



FinTrust

Engineering trust into
conversational interfaces

Agenda

1. Chatbot definition
2. Social science theories on trust
3. What our research says about trust
4. System architecture
5. Dialogflow
6. Small talk
7. Real-time emotional analysis



COVID-19

Wellbeing support has never
been so important



def Chatbot

A chatbot is an artificial intelligence application that can imitate a real conversation with a human in their natural language



Banking support



Personal assistants



Robo-advisors



Computers are social actors

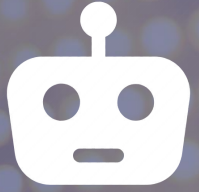
CASA framework tells us humans mindlessly apply the same social heuristics used for human interactions to computers

The aim is to lower tensions in the human-to-machine interaction. One way to decrease tension and increase trust in users is to infuse chatbots with socio-emotional features



The rise of socio-emotionally intelligent bots

Promotes coherence in human-to-machine interaction, decrease tensions, increases user interactivity and targets behavior such as sustained usage and increased trust



Trust in chatbots



Privacy & security



Accuracy of messages



Conversational style



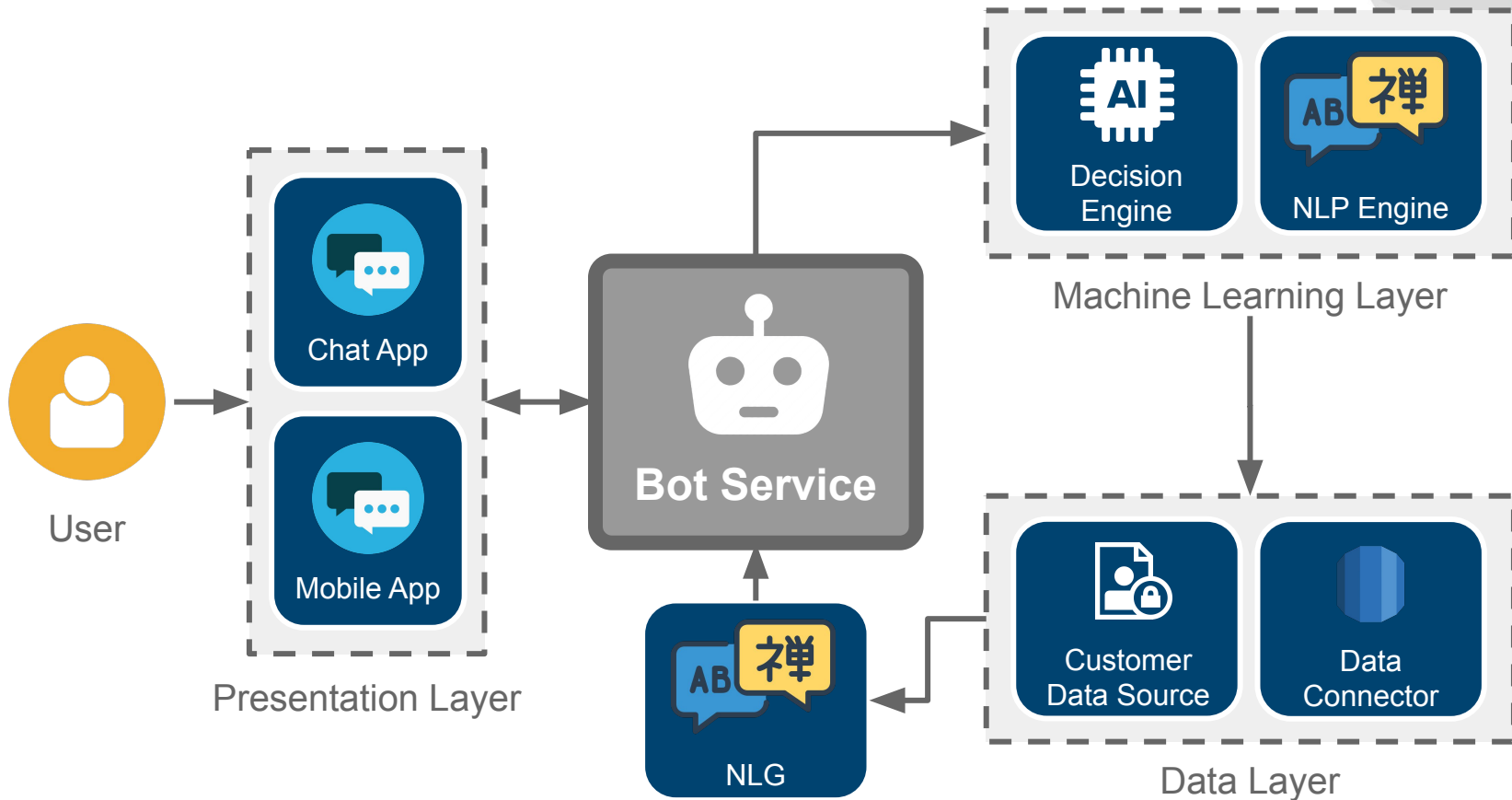
Functionality user expects



Level of control



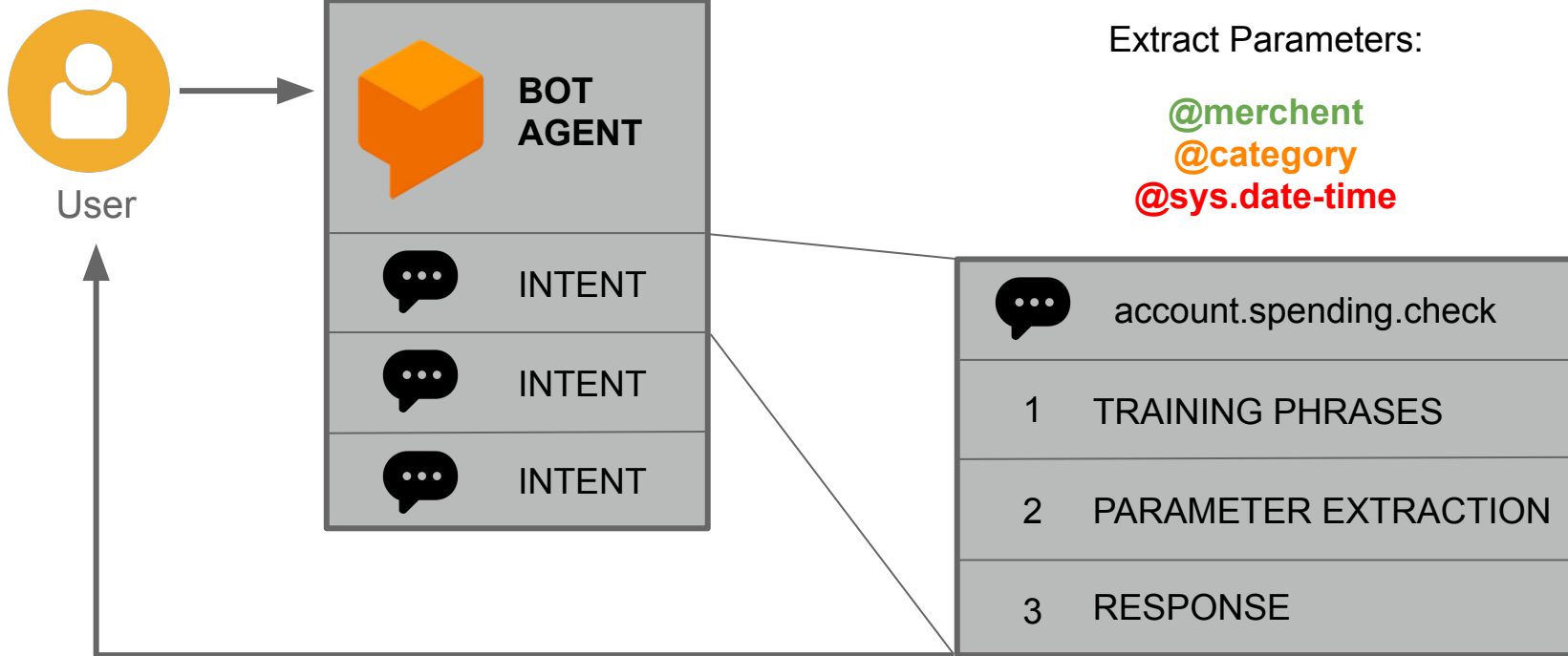
Approachable personality



Dialogflow

Google Dialogflow is a natural language understanding platform used to design and integrate a conversational user interface into mobile apps, web applications and bots

how much did I spend on **Travel** in **January**?
check my spendings at **Marriott** for **this week**
can I see my latest **withdrawals**



```
def detect_intent_with_parameters(project_id, session_id, query_params, language_code, user_input):
    session_client = dialogflow.SessionsClient()
    session = session_client.session_path(project_id, session_id)

    text_input = dialogflow.types.TextInput(text=user_input, language_code=language_code)
    query_input = dialogflow.types.QueryInput(text=text_input)

    response = session_client.detect_intent(
        session=session, query_input=query_input,
        query_params=query_params
    )

    print('Detected intent: {} (confidence: {})\n'.format(
        response.query_result.intent.display_name,
        response.query_result.intent_detection_confidence))
    print('Fulfillment text: {}\n'.format(
        response.query_result.fulfillment_text))

    return response
```

```
def detect_intent_with_parameters(project_id, session_id, query_params, language_code, user_input):
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        response.query_result.fulfillment_text))

    return response
```

Small talk

Small talk allows the chatbot to provide responses to casual conversation. It allows the agent to answer common questions outside the scope of the defined intents.

```
[
  {
    "action": "smalltalk.agent.acquaintance",
    "customAnswers": [
      "I'm a virtual assistant",
      "I'm a machine who has been created to help you",
      "I'm a chatbot"
    ]
  },
  {
    "action": "smalltalk.agent.age",
    "customAnswers": [
      "I was created recently, but don't know my exact age",
      "I'm quite new, but am constantly learning and improving"
    ]
  },
  {
    "action": "smalltalk.agent.annoying",
    "customAnswers": [
      "I'm sorry, I don't mean to be annoying"
    ]
  }
]
```

Who are you?

How old are you?

You're annoying me

```
{
  "responseId": "d7697718-ecec-4ac8-9034-4b6e7ef76761-ee7586fb",
  "queryResult": {
    "queryText": "who are you?",
    "action": "smalltalk.agent.acquaintance",
    "parameters": {},
    "allRequiredParamsPresent": true,
    "fulfillmentText": "I'm a machine who has been designed to help you",
    "fulfillmentMessages": [
      {
        "text": {
          "text": [
            "I'm a machine who has been designed to help you"
          ]
        }
      }
    ],
    "intent": {},
    "intentDetectionConfidence": 1,
    "languageCode": "en"
  }
}
```

Emotional analysis

Use granular emotional analysis in real-time to intercept responses and enhance empathy



"I hate that you can't understand me"

```
{
  "document_tone": {
    "tones": [
      {
        "score": 0.887785,
        "tone_id": "anger",
        "tone_name": "Anger"
      },
      {
        "score": 0.801827,
        "tone_id": "analytical",
        "tone_name": "Analytical"
      }
    ]
  }
}
```

GUI design





Thanks

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