

ORACLE

Best Practices on Designing Intents

Program agenda

- 1 A quick start introduction to NLP
- 2 Best practices for designing intents
- 3 Enhancing the model using the unresolved intent
- 4 NLP is a classification task

Program agenda

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Encoding words as numbers

listen

76, 73, 83, 84, 69, 78

ASCII

silent

83, 73, 76, 69, 78, 84

ASCII

Tokenization

I love my dog

[1,2,3,4]

I love my cat

[1,2,3,5]

Challenges

I love my club

[1,2,3,6]

soda

together

golf

sport

sandwich

playing card

Sentence encoding

Encodes text into high dimensional vectors

- Array of numbers
- Each element becomes single point in vector space

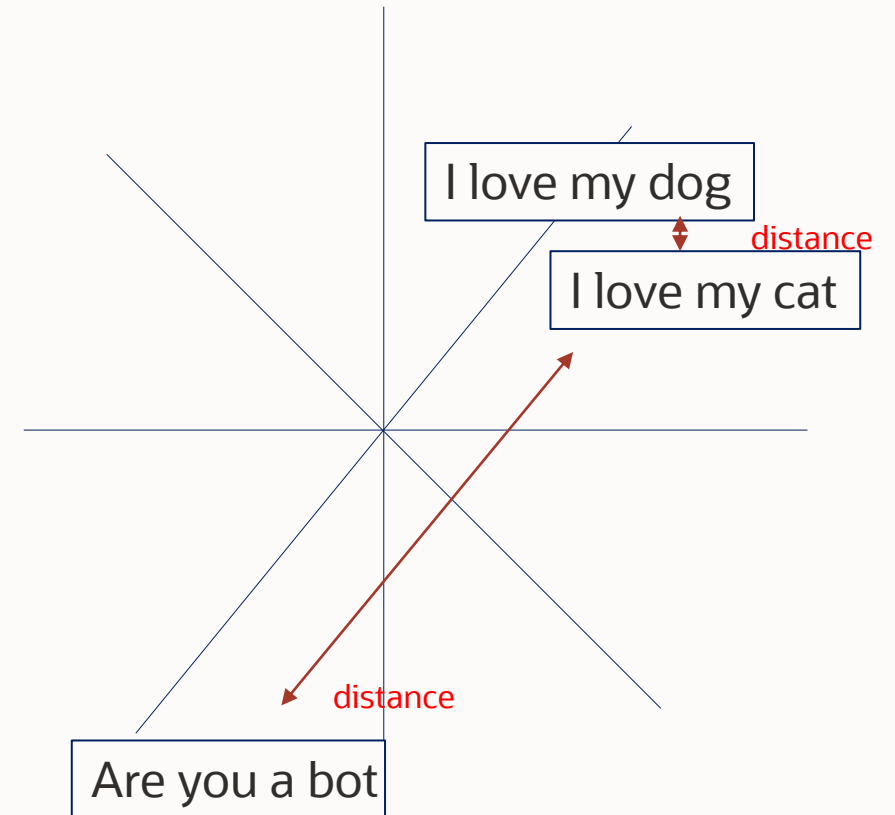
Embeddings

- "lookups" allowing to track similarities and relations

Pre-trained models

- You "refine" model by adding training utterances

high-dimensional vector



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Why good intent design is important

” Cars are designed, databases are designed, intents should also be designed

Easier maintenance

More successful intent classification

Easier Digital Assistant routing

Best practices for designing intents

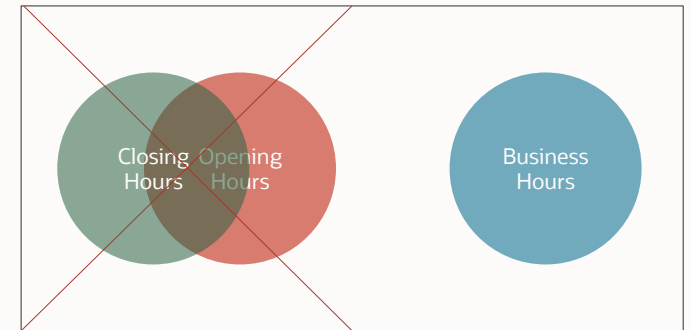
Partitioning intents

Each intent should be as “linguistically spaced” as possible

- Focus on what makes an intent unique
- You can think of intents mapping to use cases

What goes to making a good NLP model?

- Have well defined intents
 - Should have a clear focus and purpose
 - Singular linguistic focus as much as possible
 - Think “what makes this intent unique”
-
- Remember there are different ways to state an intent
 - Utterances define intents
 - “Please reset password” vs “I can’t log in to my account” vs “my password got hacked”
 - There is no “understanding”. This is a classification problem



Best practices for designing intents

Partitioning intents

Test your model early on to see how it copes

- If you don't then it's just all guesswork

Always be willing to refactor intents

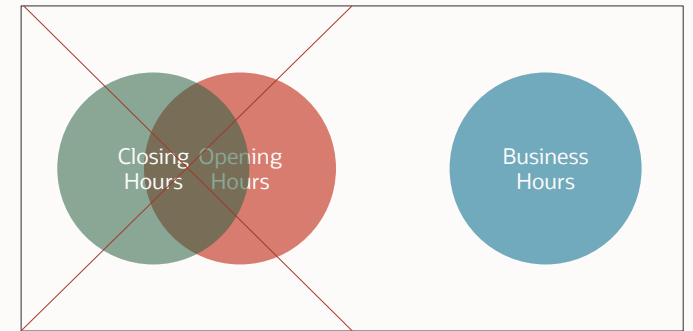
- Separating intents gives the chance for different responses

There are no hard and fast rules but:

- 2 intents are too few, 500 intents per skill is probably too many

Always use multiple Skills and a Digital Assistant

- Ideally each skill should have a common linguistic theme



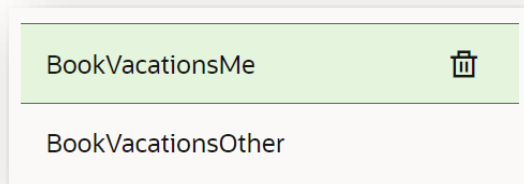
Real world intent design in action


“I want to book a day off for me” vs “I want to book a day off for Frank Nimphius”

- The above intents are very linguistically close
- Using entities to derive meaning (with trigger words) is a point of failure

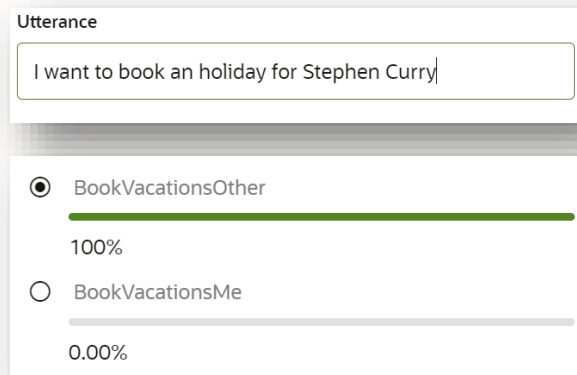
The model can be smart if it is well design and trained

- Properly trained, the model can easily distinguish the below intents
- No need to use entities
- NLP should do the heavy lifting



BookVacationsMe 

BookVacationsOther

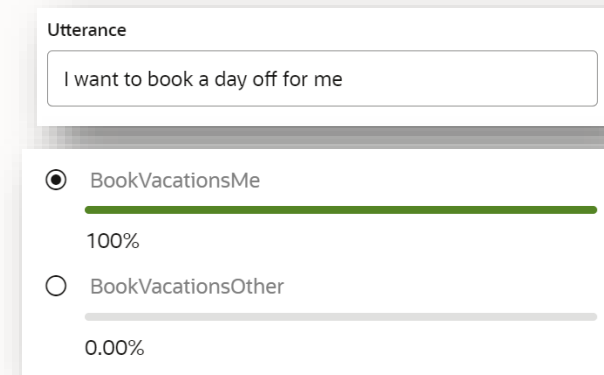


Utterance

I want to book an holiday for Stephen Curry

BookVacationsOther
100%

BookVacationsMe
0.00%



Utterance

I want to book a day off for me

BookVacationsMe
100%

BookVacationsOther
0.00%

Enhancing the model using the unresolved intent

How well can you read this
text

How well can you read this
text

How well can you read this
text

Best practices for designing intents

Partitioning skills

- Partition skills
 - Easier for development and reuse
 - Ideally a skill should focus on commonality
 - Use case
 - Linguistics
 - But ideally unique compared to other skills
- Digital assistant routing is more efficient with a cleaner separation of skills



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Enhancing the model using the unresolved intent

The unresolvedIntent gives the intents contrast

ODA will automatically generate an **out of domain** model

- By establishing the “theme/domain” of a skill based on its utterances
 - Skill that handles banking tasks doesn't take pizza orders
- No need to specifically train unresolvedIntent

We can train the model for **explicit out of domain OR out of scope**.

- Use unresolvedIntent to help clarify what an intent is NOT
- We have an intent for symptoms of colon cancer
 - This should not fire for any other type of cancer
- Collect out of scope utterances and train the unresolvedIntent with them

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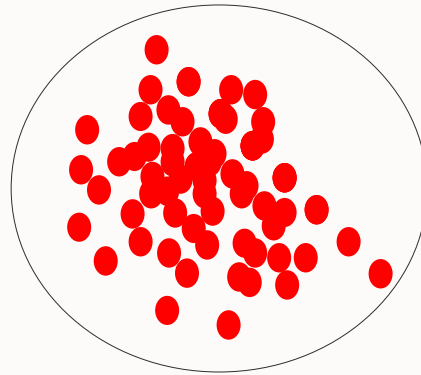
”

What if I could see inside the model?

NLP is a classification task

Well-formed model

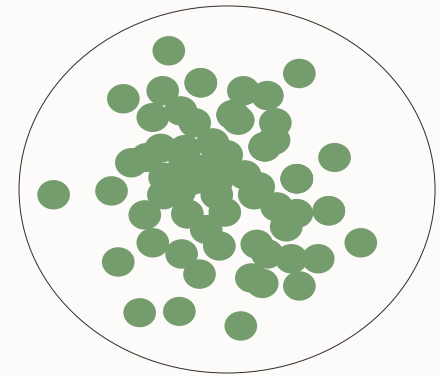
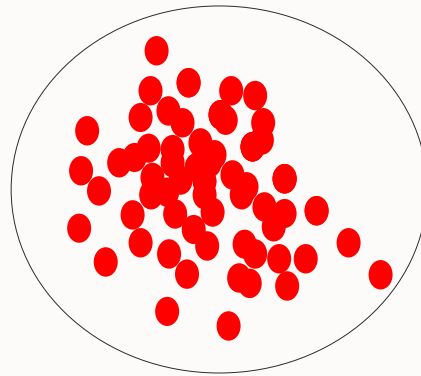
- Clearly defined Intent



NLP is a classification task

Well-formed model

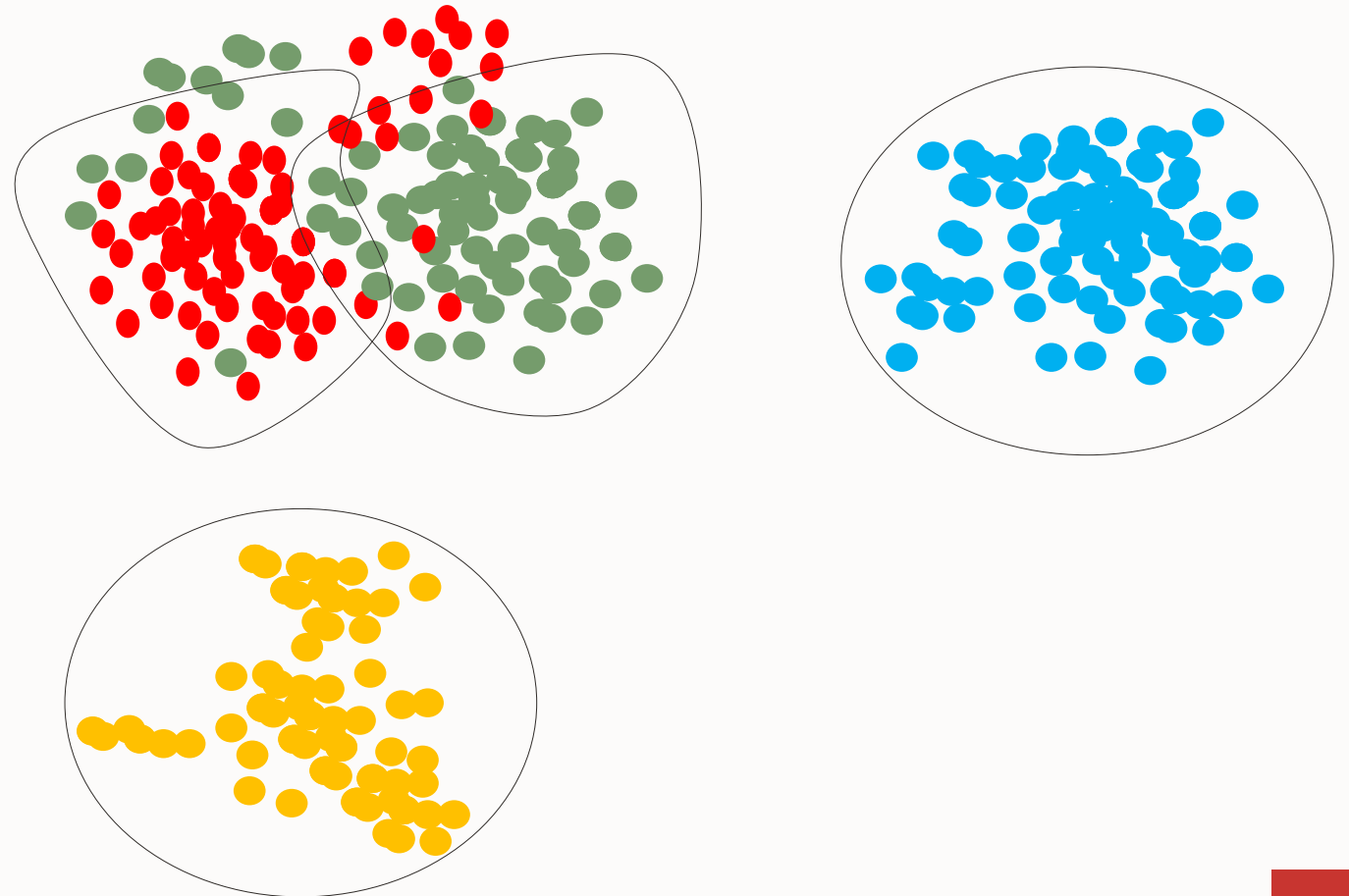
- Clearly defined Intent
- Intent's borders do not overlap



NLP is a classification task

Overlapping intents

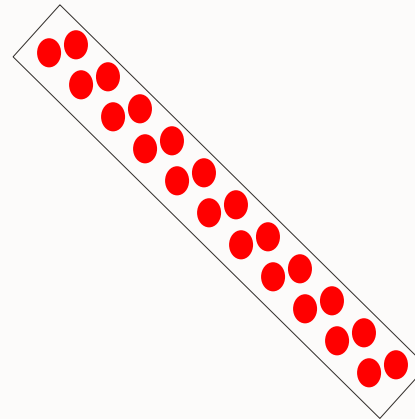
- Difficult for the NLP to properly classify utterances
- Specially those in the overlapping area
- This creates more disambiguations



NLP is a classification task

Formulaic and overfitting

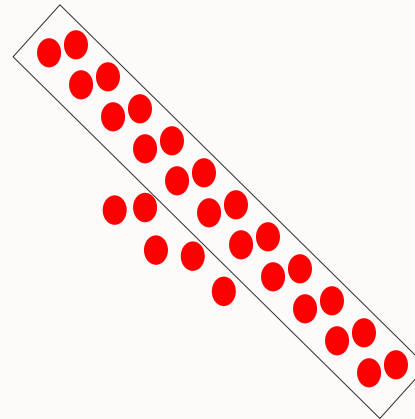
- Lack of variation in the training data causes this
- It does not reflect real life
- Any input slight different would fall outside the intent



NLP is a classification task

Formulaic and overfitting

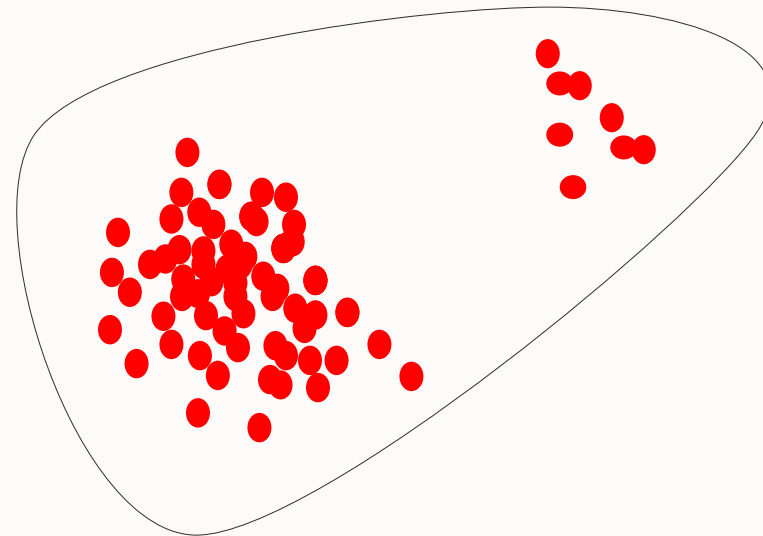
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NLP is a classification task

“Big bucket” intents

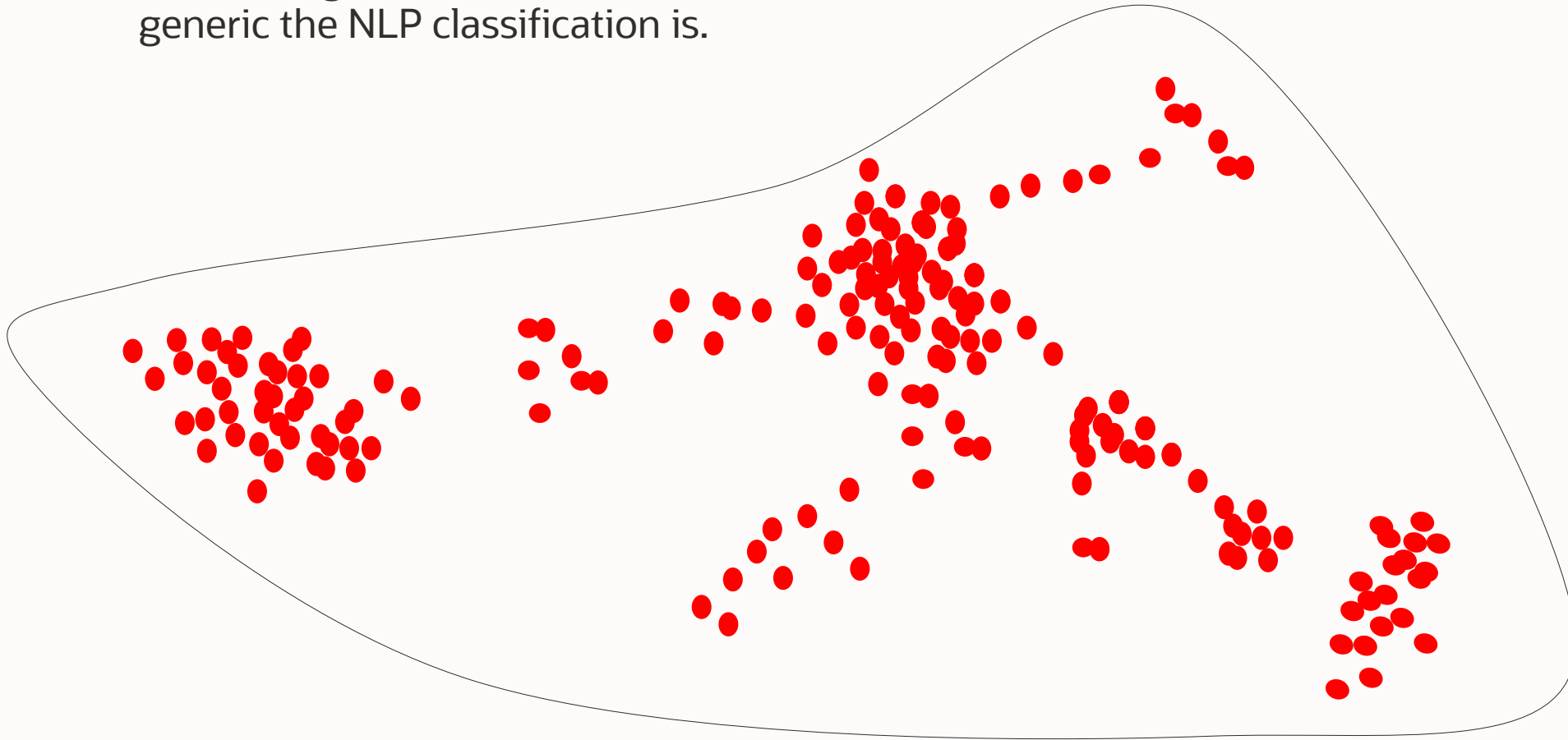
- Think about a Pizza intent where we accept “Order Pizza” and “Cancel Pizza” as utterances
- Need to use entity slotting to actually derive meaning
- The NLP is smart enough, there is no need to create such generic intents



NLP is a classification task

“Big bucket” intents

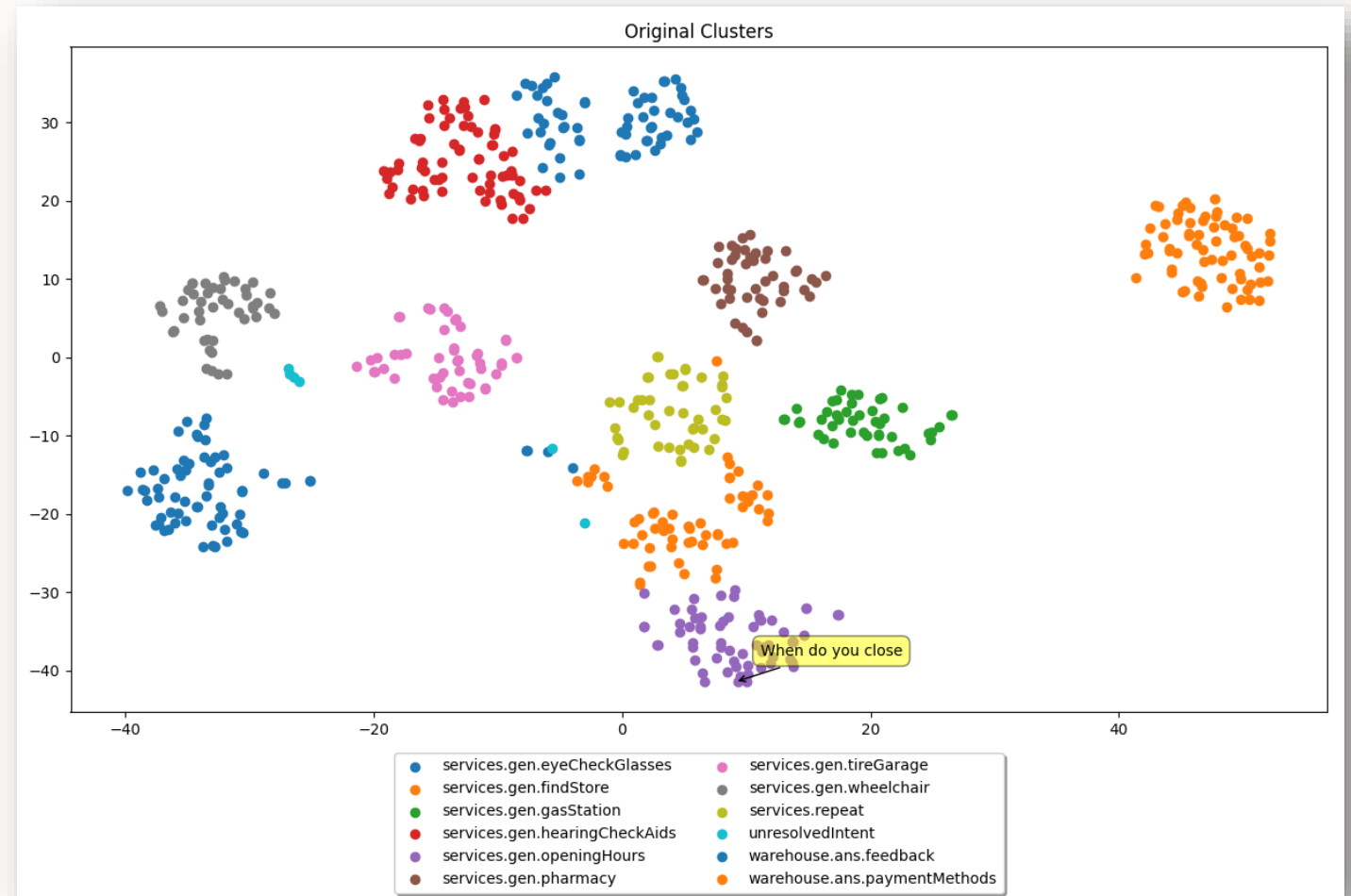
- The more generic the intent is, the more generic the NLP classification is.



NLP is a classification task

Real intent plotting

- This is a 2 dimension representation of all the utterances for a production Skill
- The visualization helps in understanding how well formed the model is
- This demonstrates many of the characteristics of a good model



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