# DESIGNING TRAVEL BOTS

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## Hack Hospitality

**School of Hospitality and Tourism Management**
**University of Surrey**
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UNIVERSITY OF
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Prepared by:

**Erin Chao Ling**, PhD Researcher
**Iis Tussyadiah,** Head of Department of Hospitality

# Hack Hospitality
## Applications and Implications of AI in Hospitality

The Department of Hospitality in collaboration with the Centre for Research and Enterprise (CRE) within the School of Hospitality and Tourism Management at University of Surrey kick started Hack Hospitality, a series of collaborative workshops to discuss the applications and implications of artificial intelligence (AI) and robotics in hospitality. The inaugural workshops were held in Central London on 12 February 2019 and in Guildford on 19 February 2019.

**Hack Hospitality** brought together Surrey's research team with experts in AI and robotics, as well as thought leaders in the hospitality and travel industry to envision how to best implement chatbots for hospitality. Workshop participants engaged in insightful discussion and collaborative exercises using Personas and Scripts to co-design human-chatbot conversations and think about the benefits and challenges of implementing chatbots in the travel and hospitality industry.

*"Surrey's Hack Hospitality is a platform that brings together researchers and industry experts to co-design intelligent hospitality systems."*

**WORKSHOP PARTICIPANTS**

- *Arora Group*
- *BotsAndUs*
- *The Bot Platform*
- *Casual Dining Group*
- *The Cato Bot Company Ltd.*
- *Crepeaffaire Ltd.*
- *D&D Restaurants*

- *Fit Food & Juice Bars*
- *Gin Kitchen*
- *Humanise.AI*
- *Institute of Hospitality*
- *Karakuri*
- *Lakeside Restaurant*
- *McDonald's*

- *Moving Food*
- *Rarely Impossible*
- *SACO Apartments*
- *SHTM*
- *Visit Surrey*
- *WTTC*

# Are chatbots necessary?
## How bots can assist travellers

- Chatbots can simplify hotel booking process.
- Chatbots are available 24/7 to provide instant assistance, thus reduce reception workload and increase time efficiency.
- As a reservation channel, chatbots can improve direct hotel marketing so as to increase hotel revenues.
- Hotels can collect and build guest profiles to provide personalised customer service and tailored promotion through the use of chatbots.
- Chatbots can add value by offering more personalised recommendations and better conversational interface compared to search engines.

*"if you can Google it, you probably don't need a chatbot for it."*

- Hotel guests want easy and fast check in and check out.
- Hotel guests can get proactive notifications from chatbots.
- Chatbots can be useful to assist older travellers in hotels, or those starting to suffer from dementia.

**"Knowing the reason for having a chatbot will help define how to run it. Therefore, we need to better understand different guests' needs (e.g. between repeat guests and one-off visitors)."**

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# What makes a good chatbot?
## Chatbots should be able to...

### INTERACTION

- ...recognise the context of a conversation and know how to start the conversation.
- ...give users some prompts to let them know that they are talking to a chatbot.
- ...come with an instruction booklet to tell users what they can ask and what to do with the chatbots.
- ...provide a narrow enough response by saying something insightful for users.
- ...identify and recognise from user's responses (e.g., the delay it takes to respond, saying 'Hmmm' or 'Um', intonation) and work out whether or not they are losing the confidence of the user.

### PROACTIVITY AND CURATED RECOMMENDATION

- ...recognise when the user lands, provide welcoming greetings, and proactively ask if further booking is needed.
- ...know users' personal data (such as demographic) and be proactive in giving some recommendations that users would potentially like. They can do so by linking to users' social media profiles and giving recommendations based on preference and behaviour, particularly for young people (e.g., vegan, who they follow, travel history).
- ...be very personalised.
- ...recommend good restaurants with detailed information based on users' location and can guide to the booking stage.
- ...give recommendations by sending them to users' laptop and/or phone to check out more things visually, so users can see what they are inspired by.
- ...apply weights to items on the list such that they match users' demographics; pick up local information or from previous conversations, and take it through the booking process.
- ...provide useful curation (of recommendations) instead of giving too many options.

## INTELLIGENCE

- ...have memories (from past conversations) rather than just hold a single thread of conversation.
- ...remember what users have asked and said before and can continue the conversation later.
- ...integrate language translation.
- ...understand all different languages.

## ASSISTANCE

- ...build the anticipation (of travelling).
- ...help users to share booking information on social media.
- ...solve problems and actually enhance the guest's stay.
- ...provide access to conversation with members of human staff.



*"Chatbots should be able to constantly think about users' experience and be proactive. They should provide notifications about restaurant bookings, taxi bookings, special offers, information about events or activities happening nearby, weather warnings, and local issues that guests need to be aware of."*

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# What makes it so complex?
## Challenges of implementing travel chatbots

### MANAGING EXPECTATION

- People (including senior management and customers) have too high expectation on chatbots, but the technology is yet relatively limited.
- Too much detailed information needed to describe the "holiday" (e.g. flights, room types, room quantities) that do not give users any help.
- Visual forms (photos) are necessary to be sent to users instead of pure textual bot conversation.

### INTERACTION

- There is a real issue around how a guest know what they can do with chatbots.
- The use of language has to be very carefully thought through and make it super clear what the user is implying, which requires a lot of concentration on phrasing.
- Tedious experience when the chatbot doubles the size of the conversation to confirm the user's ambiguous request.
- There is an issue of merging the conversation contexts. It is difficult for chatbots to go back and know it is the same person; different conversations, but the same context. It thus needs more push towards context recognition.

*"Language ambiguity can be a challenge: how to define the term that the user typed. What "the best" means to the user when asking "what is the best season to travel?"; is it cheapest or best weather or best for particular activities?"*

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### INTEROPERABILITY

- Find ways that chatbots would work across different types of technologies. They need to be working on a phone, an Alexa hub in a room, on WeChat, WhatsApp, or Facebook Messenger.

## CONFIRMATION

- Users are scared that the chatbot will make bookings directly before the user's confirmation.
- It is difficult to make sure that if users want information, they will get information, and that there will be a next step to confirm when the chatbot would actually make the bookings for them.
- It is difficult to trust chatbots with travel. Travellers would like to double check the booking information to confirm the accuracy as money is involved.

## ETHICS AND PRIVACY

- How to profile the customers, to elicit that information so as to act on it (for personalisation).
- Privacy concerns about surveillance; afraid of being listened to.
- The recommendations that chatbot can provide might be limited within big brands in partnership, and thus might lack a better deal from other brands.

*"Hotels should obtain guests' consent if using voice-based chatbot devices in rooms."*

## LANGUAGE

- Chatbots cannot understand a different language.
- It is very easy to get frustrated when the chatbot cannot understand an accent.
- Hotels have tourist guests from all over the world. It is a popular question for travellers to ask for language translation.

# Lessons learned
## Key takeaways

### OPPORTUNITIES
- Chatbots can help make marketing more effective, improve customer service, and enhance customer experience.
- Chatbots can help save travellers' time to book a trip, hotels, and restaurants.
- Chatbots can maximise efficiency in planning and managing a trip, particularly for business travellers.

### CHALLENGES
- Language challenges: ability to understand command/request.
- Too high expectation on chatbot performance.
- Cultural/language differences resulting in interaction problems.
- Chatbots lack context recognition and memory of previous conversations.
- Interoperability across different platforms, adjusting to guests' apps.
- Travellers feel more comfortable using chatbots for restaurants and city tourism (while on a trip), rather than planning a trip (fear of accidental booking).

### WHAT'S NEXT?
- Training and guidance are needed to set up appropriate level of expectation and clearer purpose of using chatbots for travel.
- The overarching concern about trusting chatbots would be eventually normalised.
- People would be more likely to use chatbots for travel if they are more intelligent (context recognition, proactive curated recommendations).

"It is important to use chatbots to identify opportunities to maximise revenues from non-room rates: add-on services such as food and beverages, spa, etc. The system needs to extract rich information about customers and send relevant recommendations at opportune moments."

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# Human-chatbot interaction
## How will the conversation unfold?
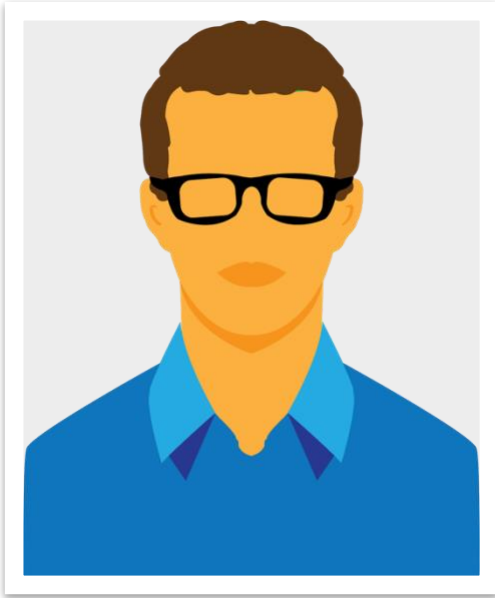
**JACK**
- Male, 43 years old
- A Professor from New York
- Travelling for a conference
- Disciplined and ambitious

**TECHNOLOGY**
- Digitally fluent via smart phone, tablet, prefers working on laptop
- Uses Facebook and LinkedIn to stay connected with colleagues, but only checks twice a week
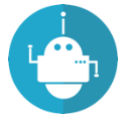- Comfortable with the latest technologies

**TRAVEL**

"Jack seeks easy and fast booking options that provide flexibility based on his busy schedule. He wants comfortable and high quality service and products. He looks for efficiency during his stay."

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# Human-chatbot interaction
## A vision: Jack & Gem

How can I help?

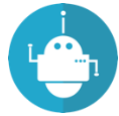Accept that invitation to the conference in Hawaii.
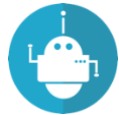
Done. Do you need help with your travel?

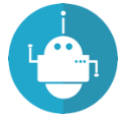Yes, book the conference hotel from Sunday for a week.

No can do, Jack. But Hilton is showing availability. Book it?

No, I want to use my Marriott points.

The nearest Marriott is two miles away and it has rooms.

What's the cancellation policy on that?

24 hours. Will you book?

Yes, please. Also, how do I get to the conference?

A taxi will cost $20 and take 20 minutes. You can also take a bus.

It's okay. I will just take an Uber when I'm there.

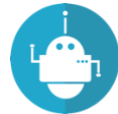All done. See you in Hawaii!

### At the Airport

Aloha! Shall I book an Uber while you collect your luggage at Belt 3?

Great, thanks!

### At the Hotel

Can you recommend an Italian restaurant nearby?

Gio's has good reviews. It is 5 minutes away. Shall I book?

Yes, book for 8pm, please!

*Hack Hospitality*
# DESIGNING TRAVEL BOTS

*Facilitators:*

Erin Chao Ling      | c.ling@surrey.ac.uk
Aarni Tuomi          | a.tuomi@surrey.ac.uk
Iis Tussyadiah       | i.tussyadiah@surrey.ac.uk

*With contribution from:*
Nathalie Hinds • Jason Stienmetz • Husna Zainal Abidin • Athina Ioannou

School of Hospitality and Tourism Management
University of Surrey



*Sponsors:*