VCI\textsuperscript{2}R at the NTCIR-13 Lifelog-2 LIT Task

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Decoding the Topics and Retrieving Activities

<table>
<thead>
<tr>
<th>Topics</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1: Diet and blood sugar level</td>
<td>Eating: user is eating food</td>
</tr>
<tr>
<td>T2: Exercise &amp; physical activity</td>
<td>Walk, Run, Hiking*, Gym/Yoga.</td>
</tr>
<tr>
<td>T3: Social</td>
<td>User is facing one or more persons in a conversation</td>
</tr>
<tr>
<td>T4: Transportation</td>
<td>Driving a car or taking a taxi, taking a bus, taking a train, taking a plane</td>
</tr>
</tbody>
</table>

**Retrieval Process**

1. Extract semantics for all image frames: 1K objects, 365 places, 80 MS coco, meta-data (location, activity)
2. Define topics: semantics inclusion criteria
3. Prepare training and validation set from ground truth
4. Train parameters (linear regression)
5. Visual examination and fine-tuning (repeat steps 2~5)
Theme-finding & Insight Visualization

Aggregate   Cluster   Associate   Animate   Compare

(1) Bar chart
(2) Clock-view
(3) Bubble chart
(4) Affinity map
(5) Activity on geographical map
(6) Sunburst chart
(7) Calendar view
(8) Radar chart
T1. Diet and Blood Sugar Level

Diet log: Text

- <drink-log>
  - <log>
    - <time>06:20</time>
    - <drink>Coffee</drink>
  </log>
- <log>
  - <time>08:40</time>
  - <drink>Coffee</drink>
</log>
- <log>
  - <time>15:50</time>
  - <drink>Coffee</drink>
</log>
- <log>
  - <time>16:35</time>
  - <drink>Class of red wine</drink>
</log>
</drink-log>
- <food-log>
  - <log>
    - <time>06:20</time>
    - <food>Small cereal</food>
  </log>
  - <log>
    - <time>08:20</time>
    - <food>Fruit</food>
  </log>
  - <log>
    - <time>11:50</time>
    - <food>Lunch: couscous with lamb and water</food>
  </log>
  - <log>
    - <time>18:35</time>
    - <food>Homemade bolognaise with wholewheat pasta and red wine + some cashew nuts</food>
  </log>
</food-log>

Glycemic index (GI) and glycemic load (GL) values determined in subjects with normal glucose tolerance: 2008

<table>
<thead>
<tr>
<th>Food Number and Item</th>
<th>GI² (Glucose Size = 100 g)</th>
<th>Serve per serve</th>
<th>GL³</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BAKERY PRODUCTS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cakes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Banana cake, made with sugar</td>
<td>47±8</td>
<td>60</td>
<td>14</td>
</tr>
<tr>
<td>2 Banana cake, made without sugar</td>
<td>55±10</td>
<td>60</td>
<td>12</td>
</tr>
<tr>
<td>3 Carrot cake, prepared with coconut flour (Philippines)</td>
<td>36</td>
<td>60</td>
<td>8</td>
</tr>
<tr>
<td>4 Chocolate cake made from packet mix with chocolate frosting (Betty Crocker, General Mills Inc., Minneapolis, USA)</td>
<td>38±3</td>
<td>111</td>
<td>20</td>
</tr>
<tr>
<td>5 Cupcake, strawberry-iced (Squiggles, Farmland, Grocery Holdings, Tooronga, Australia)</td>
<td>73±12</td>
<td>38</td>
<td>19</td>
</tr>
</tbody>
</table>
T1. Diet and Blood Sugar Level

Nutritional information (Glycemic load) of frequent food & drink

### Food
1. All-bran cereal (32) - GL: 13.0
2. Vegetable (19) - GL: 13.0
3. Boiled egg (16) - GL: 8.0
4. Cake (15) - GL: 17.0
5. Caesar salad (11) - GL: 13.0
6. Cookie (11) - GL: 5.5
7. Sausage (10) - GL: 8.0
8. Apple (10) - GL: 20.0
9. Pork (9) - GL: 13.0
10. Bread (9) - GL: 10.7
11. Cashew nuts (9) - GL: 3.0
12. Spring roll (6) - GL: 20.0
13. Meal (6) - GL: 10.0
14. Mushroom pasta (6) - GL: 3.0
15. Berries (5) - GL: 6.8
16. Beans (6) - GL: 11.0
17. Pepper (6) - GL: 13.0
18. Sushi (6) - GL: 8.7
19. Fruit (6) - GL: 11.0
20. Bacon (5) - GL: 20.0

### Drink
1. Coffee (100) - GL: 18.0
2. Coconut water (11) - GL: 11.0
3. Mint tea (9) - GL: 13.0
4. White wine (7) - GL: 14.0
5. Beer (6) - GL: 8.0
6. Red wine (6) - GL: 12.0
7. Berry smoothie (3) - GL: 7.0
8. Lemon orange juice (2) - GL: 12.0
9. Diet coke (2) - GL: 3.0
10. Soup (2) - GL: 11.0
11. Water with juice (2) - GL: 12.0
12. Coca cola (1) - GL: 14.0
13. Whisky (1) - GL: 12.4
14. Baileys (1) - GL: 18.5
15. Gluten-free beer (1) - GL: 14.5
16. Vanilla milkshake (1) - GL: 7.0
17. Coconut milk (1) - GL: 4.0
18. Juice (1) - GL: 12.0
T1. Diet and Blood Sugar Level

Factors contributing to blood sugar level

- Food intake is the most important factor to BLU
- Exercise and sleep may help maintain lower blood sugar level, but not statistically significant.
T2: Exercise & Physical Activity

- Walking is the main mode of exercise; especially true for u1.
- U2 exercises more than U1.
T3. Socialize

Geographic view

Calendar view

Socializing vs. mood

Socialize + exercise is good for mood
T4. Where

- Co-location of two users inferred from GPS + time
- < 30 meters
- Date: 2016.10.14
- Time: 19:00
- Place: The Westin Dublin?
- Multiple view to show the meeting of two users: map + photos
T4. Where

- The affinity map shows places that are connected according to temporal and spatial dimensions.
- Each node represents a place.
- Each edge shows a connection between them.
- A connection can be specified according to the transportation mode (walk, car, bus, etc.).
- The map can be filtered according to transportation mode.
T5: Compare

U1 spent more time in commuting, eating and socializing, whereas u2 has more physical activity and enjoyed more sleep.
Prototype Mobile App

- Themed diary presented in a mobile app.
- Five themes are included according to the LIT task requirements.
- Each theme features a list of items/questions of interest.
- Insights are elaborated and visualized under each item.
- On-line mode to be developed.
Summary

• Data recording and processing
  • High quality data is always desirable
  • Accurate retrieval is key

• Customization and personalization
  – Insights are highly individualized
  – Allow layman to generate their own insights

• Insight interpretation
  • Allow layman users to understand

• Scientific rigor vs. user experience
  • Interesting results facilitate UX but may sacrifice scientific rigor.

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