Just-for-Me: An Adaptive Personalization System for Location-Aware Social Music Recommendation

SMU SINGAPORE MANAGEMENT UNIVERSITY
School of Information Systems

Zhiyong Cheng, Jialie Shen, Tao Mei

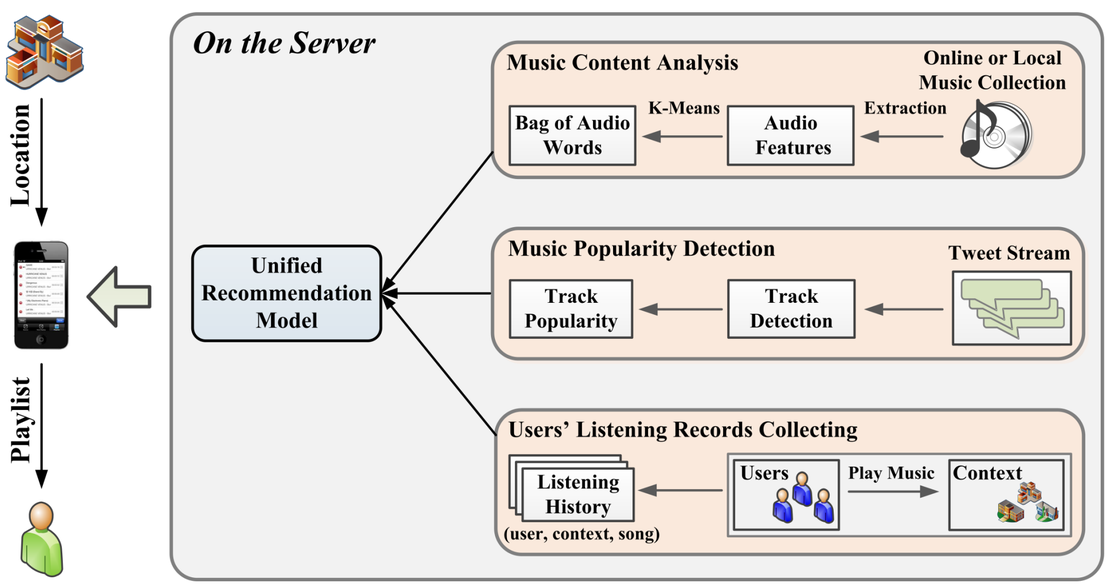
Research Motivation

- **Music Consumption Trends**: People increasingly use the handheld devices to access music contents on the move.
- **New Communication Paradigm:** Online social media applications (e.g., Last.fm and Twitter) provide convenient platforms to access music and related UGCs.
- **Dynamic Music Preferences:** Music preferences can be influenced by various contextual factors (e.g., location context and music popularity trends).

System Overview

- **Main objective:** The ***Just-for-Me*** aims to provide accurate and robust location-aware mobile music recommendation service by considering both the *location contexts* and *global music popularity trends*.
- **Architecture:** The system applies server-client architecture.
  - ***In the server side***: the recommendation model is trained and used to generate the playlists for different locations.
  - ***In the client side***: the corresponding recommended playlist with respect to the current location is presented.
- The ***Just-for-Me*** system consists of four main modules: (1) music content analysis, (2) music popularity detection, (3) users' listening records collection, and (4) unified recommendation model.
- A system prototype is implemented on Windows Phone 8 using Nokia Lumia 1320 with 1GB RAM.

System Architecture



User Interface

Recommendation **Customization** **Annotation** **Player**

Effects of Track Popularity

- To validate the effects of music popularity trends on music recommendation, we compared the recommendation accuracy between the three-way aspect model without (USW) and with popularity (USW_P).

Recommendation Accuracy Comparison

	Week 1		Week 3	
	USW	USW_P	USW	USW_P
P@10	0.235	***0.301***	0.302	***0.375***
P@20	0.345	***0.413***	0.395	***0.463***
P@30	0.644	***0.684***	0.481	***0.512***
P@40	0.638	***0.675***	0.578	***0.603***
P@50	0.740	***0.780***	0.647	***0.680***

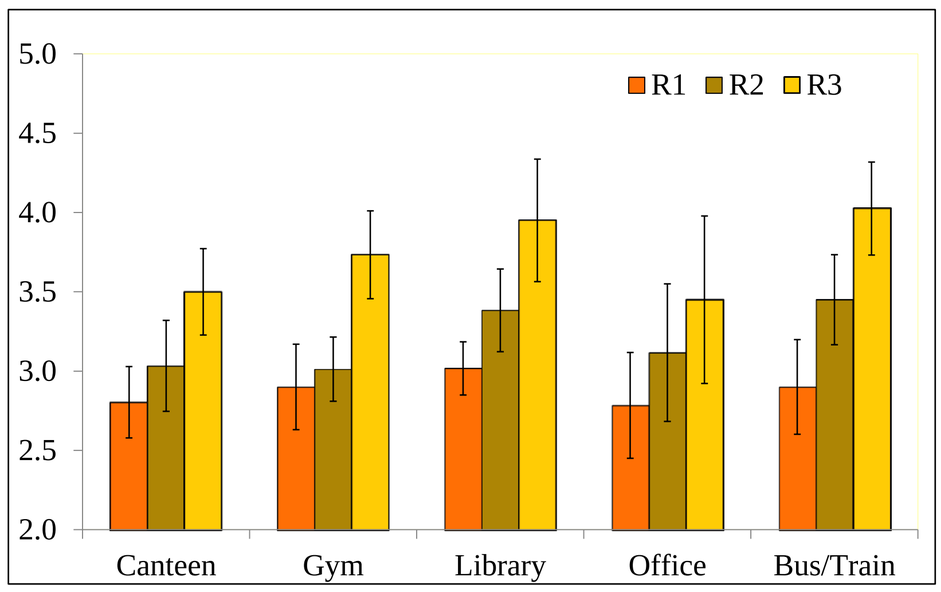
System Performance

- A comprehensive user study aims to compare ***Just-for-Me*** with two competitors on recommendation performance over five common venues:
  - R1: this system adopts a random recommendation strategy
  - R2: this system applies a contextual post-filtering method
  - R3: ***Just-for-Me*** system

Recommendation Accuracy Comparison

P@10	Canteen	Gym	Library	Office	Bus/Train
R1	0.333	0.333	0.333	0.300	0.333
R2	0.351	0.353	0.417	0.340	0.417
R3	***0.400***	***0.433***	***0.600***	***0.417***	***0.490***

Average Ratings Comparison (Top 10)



- **Effectiveness**: The mean relative improvements over R1 and R2 on P@10 are 43.17% and 24.13%, respectively.
- **Robustness**: The system consistently outperforms R1 and R2 over five venues.

Acknowledgements

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