Online Social Networks meet Smartphones

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Online Social Networks (OSNs)

Fast Facts

- 2 billion people use the Internet
- 500 million on Facebook
- Facebook is the most visited website in the US. Americans spend there most of their web time
- The number of Twitter users increases by 300K every day

Sampling OSN users

Random Walk (RW)   Breath First Search

Sampling via crawling to learn users and structure of OSNs.
Problem: **sampling bias**
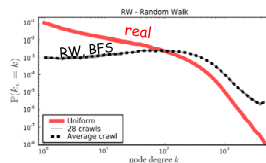
Measurement techniques that remove bias improve efficiency:

- Reweighted RW
  M. Gjoka, M. Kurant, C. Butts, A. Markopoulou
  "Walking in Facebook: A Case Study of Unbiased Sampling of OSNs" INFOCOM 2010
- Unbiased BFS
  M. Kurant, A. Markopoulou and P. Thiran
  "On the bias of BFS" International Teletraffic Congress (ITC 22), 2010
- Multigraph sampling
  M. Gjoka, C. Butts, M. Kurant, A. Markopoulou.
  "Multigraph Sampling of Online Social Networks" Under submission
- Stratified graph sampling
  M. Kurant, M. Gjoka, C. Butts, A. Markopoulou.
  "Walking in Graphs with a Magnifying Glass" Under submission

In collaboration with Carter Butts and the NCASD Lab: http://www.ncasd.org/

Mobile Social Networks
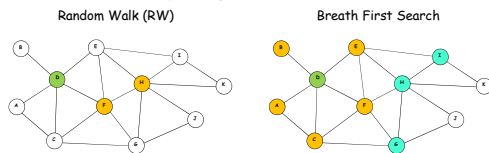### and content dissemination

Fast Facts

- There are 1 billion personal computers and 5 billion mobile phones in use in the world.
- Mobile users accessing OSNs through handheld devices
  - 19% (10.6M) of mobile users in the US
  - 23% (2M) of mobile users in the UK
  - 75% of OSN users in Japan
- 200M (out of 500M) users access Facebook on smartphones

Today: not truly integrated
users access OSN through mobile interface

Problems:

- Cellular provider: bandwidth wasted, overload
- OSN provider: massive infrastructure is required
- User: may experience delay

Our vision for content delivery:
cooperation of OSN + mobile operator + user

Opportunities :

o 3G connection + wifi/device2device communication
o Leverage topology and location information (OSN, operator)
o Leverage social graph/trust/interests (OSN)
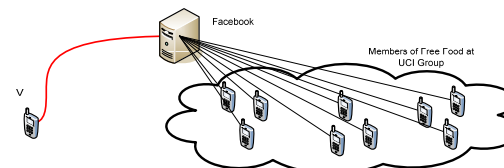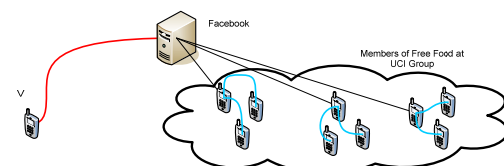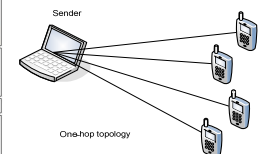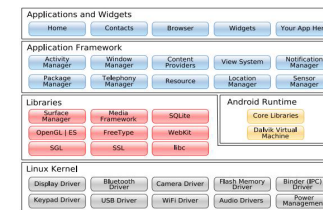
Smartphones

Fast Facts

- 28% of U.S. mobile subscribers now have smartphones
- In the past 6 months: 41% of cell phone buyers got a smartphone.
- Android's market share is the fastest growing

Direct communication (demo)

- use android API + ad hoc (wi-fi) connections between devices
- to exploit proximity/friendship
- and possibly wireless broadcast
- for better content delivery

- Current demo : a facebook app:
  server (laptop) – clients (smartphones)
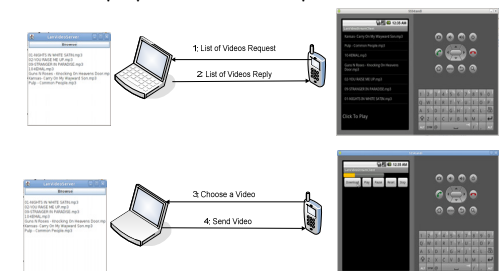
In collaboration with DOCOMO USA Labs: and AT&T Labs Research: