

ORACLE®

Oracle Digital Assistant

The Complete Training

Training your model

Safe Harbor Statement

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Topic agenda

- 1 ➤ Recap – the models in Oracle Digital Assistant
- 2 ➤ General guidelines for training your skills
- 3 ➤ Specific tips for training your skills
- 4 ➤ Tips for designing intents
- 5 ➤ Training the digital assistant
- 6 ➤ Quality reports

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Why have different training models?

- Trainer Ht
 - Rules based
 - Fast & best suited for small set of utterances
 - Good for new development
- Trainer Tm
 - Machine learning
 - Thrives on more and more data
 - Higher accuracy (especially data outside your utterances) if enough data
 - Already trained on “knowledge” of English language (NLP)
- Q&A

Why have different training models?

- Intent Answers now a feature of intents
 - Allows QnA style of interaction without specific OBotML
 - Uses intent resolution models
 - Optimized model has to be switched on

Display Name GR_ConversationDesigner

Name GR_ConversationDesigner

Version 1.0

Category *Category your Skill bot falls under*

One-Sentence Description

Detailed Description *This description appears on the skill's Details page in the skills catalog*

2048 characters left

Training Model Trainer Tm

Optimize for Answer Intents ☐

Translation Service None

Use [Translation Service](#) to define a service.

+ Intent More

Filter

Sort By Created Ascending

| | |
|--------------------------|---|
| AlwaysFree | x |
| AutonomousDatabase | x |
| CloudInfra | x |
| CloudPromotion | x |
| ConvertFreeToPaid | x |
| CreditsExpire | x |
| CreditUsageDiscount | x |
| DiscountRates | x |
| FreeCountries | x |
| FreePaidAccounts | x |
| FreeTrial | x |
| HowLongFreeCredits | x |
| HowSimple | x |

Description

Conversation Name * ConvertFreeToPaid

Name * ConvertFreeToPaid

Description

Answer

You can upgrade your cloud account to paid at any time. Simply go to Account Management in the Oracle Cloud Console and complete the upgrade steps.

Examples ?

Filter

Enter your example utterances here.

Can I convert to a paid account

Can I go to a paid account when the trial ends

How do I convert my Oracle Cloud Free Tier account to a paid account?

Where are we going with training models?

- Trainer Ht, Tm and QnA continue to evolve every release
 - 19.4.1 Tm similar to previous releases
 - OCI Native 19.10 advanced in TrainerTm
- We are considering moving towards a “unified model” (rev rec rules apply)
 - Recommended for answer intents
 - Could be used for Trainer Tm
 - GPU intensive for training
 - Off by default

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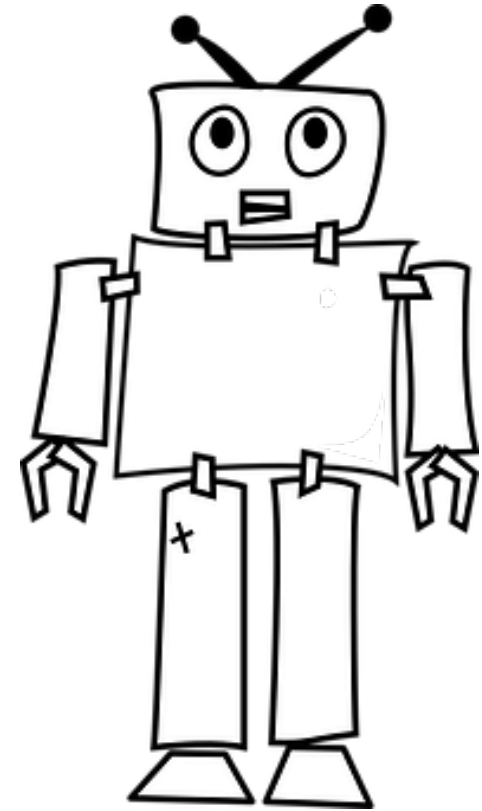
? Training Model Trainer Tm

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Use [Translation Service](#) to define a service.

Your digital assistant is only as
smart as the data you train it with
(rubbish in, rubbish out)

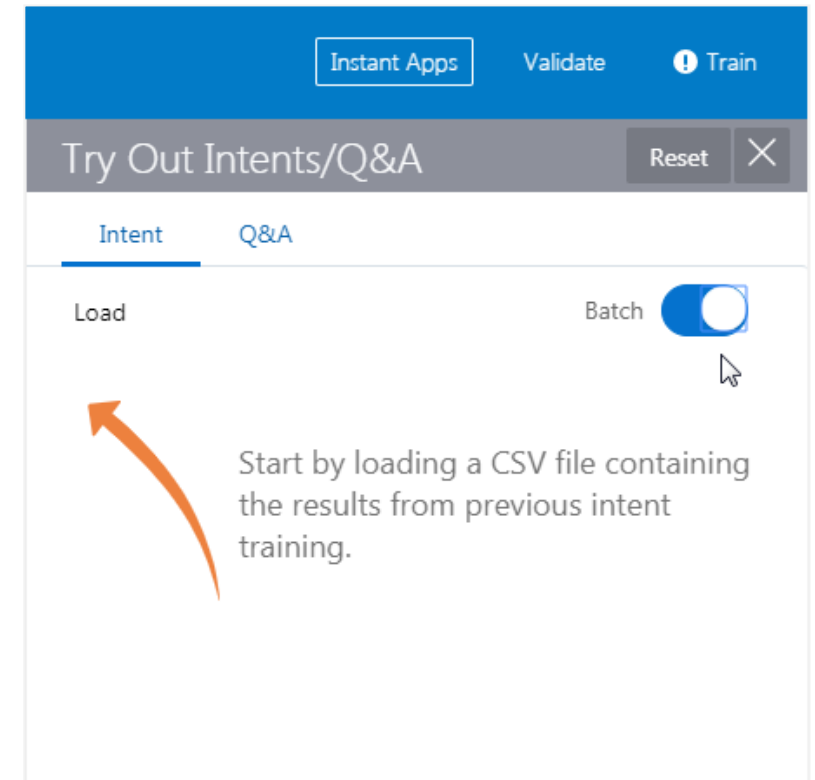


Topic agenda

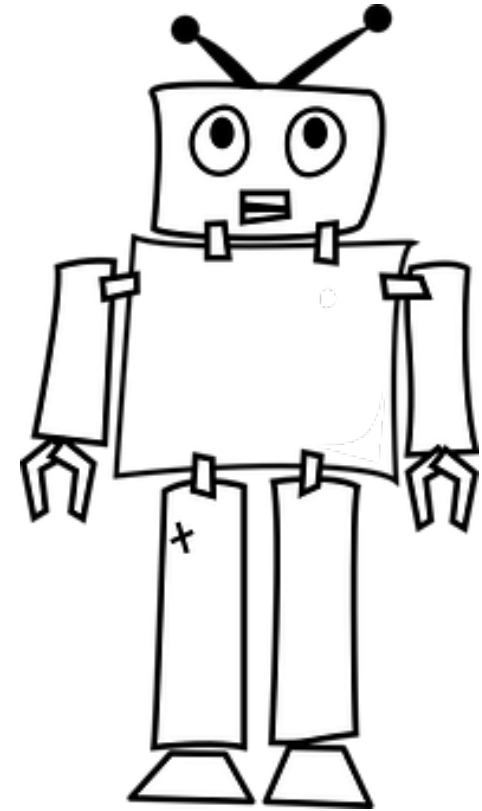
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General guidelines for training your skills

- You MUST have buy in for the long term
- Your first release will have the language understanding of a 2 year old (if you are lucky!)
 - But that's ok, you need to start somewhere
- Plan for NLP improvement
 - The only real data is user data
 - Train, test, repeat
 - Use batch training feature
 - For all new data perform a 80/20 split
 - 80% training data, 20% testing data



Many bot projects **fail** because of **unrealistic expectations**. Get **buy in** for the **long term**, start **small**, grow.



General guidelines for training your skills

- Your goal is to train the model on real-world sample utterances
 - Synthesized utterances are no substitute for real world utterances
- Real-world data will likely need to be manually classified
 - It is not always clear what phrases map to an intent
 - Needs to be decide by project team: business, conversational designer, developer
- You shouldn't necessarily sanitize user data
 - Include common mis-spellings, slang, synonyms, abbreviations where it makes sense

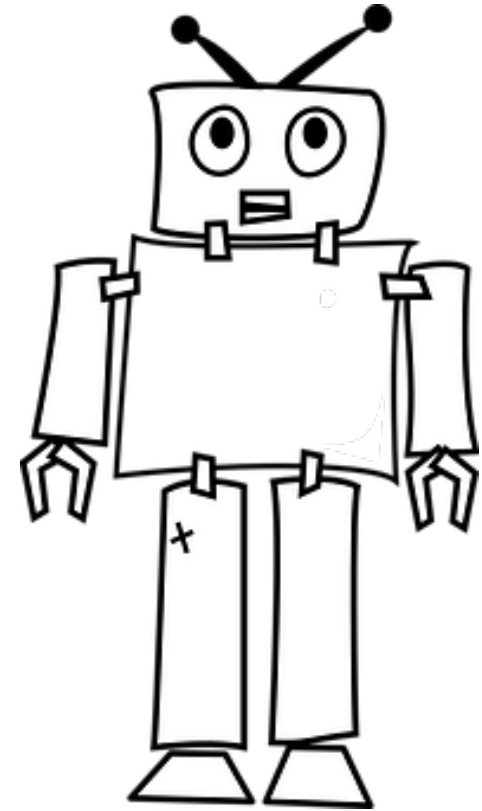
General guidelines for training your skills

- The golden rules to help you develop good understanding
 - For production use Trainer Tm
 - Real world utterances
 - Well design and classified intents
 - Train unresolved (anti-usecase) utterances
 - As many as you need to get the results you desire
 - Our research has shown a “plateauing off” around the 92% accuracy level

Synthesizing utterances when you have no existing data

- Trainer Ht best place to start off
 - Generally better with smaller data sets
 - Plan to move to Trainer Tm as you gather more sample user inputs
- You have to synthesize sample utterance
 - Your primary goal is to help disambiguate intents
- A model has no inherent knowledge of what an utterance actually means
 - Frequency of words, sentence patterns, some knowledge of parts of speech, train with synonyms
- Train, test, repeat

So if I am going to build a **good model** shouldn't I know how it works?

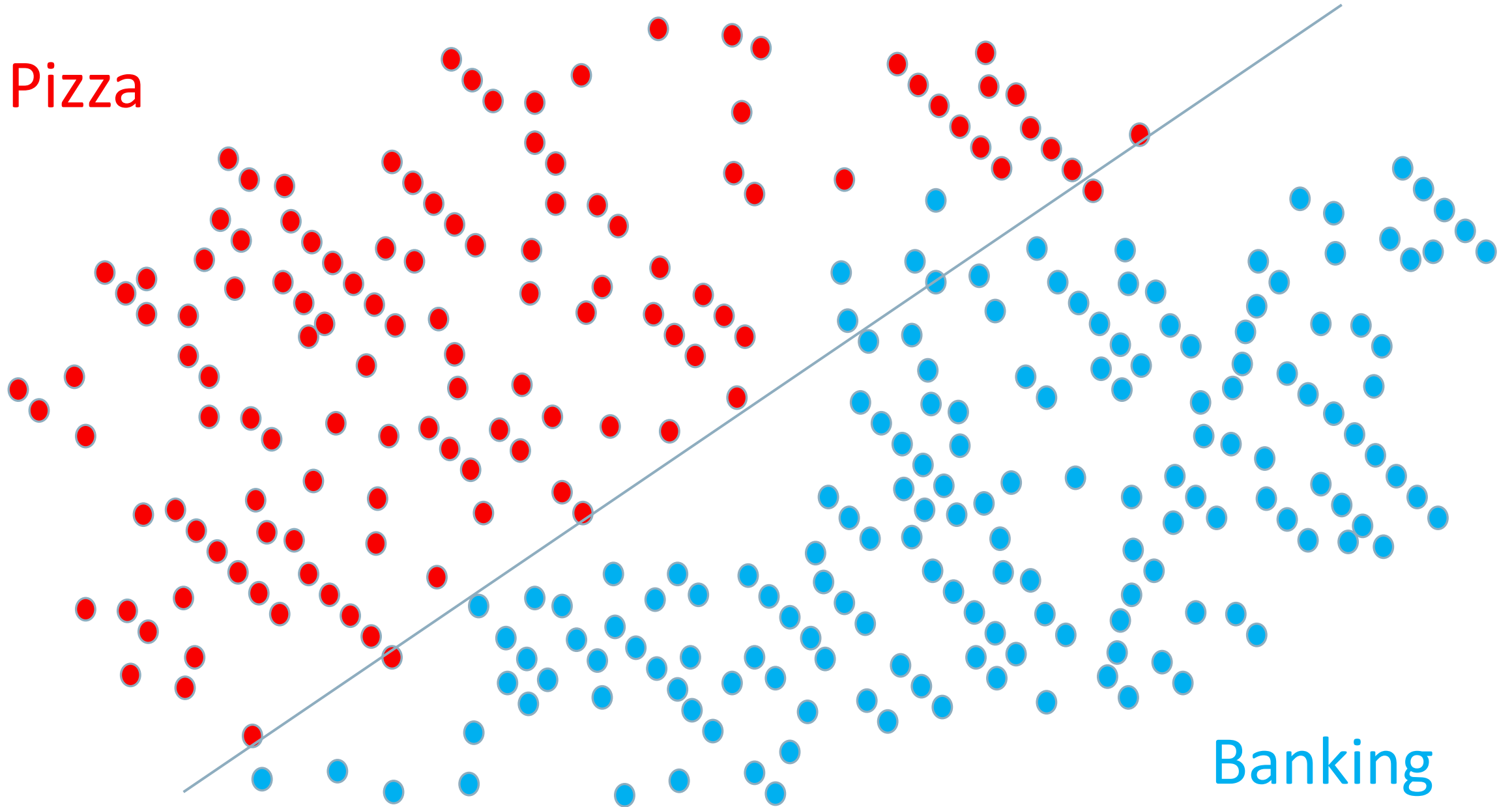


Pizza



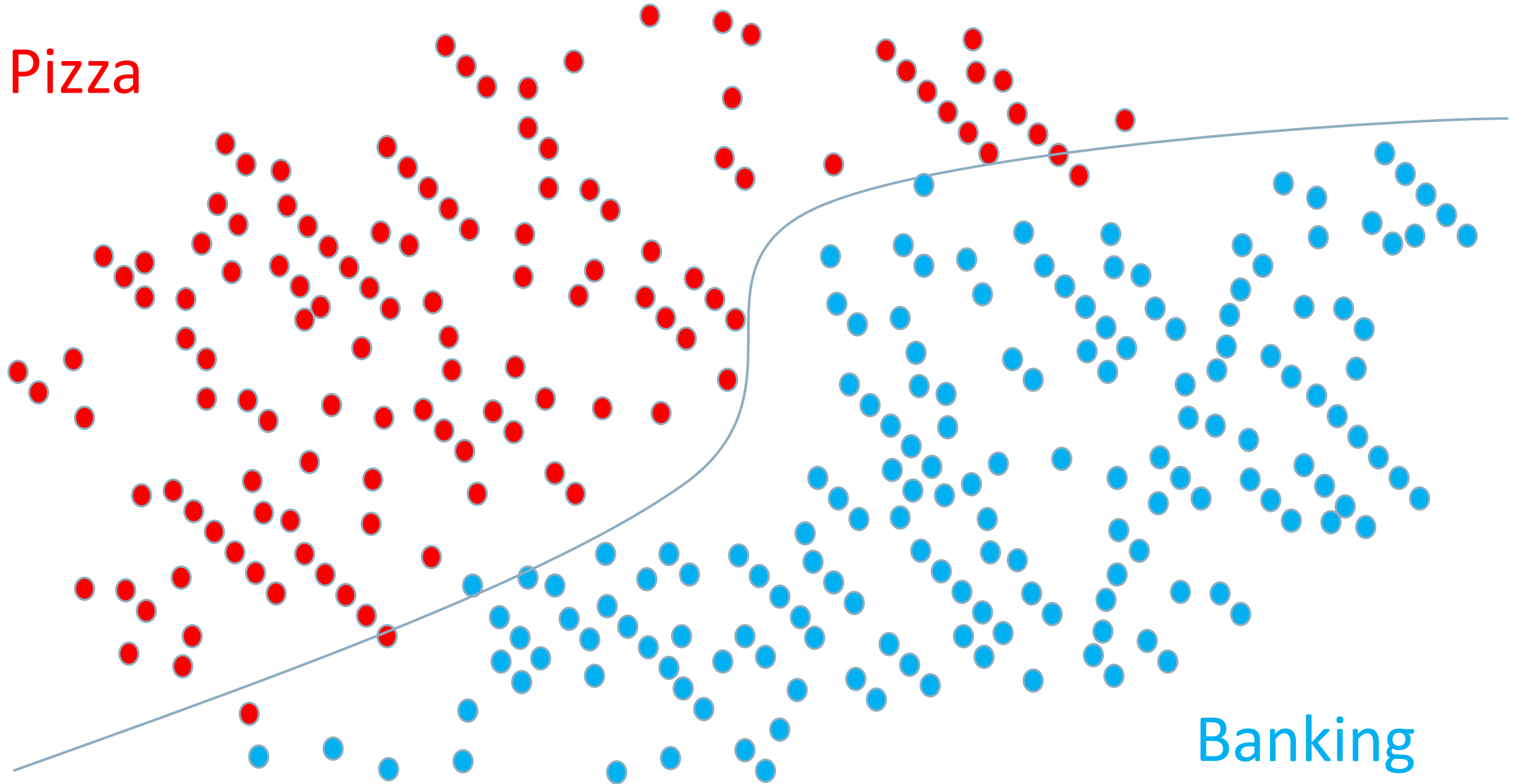
Banking

Pizza



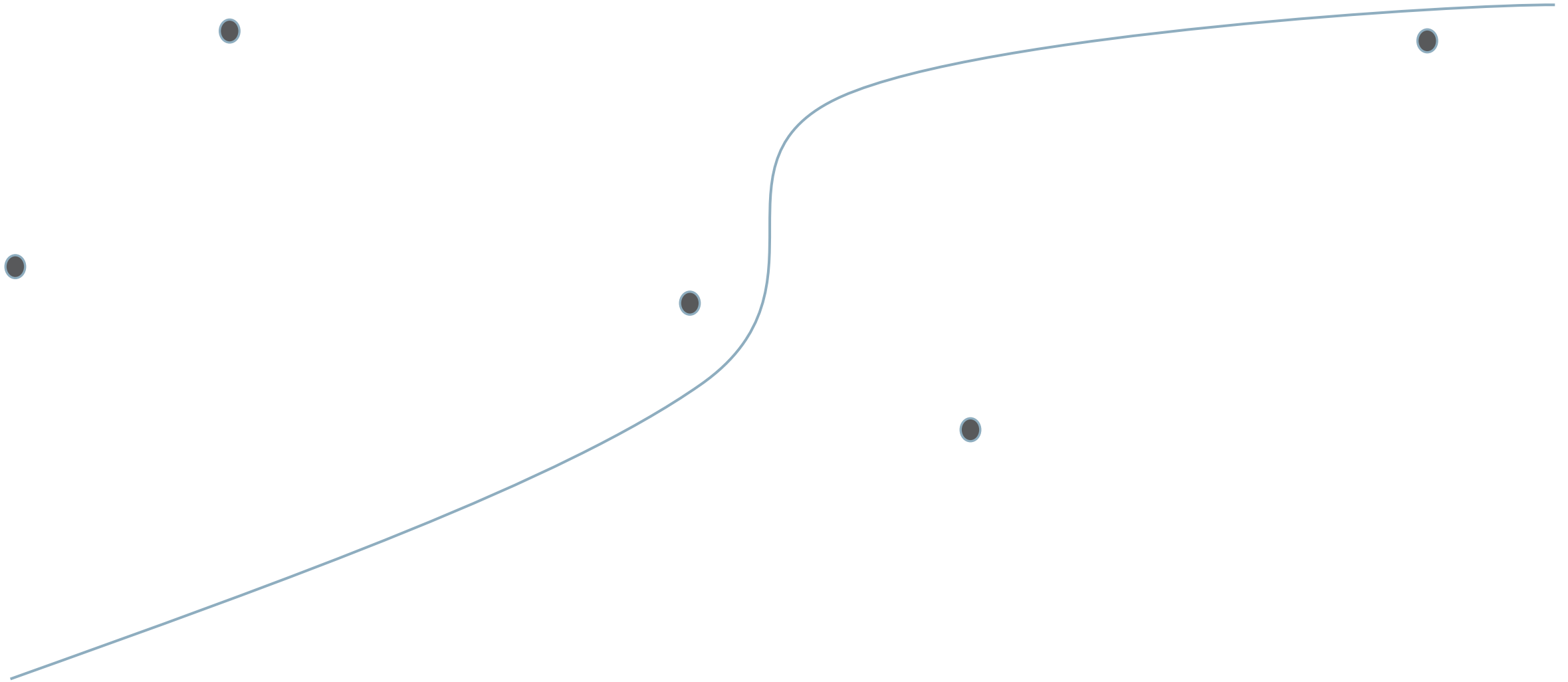
Banking

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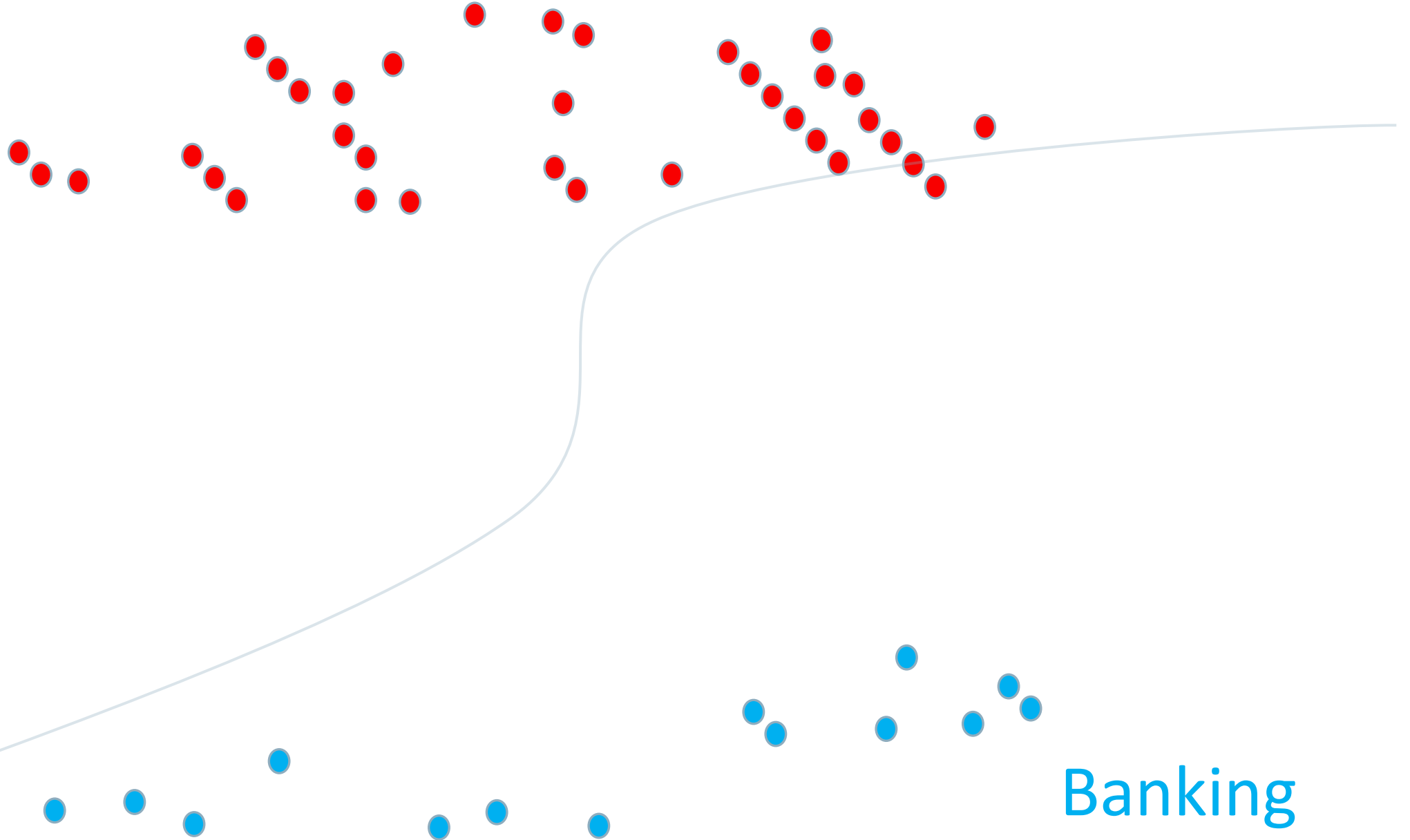


Banking

Pizza

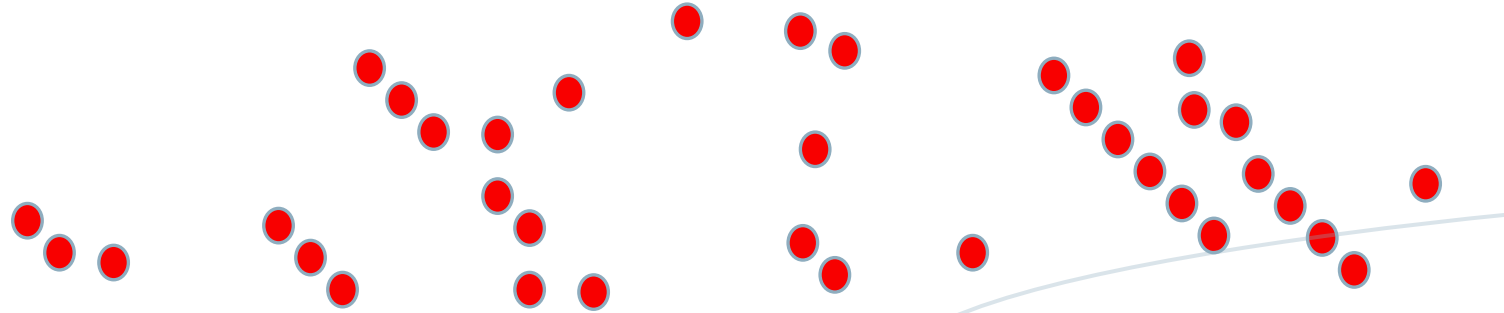


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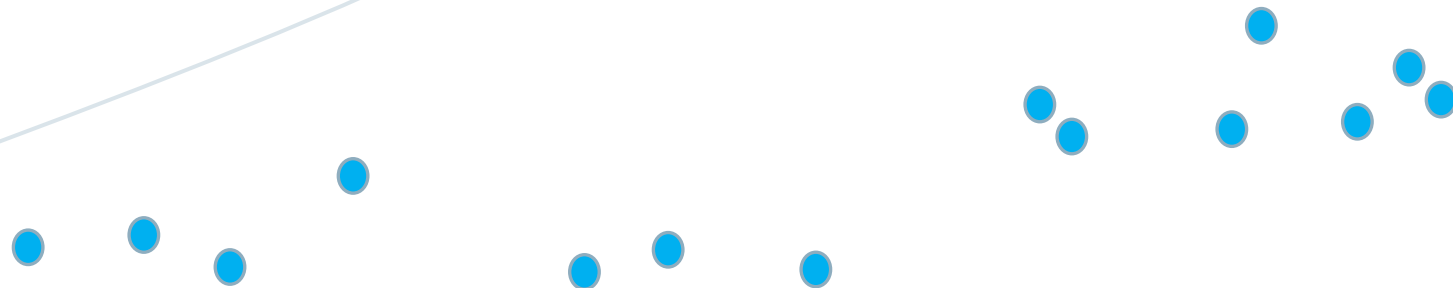


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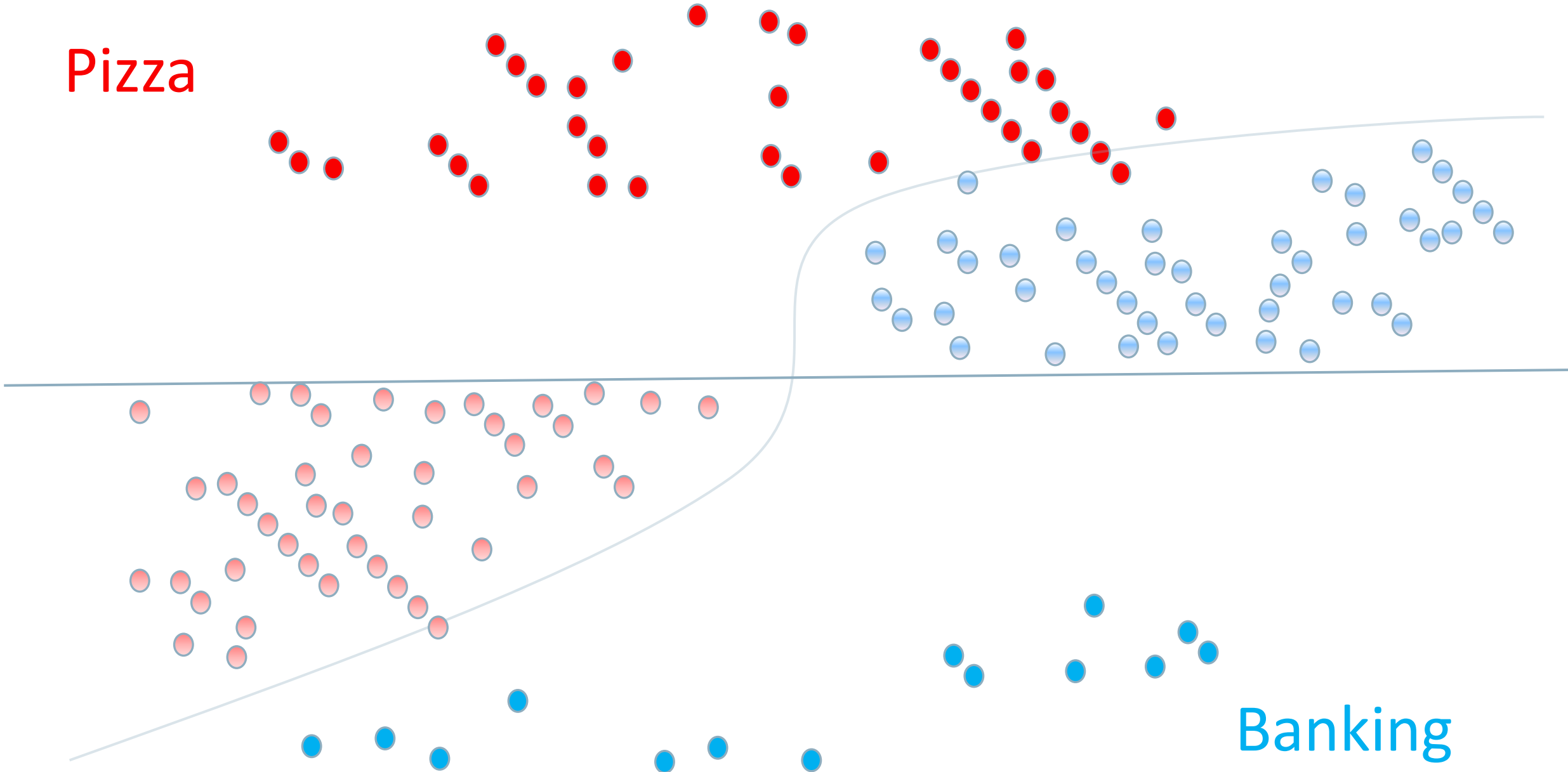
Pizza



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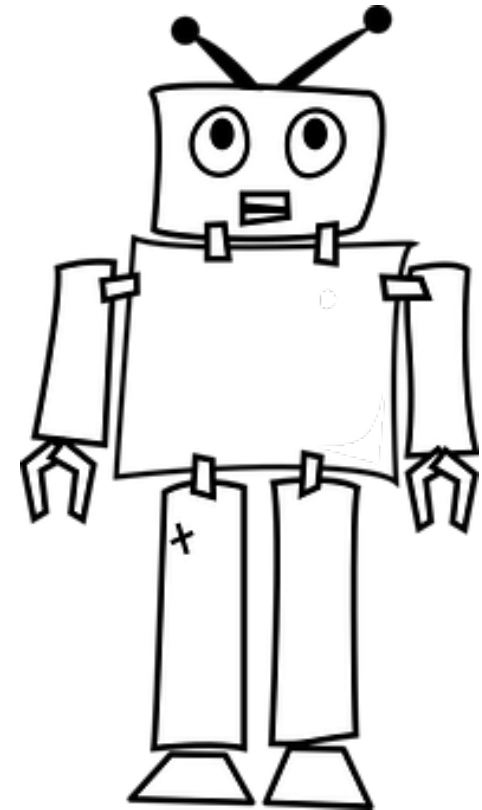


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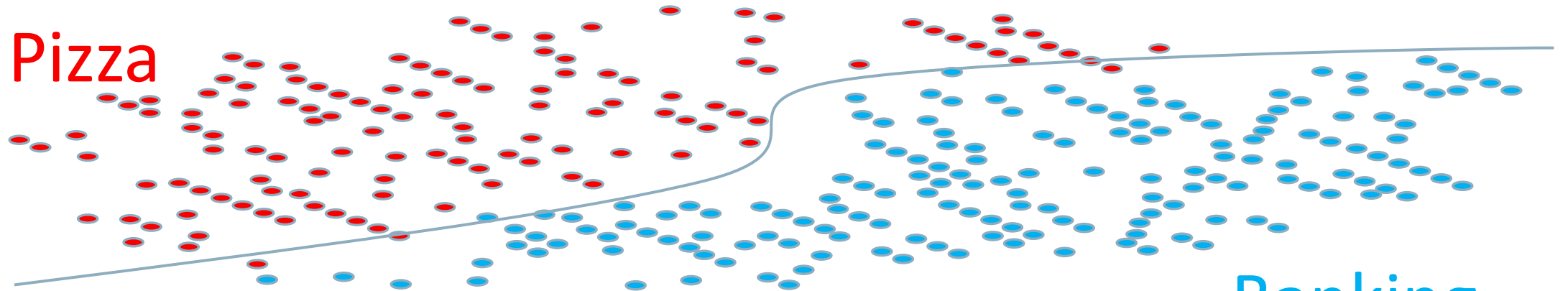


Banking

If your bot is only trained to know about **two possible intents**, then it will try to resolve any input to **one of those intents**

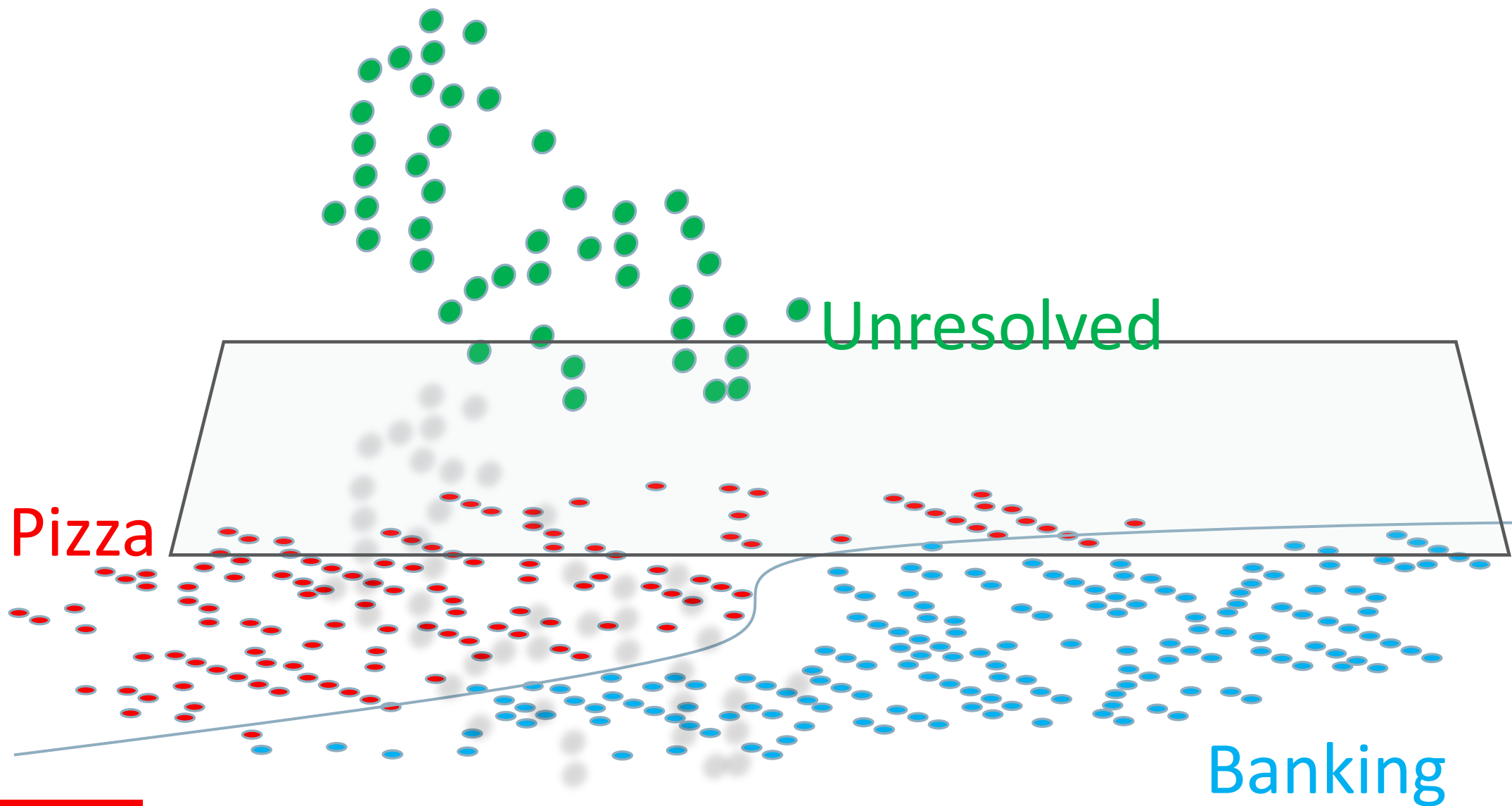


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Banking



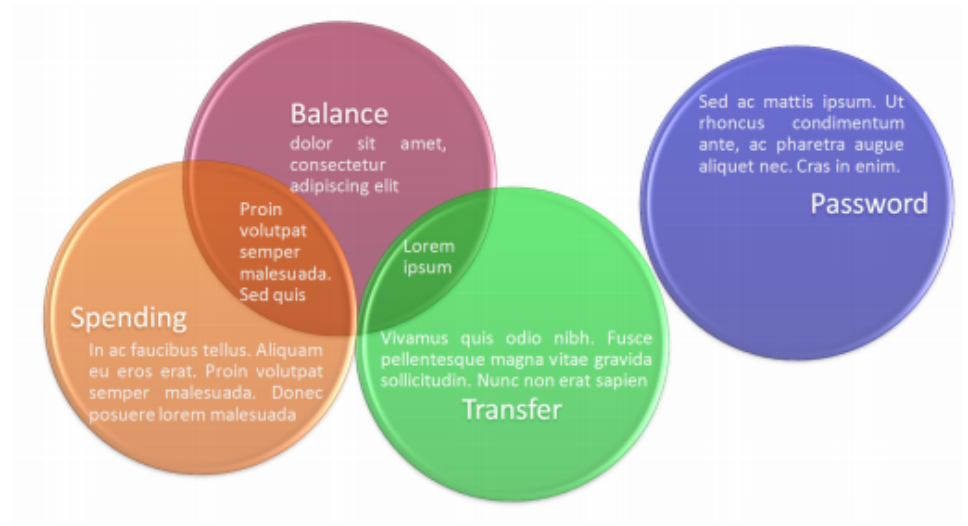


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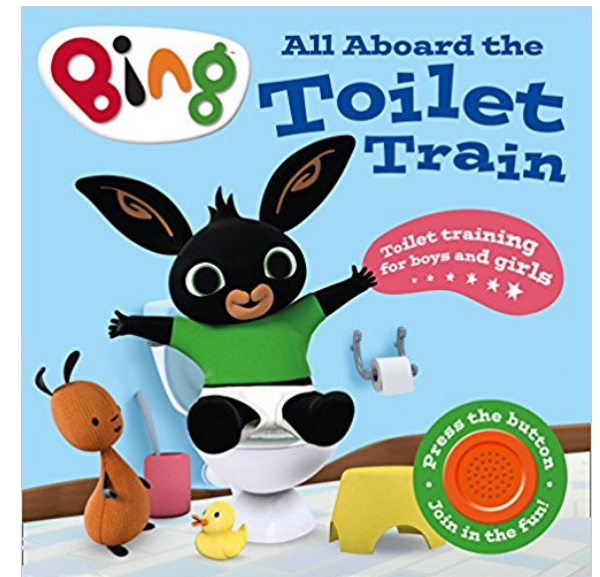
When synthesizing utterances what makes an intent unique

- The goal is to disambiguate intents
- What are key actors, actions and objects
 - “who” does “what” to “who”
 - Design utterances around these
- Consider combining intents if too similar
 - E.g. home, travel, car insurance
- Extra words can be used to weight utterances
 - But always retest when you do this



When synthesizing utterances be careful of lexical chrome

- Some words appear across all intents but add no meaning
 - “please”, “thank you”
- Ensure you don’t unintentionally skew results
 - E.g. if one intent consistently uses “please” that can skew results if the user says “please”
- Entity value in training utterances might inadvertently skew intent resolution
 - BOOK_ORDER_INTENT “Please order All Aboard the Toilet Train”
 - Incorrectly resolves “Does the train have a toilet”



When synthesizing utterances consider spelling & grammar

- Don't have to cover every form a word (Trainer Ht)
 - Different forms of a word are reduced to a common root
 - “want”, “wanted” / “run” “ran” “running” “runs”
- Sentence structure may aid intent resolution (Trainer Ht)
 - Therefore use grammatically correct sentence where possible
- However, your data should still reflect your users' language
 - “wanna”, “gonna”, “gotta”, “dunno”

When you see commonality consider combining intents

- More commonality of terms between intent utterances, the more difficult to disambiguate intents
- Consider creating one common intent and use entities to understand the discriminating factors

Updating Policy to add new person

Add wife to my policy

Alter my insurance to add son

Can I change my policy to include spouse

Add my wife to insurance

Alter my policy to add wife

Update policy to include son

Updating Policy to protect no claims

Add no claims to my policy

Alter my insurance to add protection

Can I change my policy to protect NCB

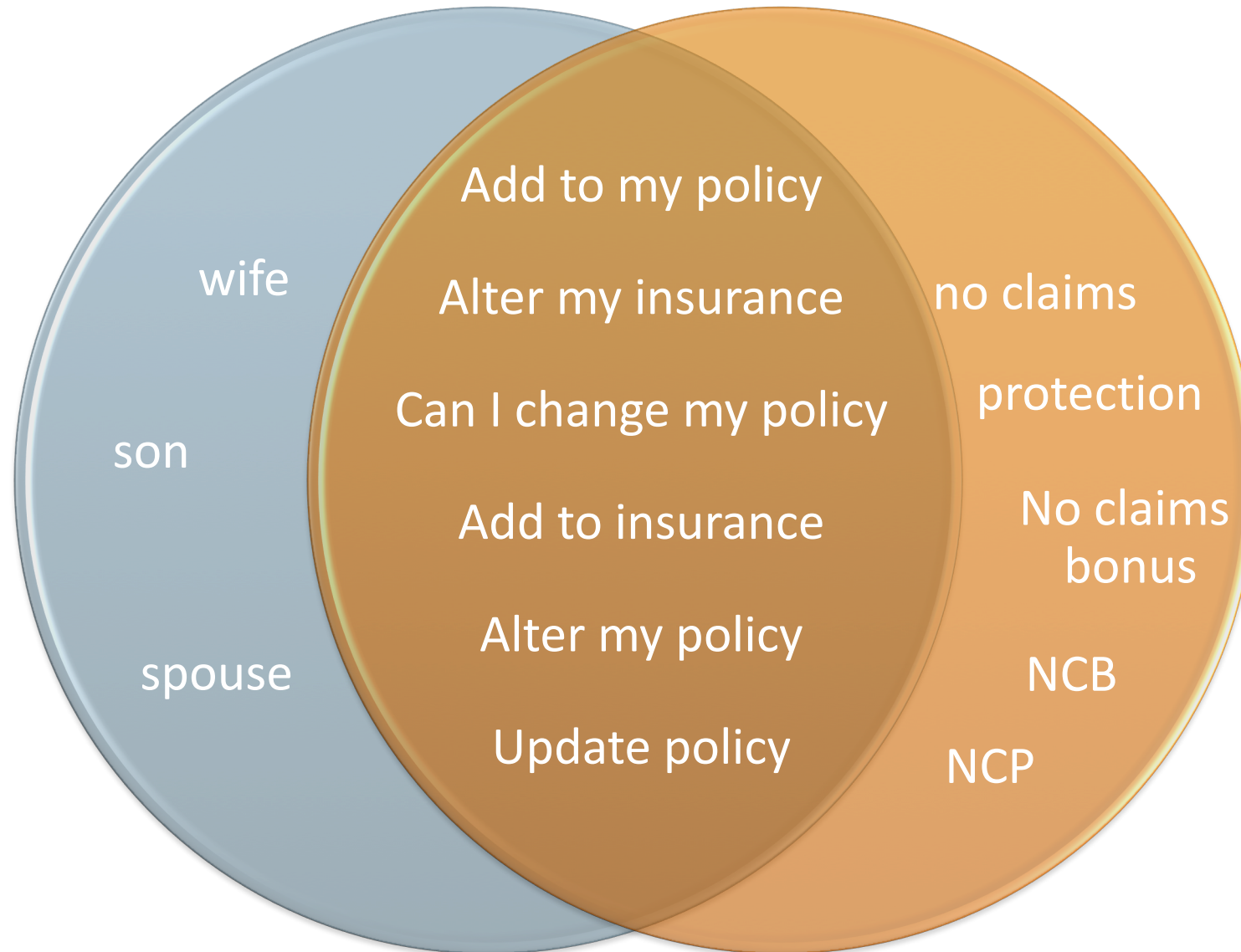
Add no claims protection to insurance

Alter my policy to add no claims bonus

Update policy to include NCP

Updating Policy to add new person

Updating Policy to protect no claims



Updating Policy

Person Entity

spouse

wife

son

Add to my policy

Alter my insurance

Can I change my policy

Add to insurance

Alter my policy

Update policy

Policy Claim Entity

No claims/

protection

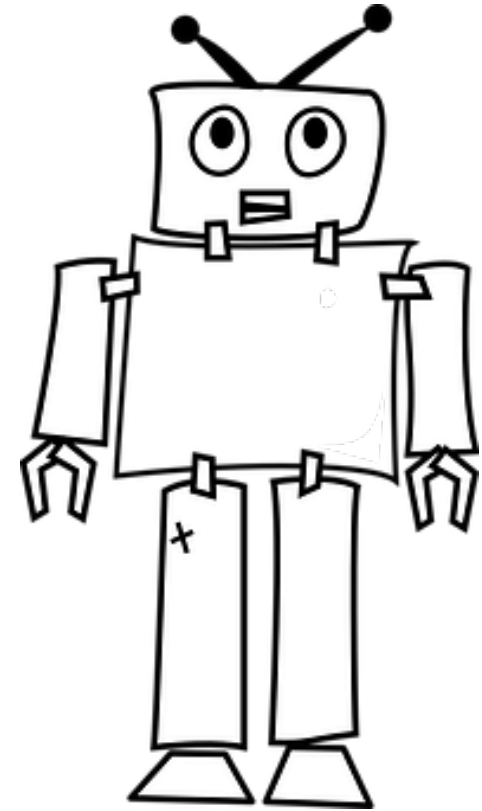
No claims bonus

NCB/NCP

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Databases are **designed**, cars are designed, UX is **designed**. And so **Intents** must also be **designed**



General tips for designing intents

- There are no hard and fast rules but:
 - 1 intent is too few, 500 intents per skill is probably too many
 - Don't overuse skills simply to partition, but don't underuse them either
- Each intent should have a distinct use case
 - If you see commonality consider refactoring
- Be “smart” when you train your intents
 - Imbalanced training can cause imbalances results
 - Rubbish in rubbish out

Good practice for designing intents

- Create intents for things you know skill can't handle but likely to be asked
 - Smalltalk, swearing, common business uses cases not handled by the skill
- A single use case might be implemented by multiple intents
 - Returns policy might be handled by 3 different intents (all execute the same flow)
 - Potentially cleaner classification
 - Opportunity to handle each intent differently in the future
- Consider intent negation – but this is a problem not easily solved
 - "I want to continue my subscription".
 - "I don't want to continue my subscription"
 - "I want to discontinue my subscription"

Train the unresolved intent

- Capture phrases which your bot should consider unresolved
 - Create unresolvedIntent intent
 - Use this to record any phrases you DON'T want to be resolved to your actual intents
- Analyze bot conversations and train the bot with any malicious/mismatched/rogue input
- Gives the intent resolution engine knowledge of what is NOT an intent

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Training the digital assistant

- All training guidelines apply to the skill
- DA creates “uber model” – an intent for each skill
 - This is only helps DA to identify candidate skills
 - The more skills the lower you should consider candidate threshold
- There are only three intents at the digital assistant level
 - Help, Exit, unresolvedIntent for disambiguating help and exit only.
- Digital assistant treats a skill unresolvedIntent in a special way
 - If no active skill, shows all available skills in the DA automatically
 - If a skill is active, the skill’s unresolvedIntent handles the user input
 - You should never be prompted with the unresolvedIntent

Candidate Skills Confidence Threshold

0.4



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Introduction to quality reports

- Report that highlights possible intent resolution errors
 - Where utterances within intents are too similar
- Use a random 20% of the utterances to test the other 80%
- Compares all possible combination of pairs of intents in order to report
 - High quality: intents are distinct
 - Medium quality: some similar utterances
 - Low quality: the intent pairs aren't differentiated enough
- Indicates the number of utterances which may be problematic



Int_Agnt_Exm_Authrty

↔ Int_Agnt_Min_Age



Int_Agnt_Shift_Agncy

↔ Int_Agnt_Shift_Cmpny

2



Int_Agnt_Min_Age

↔ Int_Agnt_Rtrmnt_Age

4

Quality report on utterances

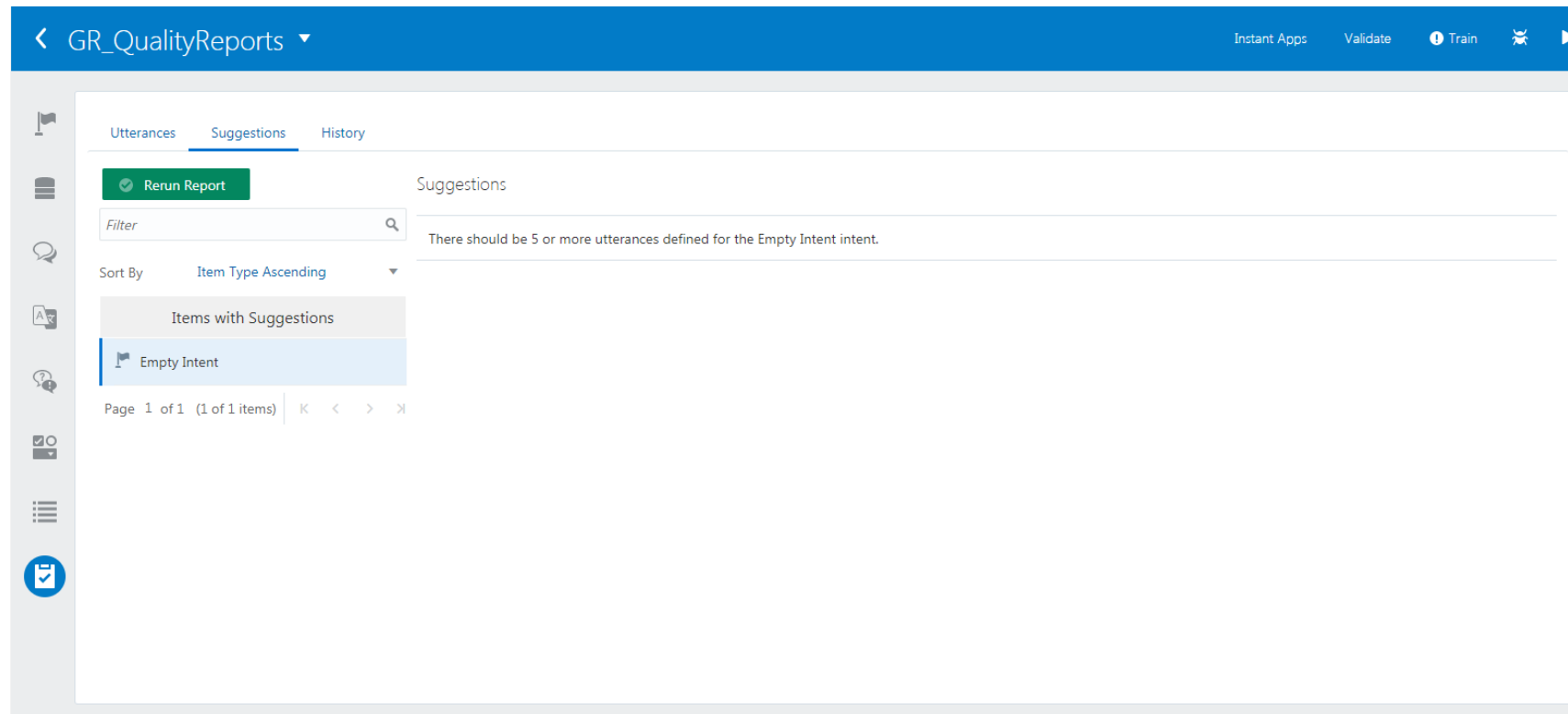
- Indicates an utterances that a deemed to be similar
- Misclassified utterances (tests did not resolve to correct intent)

The screenshot displays the Oracle Quality Reports interface. The top navigation bar includes a back arrow, the title "GR_QualityReports", and buttons for "Instant Apps", "Validate", "Train", and a play icon. The main content area is divided into three tabs: "Utterances", "Suggestions", and "History". The "Utterances" tab is active, showing a "Rerun Report" button, a "Show All" toggle, and a search filter. Below the filter, there's a "Sort By" dropdown set to "Quality Ascending". A list of intent pairs is shown on the left, with "Int_Agnt_Monthly_Statmnt" and "Int_Agnt_Periodicity_Paymnt" selected. The main area displays two sections: "Similar Utterances" and "Misclassified Utterances". The "Misclassified Utterances" section is expanded, showing a table with columns: Utterance, Expected Intent, Observed Intent, and Accuracy. The table lists three misclassified utterances with their respective expected and observed intents and accuracy scores.

| Utterance | Expected Intent | Observed Intent | Accuracy |
|--|-----------------------------|-----------------------------|----------|
| When will i get commission | Int_Agnt_Periodicity_Paymnt | Int_Agnt_Monthly_Statmnt | 1 |
| Will i get my commission every month | Int_Agnt_Periodicity_Paymnt | Int_Agnt_Monthly_Statmnt | 1 |
| When will i get monthly commission statement | Int_Agnt_Monthly_Statmnt | Int_Agnt_Periodicity_Paymnt | 1 |

Quality report suggestions

- Reports any suggested changes you can make to your intents or utterances



Quality report history

- View past user input ranked by win margin and confidence level
- Useful for
 - Narrow margins between intent classification
 - Intent resolution failures
 - Low confidence resolution

The screenshot displays the 'GR_QualityReports' interface. At the top, there's a navigation bar with 'Instant Apps', 'Validate', 'Train', and a play button. Below this, the 'History' tab is selected. The main area shows a search filter: 'Show me all customer messages' with a dropdown set to 'Last 30 Days', a 'where' clause with 'All' and 'Any' options, and a condition 'Win Margin Is Less Than 10%'. A '+ Criteria' button is present. Below the filter, a list of customer messages is shown on the left, and a table of intent data is on the right. The table has columns for 'Intent', 'Win Margin', and 'Confidence'. The first row shows 'Int_Agnt_Aftr_Exam_Procedure' with a 3.9% win margin and 18% confidence. The second row shows 'Int_Agnt_Passing_Marks' with an N/A win margin and 14% confidence. A 'Show All' button is below the table. At the bottom, a 'General' section shows the 'Timestamp' as '3/2/18' and the 'Channel' as 'test'.

| Intent | Win Margin | Confidence |
|------------------------------|------------|------------|
| Int_Agnt_Aftr_Exam_Procedure | 3.9% | 18% |
| Int_Agnt_Passing_Marks | N/A | 14% |

Quality report history

- Show top intents that resolved with low confidence

Top Intent Confidence ▼ Is Less Than ▼ 50% ▼ ^ ×

- Show where there may have been ambiguity between intents

Win Margin ▼ Is Less Than ▼ 20% ▼ ^ ×

- Show me used input where the top intent was unresolved

Top Intent Name ▼ Is Equal To ▼ unresolvedIntent ×



Oracle Digital Assistant Hands-On

TBD

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