Contextual Synchronization on Social Collaboration

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The 3rd International Conference on Web Intelligence, Mining and Semantics (WIMS'13) in Madrid, Spain
Short Introduction

- Yeungnam University, Daegu, Korea
- Nguyen Tat Thanh University, HCMC, Korea
- University of Malaya, Kuala Lumpur, Malaysia
The 3rd International Conference on Web Intelligence, Mining and Semantics (WIMS'13) in Madrid, Spain
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Background

- Large scale organization (a number of users & a large amount of data)
Collaboration tools in enterprise computing environment
Agenda

• Contextual Synchronization
• Social contextualization
• Social media communication
• Examples
• Conclusion
Agenda

- Contextual Synchronization
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What is contextual synchronization?
Synchronization

- happening, existing, or arising at precisely the same time
- recurring or operating at exactly the same periods
- [Merriam-Webster]
Synchronization
Synchronization

• (cont.) Data synchronization refers to the idea of keeping multiple copies of a dataset in coherence with one another, or to maintain data integrity. Process synchronization primitives are commonly used to implement data synchronization. http://en.wikipedia.org/wiki/Synchronization_(computer_science)
Synchronization

- A set of communication actions in proper order

1. Send(a, b)
2. Ack(b, a)
3. Send(b, c)
4. Ack(c, b), Ack(c, a)
   ....
Contextual Synchronization

- **Contextual** synchronization refers to the idea of keeping multiple USERS in coherence with one another, or to maintain data integrity by considering their contexts.
Information Propagation
Behavior Mimicry
Third Party Observation of Mimicry

Exp 2: Cropped Video: Mimicry Obscured

Exp 1: Whole Video

Participant

Mimic (Interviewee)

Model (Interviewer)
Tagoole

Tagoole

- Understanding various features of information propagation

Tagoole

• Understanding various features of information propagation

• How quickly a certain information is propagated?

Tagoole

- Understanding various features of information propagation
- How quickly a certain information is propagated?
- How widely .... ?

Tagoole

• Understanding various features of information propagation

• How quickly a certain information is propagated?

• How widely .... ?

• Why .... ?

Building Social Pulse
Folksonomy
Folksonomy
T+Folksonomy
T+Folksonomy

- Temporal distribution of frequencies
T+Folksonomy

- Temporal distribution of frequencies
- Inducibility, a relationship between two arbitrary tags
Demo

http://165.229.229.159/tagoole/tagoole.php
Tag: egypt

Number of tags 1502893

Egypt

Photos ID (21):

Username (14):


cairo

Photos ID (5):

Username (4):

Timestamp: 2012-03-19 || 2012-02-20 || 2012-02-20 || 2009-08-05 || 2012-03-20 ||

africa

Photos ID (3):

Username (2):

Timestamp: 2012-02-20 || 2012-02-20 || 2011-07-25 ||
Compare two tags: **Egypt** and **Libya**

<table>
<thead>
<tr>
<th></th>
<th>Egypt</th>
<th>Libya</th>
</tr>
</thead>
<tbody>
<tr>
<td>Users</td>
<td>28 ++</td>
<td>29 ++</td>
</tr>
<tr>
<td>Tags</td>
<td>1502900</td>
<td>81941</td>
</tr>
</tbody>
</table>

**Indiscernibility:** 18.341245530321

**Social Pulse**

- Egypt
- Libya
Arab Spring

Social Pulse

- Egypt
- Libya

Year:
- 2006
- 2007
- 2009
- 2010
- 2011
- 2012

Value:
- 0
- 250
- 500
- 750
- 1,000
Arab Spring

Social Pulse

2011 Egyptian revolution

2006 2007 2009 2010 2011 2012

0 250 500 750 1,000

eypt
Libya
TweetPulse
Agenda

• Contextual Synchronization
• **Social contextualization**
• Social media communication
• Examples
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Context-aware services

- Location
- Time
- Any other context?
Social networks (2010)
With a number of online social media, our social networks are distributed.
Ego-centric Social Network (e-SN)

- Social networks are distributed in many different applications, e.g., Facebook and Twitter.
- Thus, the partial social networks have to be integrated to build an ego-centric social network.
Why e-SN?

- Personalized filtering
Why e-SN?

- Personalized filtering
Why e-SN?

- Personalized filtering
Why e-SN?

- Personalized filtering
Only from my neighbors
Social contextualization

• Context fusion
  • We need to collect all possible information (e.g., resources and knowledge) from our neighbors.
  • Fusing contextual information around target users
Contextualization

• To provide context-aware services, e-SN should be contextualized with
  • location
  • time
  • context of my neighbors
• Need to consider to exploit the planner module
Scenario on Context Fusion

- It is my wife’s birthday, tomorrow.
- I am in “Puerta del Sol” for a technical meeting.
Current Location

“Puerta del Sol”

Recommendation

My Wife’s Birthday

Tomorrow

Restaurants and Cafes

near Current location

My wife’s favorite movies

Promotion news

from “El Corte Inglés”

https://twitter.com/elcorteingles
Reality mining for TelCon

• Building a social network by mobile phone usage patterns
• How often (or how long) has Ua called Ub?
• Inferring semantics of each social links between users
• What is the relationship between Ua and Ub?

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Social media communication

- A number of communication media among users
- E-mail, Telephone, SMS, Video conferencing, Instant messaging, and so on.

Question: How (and Why) people choose the SCTs?
Social affinities (context)

• Vertical vs. Horizontal

• e.g., “Ask your boss to answer.” and “Ask your students to come”

• Also, cultural differences
Task characteristics

• Urgency (e.g., “Find the answer right now”)
• Complexity (e.g., “Explain what is the capital of Spain” and “Tell me what is contextual synchronization”)
• Multiplicity (e.g., 1:1, 1:N, and M:N communications)
Media richness

- Need to weigh a SCT
- Weight(email) > Weight(SMS)
Example

Capt. Jim Brass
LVPD Homicide
Detective

Al Robbins
Chief Medical
Examiner

Warrick Brown
CSI Level 3

Gil Grissom
CSI Night-Shift
Supervisor

Sara Sidle
CSI Level 3

Catherine Willows
CSI Asst. Night-Shift
Supervisor

Nick Stokes
CSI Level 3
Hair and fiber analysis

Greg Sanders
CSI Level 2

Hair and fiber analysis
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Vision
Vision

Cross-media Communication
Vision

Cross-media Communication

Ask @Gil and @Robbin who the murderer is.
Wrap-up

• The main research question is

• “How to support users to efficiently collaborate with each other?”

• Ontologies? Linked Data?

• Any questions & comments
Special Thanks

- National Research Foundation (NRF) in Korea
- Korean Telecom (KT)
- SaltLux
- Dr. Xuan Hau Pham, Nguyen Trung Duc, Le Ngoc Tu
CFP

• Special Issue on Information Fusion

• “Social Big Data” (http://www.journals.elsevier.com/information-fusion/call-for-papers/the-context-of-social-big-data/)

• International Conference on Computational Collective Intelligence 2014 at Jeju Island, Korea

• International Conference on Information Scalability 2014 (InfoScale 2014) at Seoul, Korea