that users interact with
- **Collective user behavior decides on information ranking**

Information propagation on Twitter





Designing the new Filter 2.0

- Based on observed user behavior
 - e.g. Twitter
- Identify problems
 - Power-user problem
 - Broadcast only: no audience segregation
 - Broken feedback loop
- New solutions
 - Validate with real-world traces (e.g. Twitter)



Filter 2.0: open questions

- How do we deal with power-law distribution in user activity?
- What is the network formation mechanism?
 - How can users meet other users?
 - How to enable serendipity?
- How does network formation influence the information flow?
- Can we ask optimality questions?
 - Optimal game rules?
 - Optimal social graph for information flow?