ELEVATING THE CUSTOMER JOURNEY WITH CONVERSATIONAL AI

Michael Johnston
Director of Research and Innovation
Engage *where* they want

*when* they want

*with little* effort
Speech and language
• Highly expressive
• Compositional
• Rapid
• Natural
Conversational AI

- Natural user experience
- Consistent, Branded
- Reduced cost
- Shared context

ADAPTIVE UNDERSTANDING

AUGMENTED AGENT
CASE STUDIES

1. Robust non-linear ordering over conversational SMS

2. Augmenting agents supporting webchat

Conversational AI

AUGMENTED AGENT
CASE STUDY 1

ROBUST NON-LINEAR ORDERING OVER CONVERSATIONAL SMS
MOBILE ORDERING EXPERIENCE TODAY

• High barrier of entry
  • Downloading mobile apps
  • Connecting on social

• Inefficient
  • Complex graphical menus
  • Button-driven interaction

• Not natural
  • Limited natural language capability
  • Linear conversational flow
CONVERSATIONAL ORDERING FOR FOOD SERVICE: MOTIVATIONS

• Why is SMS ordering appealing?
  • Ubiquity of SMS
  • Free up staff
    • Less time answering the phone more time making food
  • Brand consistency and personality
  • Help customers find best deal ... upsell
  • Drive to increase revenue
  • Persistent *hook* to reconnect to customer
    • Status updates
    • Promotions
PIZZA ORDERING DIALOG: SIMPLE RIGHT?

Which pizza would you like?
“pepperoni”

What size?
“large”

Which crust?
“thick crust”
PIZZA ORDERING REALITY

- Multi-item queries:
  - “I want 2 pizzas one hotbox one chicken ranch a large chzstix and 2 cokes”
- Iterative refinement:
  - “Make the hotbox XL”
  - “XL regular crust for all of them and extra cheese on the chicken”
- Information queries
  - “What’s on the eves garden?”
- Over-answering:
  - “What kind of crust did you want for the Hotbox?”
  - “regular for both and an order of stix too”
- Grounding:
  - “can I get that spinach and cheese pie” (= Popeye)
- Social and FAQ support
  - “how many will the XL feed?”
  - “I love you”
CONVERSATIONAL ORDERING FOR FOOD SERVICE

• Customer trial of advanced conversational SMS ordering system for food service:
  • Robust non-linear ordering
  • Rich natural language understanding
  • Full complexities of menu including multi-item ordering, modifications, halves …
KEY CAPABILITIES

• Multi-item ordering
• Non-linear attribute queries
KEY CAPABILITIES

- Multi-item ordering
- Non-linear attribute queries

A Large Popeye and an Extra Large Cheese Pizza with Bacon and Pineapple. Sounds good! Regarding the Large Popeye and Extra Large Cheese Pizza with Bacon and Pineapple, what crust would you like for them?

Regular for both

So, that's an Extra Large Old School Crust Cheese Pizza with Bacon and Pineapple and a Large Old School Crust
KEY CAPABILITIES

• Multi-item ordering
• Non-linear attribute queries
• Item information
• Contextual understanding

What is the eves garden pizza

The Eve's Garden: Fresh Broccoli, Fontina, Roma Tomatoes and Fresh Garlic on Red Sauce
Small: $11.68, Large: $16.96, XL: $20.80

I'll take it

An Eve's Garden. Sounds good! Regarding the Eve's Garden, what size would you like?
What is the eve's garden pizza

The Eve's Garden: Fresh Broccoli, Fontina, Roma Tomatoes and Fresh Garlic on Red Sauce
Small: $11.68, Large: $16.96, XL: $20.80

I'll take it

An Eve's Garden. Sounds good! Regarding the Eve's Garden, what size would you like?
KEY CAPABILITIES

- Multi-item ordering
- Non-linear attribute queries
- Item information
- Contextual understanding
- Disambiguation
- Suggestion

What is the eves garden pizza

The Eve's Garden: Fresh Broccoli, Fontina, Roma Tomatoes and Fresh Garlic on Red Sauce
Small: $11.68, Large: $16.96, XL: $20.80

I'll take it

An Eve's Garden. Sounds good! Regarding the Eve's Garden, what size would you like?
KEY CAPABILITIES

• Multi-item ordering
• Non-linear attribute queries
• Item information
• Contextual understanding
• Disambiguation
• Suggestion
• Specials and Deals
• Order Modification

Yup the deal large pepperoni stix with cheese 2 cokes

Ok the Deal. Need some info on the Large Cheese Pizza with Pepperoni, what crust would you like?

I want a coke and a Diet Coke

Ok a Coke and a Diet Coke. What else can we get you?

I don't want the Diet

Ok, we removed a Diet Coke.
KEY CAPABILITIES

- Multi-item ordering
- Non-linear attribute queries
- Item information
- Contextual understanding
- Disambiguation
- Suggestion
- Specials and Deals
- Order Modification
- Item Modification

So, that's a Large Old School Crust Popeye and a Small Old School Crust Eve's Garden. What else can we get you Ethan?

Add sausage to the garden

A Small Old School Crust Eve's Garden with Sausage. Sounds good! What else can we get you Ethan?
KEY CAPABILITIES

• Multi-item ordering
• Non-linear attribute queries
• Item information
• Contextual understanding
• Disambiguation
• Suggestion
• Specials and Deals
• Order Modification
• Item Modification
• Social & FAQ support

How many pizzas for 5 people?

An XL has 12 slices, so it can feed up to 6 people, as long as none of them are teenagers or college students --- they'll need an XL each. What can we get you Ethan?

I love you

We're blushing :). What can we get you Ethan?
KEY CAPABILITIES

- Multi-item ordering
- Non-linear attribute queries
- Item information
- Contextual understanding
- Disambiguation
- Suggestion
- Specials and Deals
- Order Modification
- Item Modification
- Social & FAQ support

I want a large thin crust pepperoni pizza and 2 drinks a coke and a Diet Coke

A Large Skinny Crust Cheese Pizza with Pepperoni, a Coke, and a Diet Coke. Sounds good! You can get an order of Stix to make it The Deal Meal for only $0.39 more. What else can we get you Ethan?

Sounds good

The Deal. Sounds good! Need some info on the order of Stix, what dipping sauce would you like?
KEY “TAKE-AWAYS”

• Food ordering is a much more complex dialog task than you might think
  • HotBox SMS Ordering was launched to small group of customers Sept 2018:
    • “I would like to place an order and pick it up today at 11.45. I would like a large thin half cheese half spicy pepperoni and an order of breadsticks with cheese”

• Some of the challenges:
  • Multi item ordering → Rich natural language understanding
  • Multiple intents
  • Over-answering
  • Complex referential expressions to modify/delete items
  • Contextually sensitive interpretation, pizza is not always pizza
  • Grounding
  • Suggestions, Specials, Upsell
CASE STUDY 2

AUGMENTING AGENTS SUPPORTING WEBCHAT
AUGMENTING LIVE CHAT AGENTS WITH CONVERSATIONAL AI

Challenges:
- Enabling conversational customer support through web chat
- Customer service, Rewards, Coupons
- Spikes in volume

Approach:
- Conversational AI monitors chat dialogs
- Automates many responses
- Agents in the loop through intelligent chat desktop
- Provides assistance to agents
- Agent provide feedback which fuels additional automation
CUSTOMER INTERACTS WITH CHAT WIDGET
AGENT CONVERSATION DESKTOP
AUTOMATED CONVERSATION

Seamless interplay between human agents and AI driven dialog
• DNN sequence-to-sequence model generates potential responses to assist the agent
• Symbiosis of human agent and conversational AI
ELEVATING THE CUSTOMER JOURNEY WITH COVERSATIONAL AI

Conversational AI

- Natural user experience
- Consistent, Branded
- Reduced cost
- Shared context

Adaptive Understanding

Augmented Agent

Voice → Chat → SMS → Mobile → In-Home
Thank you

Michael Johnston
Director of Research and Innovation

mjohnston@interactions.com