Convey
Exploring the Use of a Context View for Chatbots

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Chatbots

Text messaging-based conversational system
Chatbot Ecosystem
Chatbots UI

- Highly flexible
- No learning curve

Same paradigm adopted from messaging apps
Chatbots UI Problems

**Cumbersome** Lengthy chats

**Non-persistent** Needs lot of scrolling

**Hard to modify intent** E.g., conversation restart

**Ambiguous** E.g., assuming 1 pizza

Hi, which pizza would you like today? Wanna try our new Veggie pizza?

I want Margherita

Great! What size?

Medium

Should I add a coke too?

Yeah sure

Check your final order and confirm: 1 Med Margherita with coke?

Confirm | Cancel

No, I change my mind. Plz make it Vegetarian.

Also, no bell peppers.

Oops, lets start over ...
Mismatch between chatbot's state of understanding, and user's perception of the chatbot understanding

Chatbot assumptions are not evident to the user
Solution: Convey

A persistent dynamic window displaying the context of the conversation

Provides intuitive interactions on the context values
Human: I want to order a hawaiian pizza

Bot: ok, anything else?

Human: yeah make that medium size, and add a coke

Bot: Please confirm your order:
    Hawaiian Pizza (Medium): 1, Coke: 1

Order food, hawaiian pizza
…
Order food, medium-sized hawaiian pizza, coke
…
Hi! I am here to help you shop.
Study Design

Task
With each interface, select either:
(a) Party footwear for yourself
(b) Sports footwear for the opposite gender

Ordering
Randomized

Budget
Rs 3000 (45 USD)

Reward
A randomly selected participant gets the selected shoes as free gift
Participants

Local IT company; snowball sampling

14 Engineering, 1 Finance, 1 Social Sciences

5 used messaging apps every hour, rest once every 4 hrs

All understand chatbot at a conceptual level, and 5 have tried chatbots before

32.5 ± 7.4 years
<table>
<thead>
<tr>
<th>Data Type</th>
<th>Default Bot</th>
<th>Convey Bot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time taken</td>
<td>7.6+2.1 min</td>
<td>8.3+2.0 min</td>
</tr>
<tr>
<td># of shoes viewed</td>
<td>71.5+21.5</td>
<td>77.6+22.7</td>
</tr>
<tr>
<td># of shoes zoomed into</td>
<td>9.8+5.3</td>
<td>10.6+9.2</td>
</tr>
<tr>
<td># of user messages</td>
<td>9.8+4.4</td>
<td>6.3+3.7</td>
</tr>
<tr>
<td># of words/message</td>
<td>33.9+13.3</td>
<td>26.1+11.2</td>
</tr>
<tr>
<td># of chars/message</td>
<td>174.4+65.8</td>
<td>136.6+50.9</td>
</tr>
<tr>
<td># of Convey interactions</td>
<td></td>
<td>7.8+6.5</td>
</tr>
</tbody>
</table>
Results

- Default Chatbot vs Convey Chatbot:
  - p<0.05
  - p<0.05

<table>
<thead>
<tr>
<th>Category</th>
<th>Likert Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mental Demand</td>
<td>2.5</td>
</tr>
<tr>
<td>Physical Demand</td>
<td>2.0</td>
</tr>
<tr>
<td>Task Success</td>
<td>3.5</td>
</tr>
<tr>
<td>Effort</td>
<td>2.8</td>
</tr>
<tr>
<td>Frustrating</td>
<td>2.3</td>
</tr>
<tr>
<td>Use in Future</td>
<td>4.0</td>
</tr>
</tbody>
</table>

13/11/18
Convey: Context View for Chatbots
Results

All 16 participants preferred chatbot with Convey

General
“Well, just keep the GUI at the top, plz, it helps!”,
“It (Convey) was more like a shopping experience, the other one was like an exam!”

Easier to Use
“... easier to find products with different combinations.”
“... easier to narrow down products.”

Faster
“... saves typing effort ...”
“I gave less false inputs to the chatbots in case with top interactive part.”
Results

**Context**  “Can keep track of what we are searching currently.”
“... easy to see what are the choices made and edit them.”
“... maintains effective cumulative history.”

**Guide**  “... showing what options are available to choose from.”

**Efficiency**  In particular, price range slider, as entering the price range using text was “almost impossible”
Results

**Precision**  Can provide precise inputs, as NLP has limitations

**Deletion**  “easily able to remove preferences once selected”

“It is WYSIWYG of chatbots!”
Other Use Cases

**News**

Show latest weather news of USA

Here

**Support**

On Windows laptop, wi-fi is not working from the past 2 hours

Give your account number
Thank You!

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