A by any other name...

Conversational Design at scale
by any other name...

Entities and Intents
Keeping them current in an ever-changing world

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At Oracle, we are designing conversational UX for

- Thousands of enterprises
- Their hundreds of thousands of users
- Using our products in real time
- In multiple domains
Conversational UX: Agenda

- Use Cases
- Challenges
- Solutions
- Costs
- Takeaway
Definitions

- Intent + Entity + Context = Meaning
Definitions

- Intent + Entity + Context = Meaning

- Example: “File an expense for $50 for dinner”

  Intent = Create expense item
  Entity 1, amount = $50
  Entity 2, description = Dinner
Case One

Semantics
Hi! I am Fin-Icky! I can help you file an expense in a jiffy. How can I help you?

I paid $24.39 yesterday for lunch with my manager.

Got it. Just need a few more details and I can file this expense. How many people is this expense for?

Are you serious?

Yes, I am. How many people?
Case One

Semantics

Are you serious?

Yes, I am. How many people?

Just two

Was this an internal employee meal?

You gotta be kidding me!

I don’t joke until my work day is over. Was this an internal employee meal?

Yes you $#!&%@!

Hey! What’s with the language?

You see I am still

Confidential

Oracle Design
You gotta be kidding me!

I don’t joke until my work day is over. Was this an internal employee meal?

Yes you $#!&%@!

Hey! What’s with the language? You see I am still learning and doing my best.

Here’s what I got.
Expense details:
Type: Meals - Internal
Amount: 24.39 USD
Date: Mar 6, 2019
Location: United States
Party size: 2
Amount =
Date =
Number of people =
Description =
Category =

I paid $24.39 yesterday for lunch with my manager.

Got it. Just need a few more details and I can file this expense. How many people is this expense for?

Are you serious?

Yes, I am. How many people?

Just two

Was this an internal employee meal?

No, it was with my manager.
Amount = $24.39
Date = yesterday
Number of people = 2
Description = meal
Category = Internal
Case One

**Semantics**

1 + 1 = 2 people

my manager + I = internal employees
Case Two

Entities
Hi! I am Fin-Icky! I can help you file an expense in a jiffy. How can I help you?

I paid $8 for Scoop to the off-site in Palo Alto today.

Got it. Just need a few more details and I can file this expense. What kind of an expense was it?

Of course, I am. Choose a type: Transportation, Meals, Supplies.
Case Two

Entities

expense was it?

Are you serious again?

Of course, I am. Choose a type: Transportation, Meals, Entertainment, Supplies or Others.

Transportation

What was the reason for this trip?

You gotta be kidding me!

Filing an expense is no joke, really. What was the reason for this trip?

Sales off-site

You gotta be kidding me!

Filing an expense is no joke, really. What was the reason for this trip?
What was the reason for this trip?

You gotta be kidding me!

Filing an expense is no joke, really. What was the reason for this trip?

Sales off-site

Alright.

Here’s what I got.
Expense details:
Type: Transportation
Amount: 8.00 USD
Date: Mar 12, 2019
Location: United States
Reason: Sales off-site
Hi! I am Fin-Icky! I can help you file an expense in a jiffy. How can I help you?

I paid $8 for Scoop to the off-site in Palo Alto today.

Got it. Just need a few more details and I can file this expense. What kind of an expense was it?

Are you serious again?

Of course, I am. Choose a type: Transportation, Meals, Entertainment, Supplies or Others.
Amount = $8
Date = today
Description = transportation
Reason = off-site

Hi! I am Fin-Icky! I can help you file an expense in a jiffy. How can I help you?

I paid $8 for Scoop to the off-site in Palo Alto today.

Got it. Just need a few more details and I can file this expense. What kind of an expense was it?

Are you serious again?

Of course, I am. Choose a type: Transportation, Meals, Entertainment, Supplies or Others.
Case Two

Entities

Lyft. Uber. Scoop? Don’t know her...
Case Two

Entities

Administration issue:
Scoop → Just started a short while ago
Case Two

Entities

Architectural Localization issue:

Lyft, Uber → Global entities
Case Two

Entities

Architectural Localization issue:

Zify → Europe, Asia
Case Two

Entities

Architectural Localization issue:

BeBeCar → France
Case Two

Entities

Architectural Localization issue:

BART → Bay Area
Case Three

Classification

“I took the ferry for nine dollars, yesterday.”
→ ferry = ground transportation

“We spent two hundred and seventy three dollars for a staff event at the Ryptic escape Room on February twentieth.”
→ staff event = internal
→ staff event may or may not be classified as entertainment
Case Three
Classification

There are different ways to classify the same entity
Case Four

**Context**

“When is the next opportunity to talk to my manager?”

→ next opportunity = next time

→ next opportunity = deal in sales context

“What are my top accounts with opportunities over $500,000?”

→ opportunity = sales context... but I’m asking for accounts
Case Four

Context

Same word can represent different entities in two different contexts
Case One
Semantics

1+1=2 people
my manager+I=internal employees

Case Two
Entities

Scoop, Zify=next Uber

Case Three
Classification

ferry=ground transportation
party=entertainment

Case Four
Context

opportunity=next time
opportunity=deal

Challenges
Case One
Semantics

Case Two
Entities

Case Three
Classification

Case Four
Context

Entity extraction is the crux of the problem

1+1=2 people
my manager+I=internal employees

Scoop, Zify=next Uber

ferry=ground transportation
party=entertainment

opportunity=next time
opportunity=deal
Case One
Semantics

Case Two
Entities

Case Three
Classification

Case Four
Context

Solutions

1. Default extraction+ confirmation (don’t over-do!)
3. Automatic administration: Machine learning
4. Rule-based disambiguation
Cost of Superior Experiences

System architecture - flexibility for customization, localization, translation
Intense Labor - transcription, annotation, and rules based algorithms
High investment in machine learning - machines learn from anomalies
Analytics - is mandatory

A word of caution:
Privacy - pay attention to how you use the data
Takeaway

We’ve looked at problems, costs, and solutions; time to hit the road:

- Evaluate – the key challenges in your implementation
- Prioritize – the ‘low hanging fruit’
- Analyze – areas that could best benefit from machine learning
- Tackle – the problems using the different methodologies explored
- Try – things out before deployment at scale
One thing at a time is ok.
A rose by any other name, is still a rose.
Thank you

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