Recommendation System using Foursquare Check-in Data

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Problem Definition

- Spend spare times effectively
  - Limited spare time
  - Hard to explore new venue

- Cold system
  - User data from Foursquare
  - Venue data from Foursquare

- Foursquare
  - User check-in data
  - Venue location data
  - Open api
Motivation

- **Recommended venues**
  - Make users happy
  - Make venue owners happy

- **Lack of recommendation systems**
  - Foursquare provides just friend-based suggestions
  - There is no popular application
  - Community needs! : )
Methodology - I

- Several existing solutions
  - User-based [1]
    - For user u, find a set of users S(u) have similar preference as u.
    - Recommend popular items among users in S(u) to user u.
  - Item-based [2]
    - For user u, get items set N(u) this user like before.
    - Recommend items which are similar to many items in N(u) to user u.
# Methodology - II

- **User-based vs. Item-based**

<table>
<thead>
<tr>
<th></th>
<th>User-based</th>
<th>Item-based</th>
</tr>
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<tbody>
<tr>
<td>Scalability</td>
<td>Bad when user size is large</td>
<td>Bad when item size is large</td>
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<tr>
<td>Explanation</td>
<td>Bad</td>
<td>Good</td>
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<td>Novelty</td>
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<tr>
<td>Coverage</td>
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<td>Cold start</td>
<td>Bad for new users</td>
<td>Bad for new items</td>
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<tr>
<td>Performance</td>
<td>Need to get many users history</td>
<td>Only need to get current user’s history</td>
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Methodology - III

- Graph-based
  - Users’ behaviors on items can be represented by bipartite graph. [3]
  - Users and items are connect by latent features. [4]
Evaluation

- Provide a simple web interface
- Login with foursquare account
- Get <latitude, longitude>, hour, day of week information from user and provide one recommendation
- Repeat that operation 5 times per user for at least 20 unique users
- Ask users if they follow the recommendation or not, and calculate our accuracy.
Questions?
References