Motivation

Cold Start Problem
- New speaker: no conversations in the training data
- New dyad: both speakers in the training data with conversations with other users, but none between the dyad

Main Idea
- Conversational context depends on the speakers
- Conversational partners minimize social difference among them
- We infer the new speakers’ representation from the partners

Contributions
- Developed a conversation model that includes the speakers for
- Inferring conversational context from their former conversations
- Generating personalized response
- Solving new speakers and dyads problem
- Made a large, longitudinal open-domain conversation corpus
- Showed a significant performance gain on appropriate responses

Twitter Conversation Corpus

Open-domain naturally occurring conversations
- Personal casual conversations
- Naturally-occurring, as opposed to authored (e.g., movie scripts)
- Open-domain, as opposed to specific topics (e.g., discussions)

Conversation Network
- Node: user (speaker)
- Edge: # conversations between users

Corpus Statistics

<table>
<thead>
<tr>
<th>Users</th>
<th>Dyads</th>
<th>Convs</th>
<th>Utterances</th>
<th>Days (period)</th>
</tr>
</thead>
<tbody>
<tr>
<td>27K</td>
<td>107K</td>
<td>770K</td>
<td>6,109K</td>
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Response Quality

Automatic Metrics

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<tr>
<th></th>
<th>BLEU</th>
<th>Emb-Avg</th>
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Examples of Personalized Responses

- Consistent demographic answers for the same speaker (User A)
- Different answers based on the dyads (A – B and A – C ≠ A – D)

Questioner | Answerer | Where is your hometown? | Do you like me?
User B | User A | north carolina | i love you .
User C | User A | north carolina . | yes i do !
User D | User A | north carolina . | no i do not
User A | User B | minnesota . | because i love you
User A | User C | manchester :) | i love you too :) xx
User A | User D | i live in <unk> | no , i don’t .

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