Context-aware personalized mobile services

MobCom Workshop
February 6th, 2013
Overview

• Intro and goals
• Approach
  – Context detection
  – Personalized services
• Prototype
  – Implementation
  – Evaluation
• Demo
Intro

Context

MobCom

- Loyalty cards & discount vouchers
- Context-aware services
- Flexible Access Control

Personalized mobile services
Overabundance of information and services
Intro

Smart devices are aware of context
Intro

Proof of concept goals

• Framework for detecting user activity and context
• Context-aware recommendation system:
  – The right information...
  – ... at the right time and place
  – ... for the right user
• Privacy and transparency
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Approach

Context detection

• Monitor sensors
  – GPS, GSM cell id, gyroscope, acceleration
  – Urbanization degree, weather conditions

• Process sensor data
  – Basic movement: still, walking, on train
  – Moving to a destination
  – Near a point of interest

• Analysis
  – Determine full context
Approach

Personalized services

Determine Categories
- Activity Model
- Preferences Model
- Population Model
- History Model

Retrieve Information
- Restaurants
- Museums
- Trains
- ... Landmarks

Recommend Activities
- Stated Prefs
- Learned Prefs
- Collab. Filtering
- Distance & Boredom Punisher
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Prototype
Implementation

Android Client

- Detection Framework
- GUI

Connection

Server

- Recommender
- Tools
- Item retrievers
  - Foursquare
  - UiTDbank
  - WikiLocation
  - ...

Connections:
- Android Client to Server
- Server to Android Client
• Context Detection framework
• Context-aware, modular (hybrid) recommendation system
  – Most modules can run on client-side
  – No data would be collected by 3rd party
  – Optional server-side modules are less transparent, less privacy friendly
• Small scale real life test (12 users)
Prototype Evaluation

- The application is easy to use
- The recommendations are interesting
- It helps me discover new, interesting things

Chart showing responses:
- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree
Prototype Demo