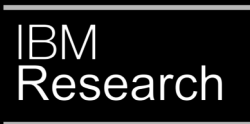


Convey

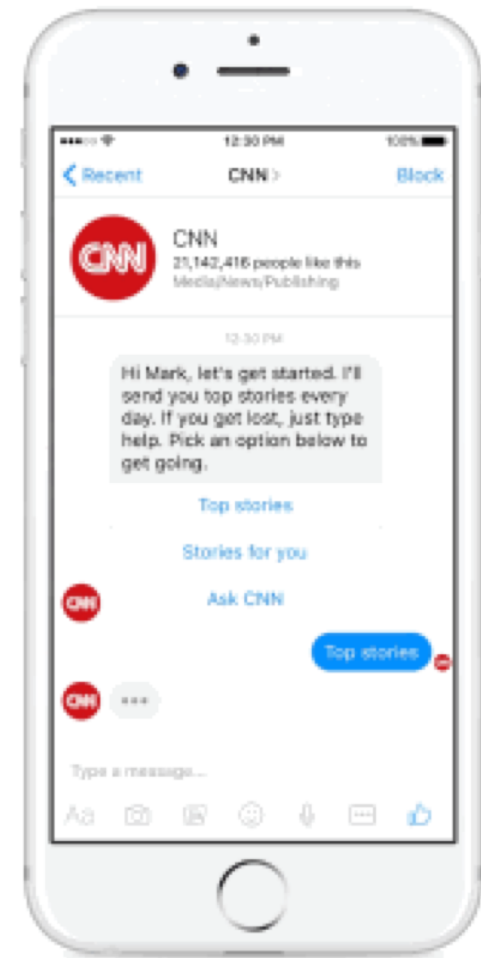
Exploring the Use of a **Context View** for **Chatbots**

Mohit Jain, Ramachandra Kota, Pratyush Kumar, Shwetak Patel

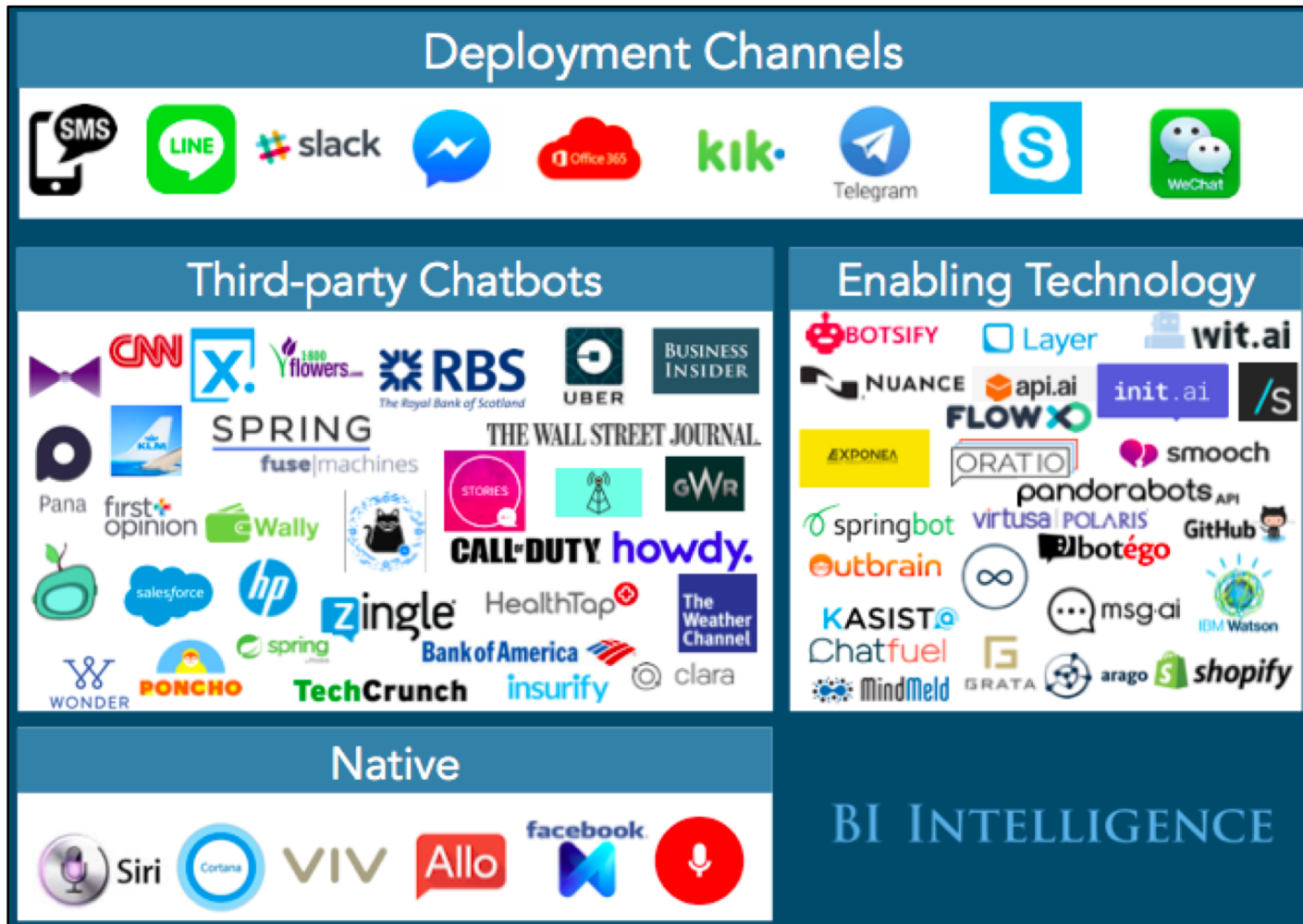


Chatbots

Text messaging-based
conversational system



Chatbot Ecosystem



Chatbots UI

Highly flexible


No learning curve



Same paradigm adopted from messaging apps

Chatbots UI Problems

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 ...

Cumbersome Lengthy chats

Non-persistent Needs lot of scrolling

Hard to modify intent E.g., conversation restart

Ambiguous E.g., assuming 1 pizza

Problems

Mismatch between

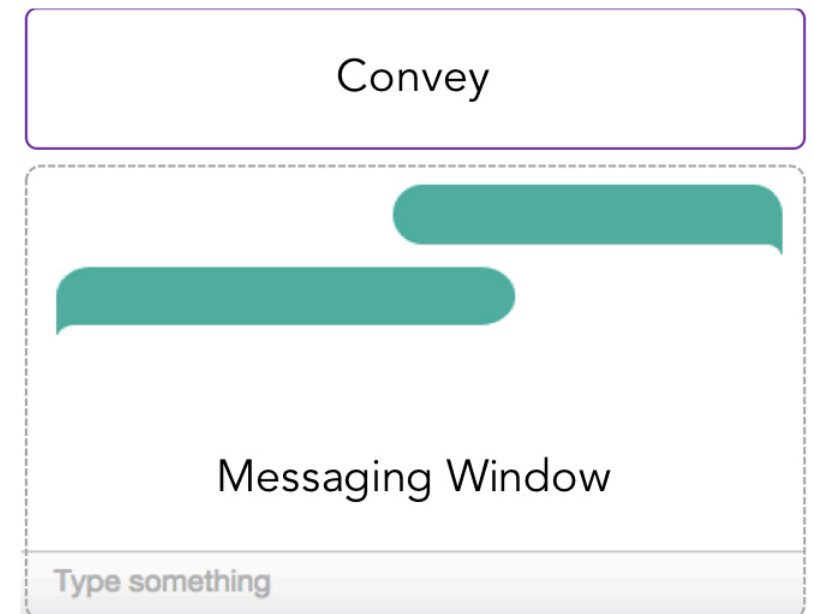
chatbot's state of understanding, *and*
user's perception of the chatbot understanding

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**



Context

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.

Type something

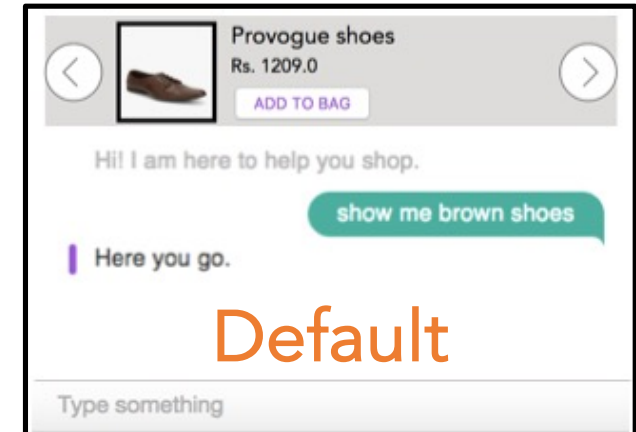
Study Design

- 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



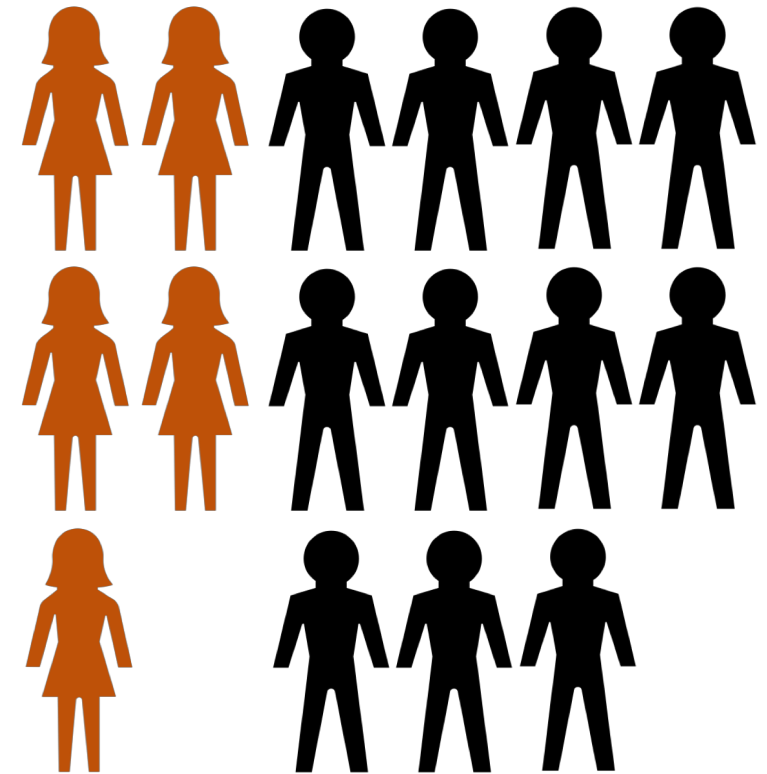
Participants

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

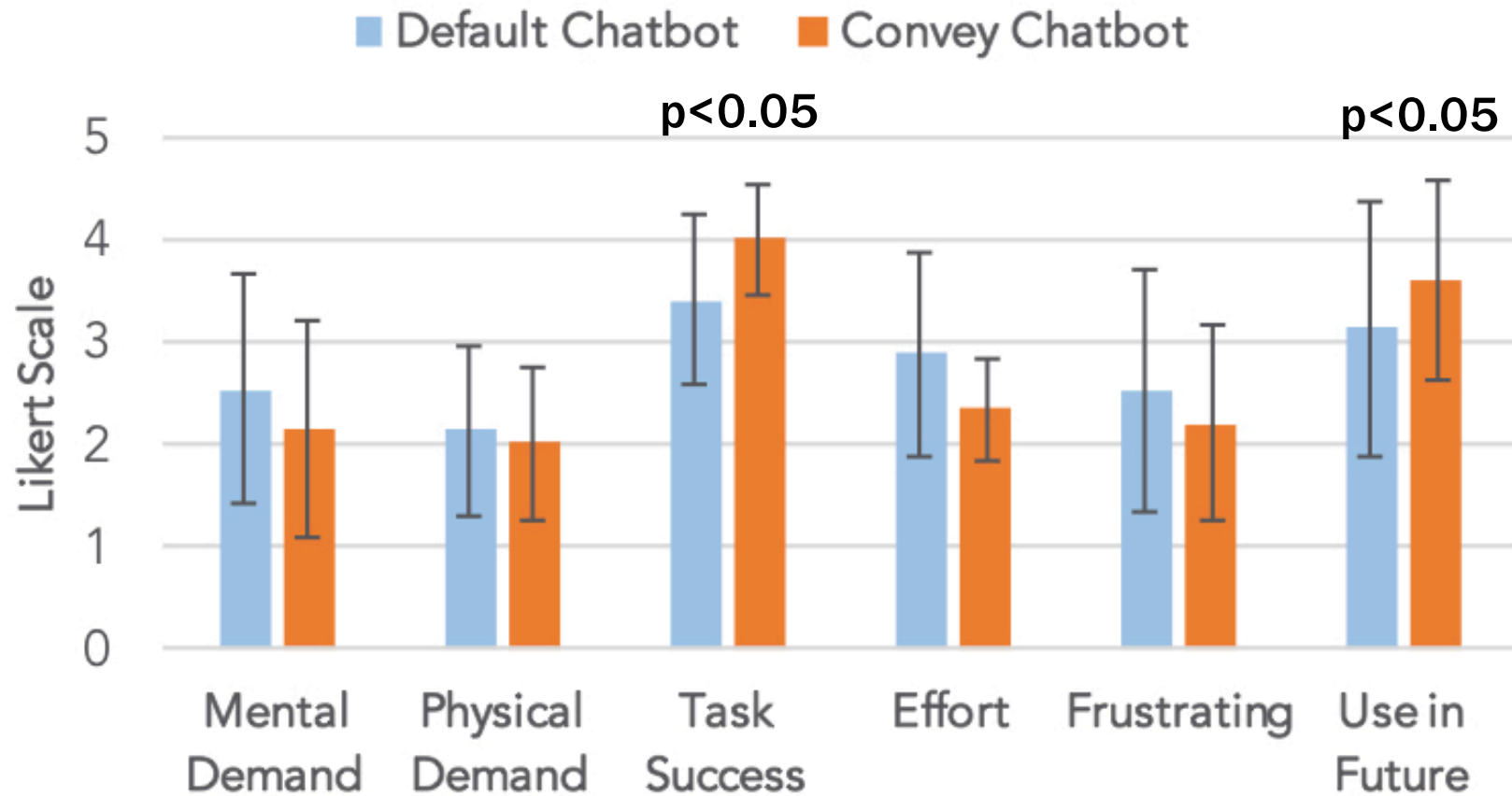


32.5 ± 7.4 years

Results

Data Type	Default Bot	Convey Bot
Time taken	7.6+2.1 min	8.3+2.0 min
# of shoes viewed	71.5+21.5	77.6+22.7
# of shoes zoomed into	9.8+5.3	10.6+9.2
# of user messages	9.8+4.4	6.3+3.7
# of words/message	33.9+13.3	26.1+11.2
# of chars/message	174.4+65.8	136.6+50.9
# of Convey interactions		7.8+6.5

Results



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 ~~x~~ weather news of USA

Jul 2015						
Su	Mo	Tu	We	Th	Fr	Sa
28	29	30	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	1

Here

news of hurricane

Type something

Support

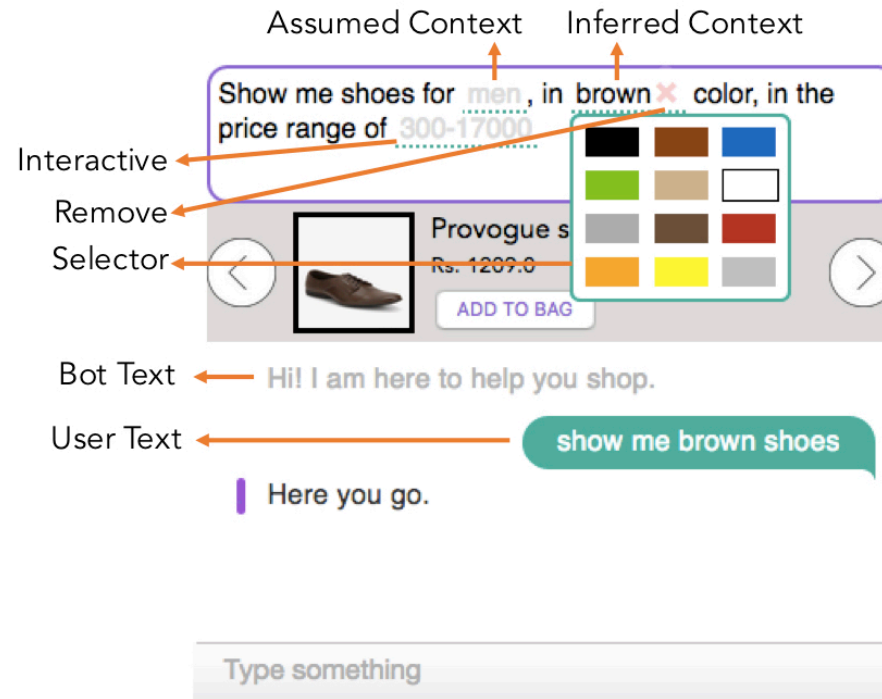
On Windows laptop, wi-fi is not working
from the past 2 hours ~~x~~

wi-fi not working

Give your account number

Type something

Thank You!



Mohit Jain

University of Washington, Seattle US: mohitj@cs.washington.edu

IBM Research, India: mohitjain@in.ibm.com