Mobile Social Search

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An Elephant and Six Blind Men
An Elephant is NOT

- Wall
- Rope
- Snake
- Spear
- Tree
- Fan
An Elephant is ... an Elephant
Mobile Social Search (MSS)

is NOT Mobile
is NOT Social
is NOT Search

Is Mobile Social Search
Changing Times in *Search*

*Mobile Social Search*: *Search* ‘inside’ problem solving in real time.
MSS: A Problem of Riches

When we were (data) poor – we searched.

Now that we are (data) rich – we need mobile social search.
Data

Then

Now
Users

Then

Now
Changes in Search 1: Restaurant

- What is an Italian Restaurant?
  - List Italian Restaurants in Brussels.

- Show me Italian Restaurants?
  - Use Yelp (or any other social approach) and distance from me to rank them.

- Where should I go to eat Italian food NOW?
  - Consider time taken, current ambiance, and quality of food into consideration.
Changes in Search 2: Swine Flu

• What are symptoms of Swine Flu?
• Is there a major Swine Flu outbreak in my area?
• You are likely to be very sick with extreme case of Swine Flu soon, your doctor is ready with the set up.
Concept recognition from *data*

![Google search results](image)

**Space**
- Location aware
- Location unaware

**Time**
- Static
- Dynamic

**Heterogeneous Media**
- 3.4 K
- 360 K
- 11.4 K

**Real-world**
- Single Media
- Multiple Media
Situation Recognition

• Situation: An actionable abstraction of observed spatio-temporal characteristics.

• Allow users to define their own spatio-temporal features and create the situation detection filters.
Swine flu: Situation Segmentation

into ‘high’ and ‘low ’activity zones.
New Problem: Too Much Diverse Data

Representation for different data sources into a common spatio-temporal format.
Level 0: Raw data streams
e.g. tweets, cameras, traffic, weather, ...

Level 1: Unified representation
(STT Data)

Level 2: Aggregation
(Emage)

Level 3: Symbolic rep.
(Situations)

Properties

STT Stream

Emage

Situation
Billions of data sources.

Selecting and combining appropriate sources to detect situations.

Interactions with different types of Users
   Decision Makers
   Individuals
Eventshop: Architecture

Front End GUI

- New Data Source
- New Query
- E-mage Stream
- Alert Request

Back End Controller

- Registered Queries
- Stream Query Processor
- Personalized Alert Unit
- Registered Data Sources
- Data Ingestor
- Raw Data Storage

API Calls
Raw Spatial Data Stream

Data Cloud
Eventshop: Interaction Environment

- **a) Data-source panel**
- **b) Operators panel**
- **c) Intermediate query panel**
- **d) Registered queries**
- **e) Results panel**

**Map**

**Timeline**

**Numeric value**

**Map data ©2011 Esri Technologies, Inc.**
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<th>Operator</th>
<th>Input</th>
<th>Output</th>
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<td>Temporal E-mage Set</td>
<td>Temporal E-mage Set</td>
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<td>• Temporal $\tau$</td>
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</table>
Personal Situation

Graphic: "Were the tickets to the Rolling Stones concert expensive?"

Response: "Yes..."
**Personalized Situation Control**

**Macro situation**
- Date=12/09/10
- Alert Level=High

**Micro event**
- e.g. “Arrgggh, I have a sore throat” (Loc=New York, Date=12/09/10)

**Situational controller**
- Goal
- Macro Situation
- Rules

**Control Action**
- “Please visit nearest CDC center at 4th St immediately”

**Level 1 personal threat + Level 3 Macro threat -> Immediate action**
1) Macro situation

2) Personalized situation

3) Recommend Actions

Planetary scale sensing
Social sensors
Device sensors
Macro sensors

Personal context
Personal life streams
Profile/Preferences

Resource data
Available

e.g. High Flu risk
Eventshop: Thai Floods

Classify (Flood level - Shelter)
Taking personalized actions
Changing Nature of Search

• Was for Archived data and mostly for researchers (*using Desktop*).

• **Currently**: Mobile clients, Local data, and Social Graph (*SoMoLo*).

• **Immediate Future**: Situations from Real Time data and Recommendations.

• **Future**: Predictive control of emerging situations.
Thanks for your time and attention.

Pepper . . . and Salt

"I don't know what I'm doing—this is pure research!"

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