

# Research Works in UJF

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# Research on Mobile Tourism -especially on LBS

- Services become ubiquitous
- Information systems are now challenged
  - to locate and deliver the **right service**
  - to the **right person**
  - at the **right time and location**

# Research 1: Semantic Clustering Reliability

- User (information) cluster is useful for
  - Analyzing the similarities between user's interest and information that service provides
  - Comparing different interest among users
  - Recommending information that comes from the same cluster with users
- The quality of the clustering?
  - Proposed a semantic clustering using ICA
  - ICA: viewing a document as an interaction of a set of independent hidden topics,

$$\begin{array}{ccccc}
& \mathbf{x}_1 & \mathbf{x}_2 & \cdots & \mathbf{x}_n \\
C_1 & p_{11} & p_{12} & \cdots & p_{1n} \\
C_2 & p_{21} & p_{22} & \cdots & p_{2n} \\
\vdots & \vdots & \vdots & \cdots & \vdots \\
C_k & p_{k1} & p_{k2} & \cdots & p_{kn}
\end{array}$$

**Figure 1. Semantic clustering matrix.**

- Problems:
  - most ICA algorithms are stochastic both on statistics and on algorithms
  - So the estimates of the independent components of a single run of an ICA algorithm cannot be trusted

- Contribution:
  - The evaluation process of reliability of semantic clustering can help find natural topic clusters in a set of documents
  - In IR, the language model is better estimated on the documents in the natural clusters that are closely related to a user's information need

# Research 2: Mobile Geographic Web Search Personalization

- “one-size-fits-all” of most information retrieval systems are not specially designed for mobile users
- Mobile personalized web search: for distinguishing mobile user's personal different search interest.

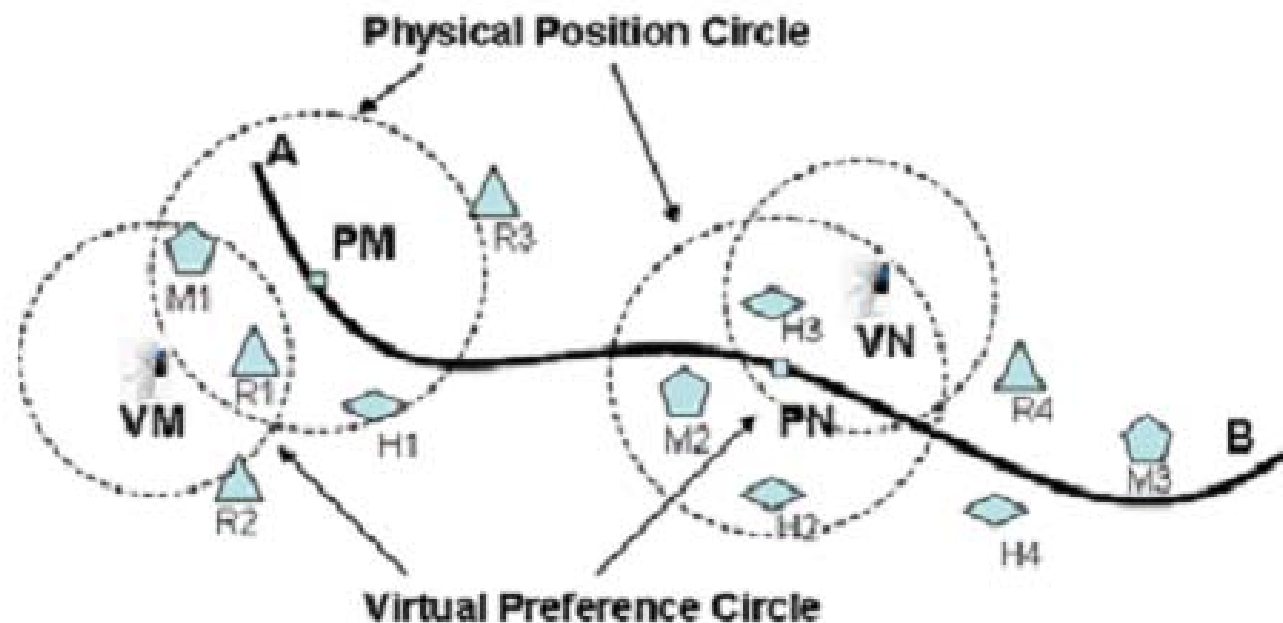
- In our research:
  - Considered user's location information to do a geographic query expansion
  - within language modeling framework, presented an approach to personalizing web search for mobile users
    - a user mixed model estimated by:
      - activated ontological topic model (from ODP)
      - user interest model
    - re-rank initial web search results from geographic query expansion



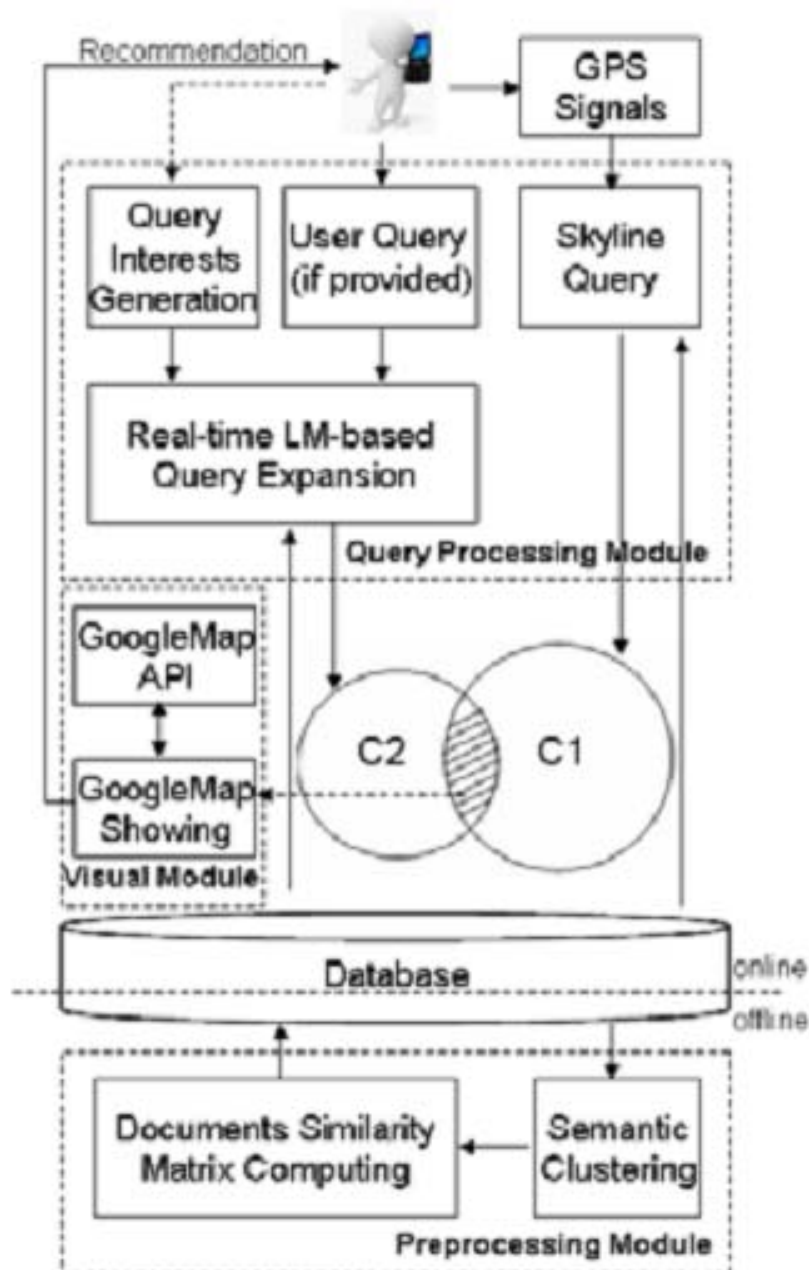
# Contribution

- Improvements comes from the consideration of
  - geographic information
  - ontological topic information
  - user interests
  - to find more relevant documents on the top list of retrieval results for satisfying mobile user's personal information need

# Research 3: Implicit Location Based Recommendation for Mobile Users



**Figure 1. Scenario of location based information recommendation according to two circles**



**LRS:** Location Based Service

**SQ:** Skyline Query

**IR:** Information Retrieval

**Figure 2. Architecture of LRS-SQIR system**

# Contribution

- The combination of using
  - skyline query
  - information retrieval
  - to do an implicit location-based personalized recommendation
  - without user's providing explicit preference or query

# Current Research 4: Shortest path (lowest cost)

- Shortest path (lowest cost) in road network
  - Using graphic theory
  - Designing its algorithm

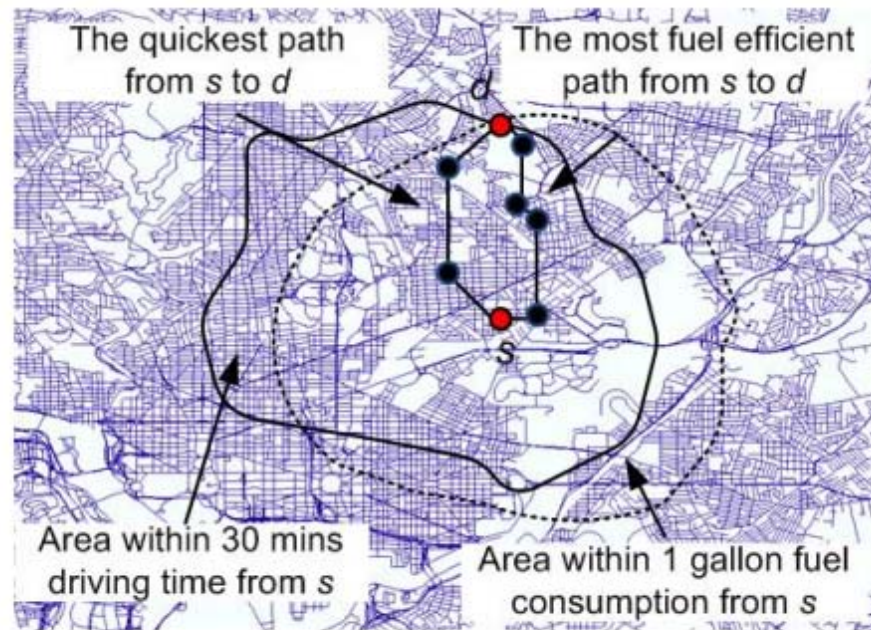


Figure 1. Range query w.r.t. to two constraints

**Thanks!**