NLP for the Enterprise

One year later

Claudiu Musat

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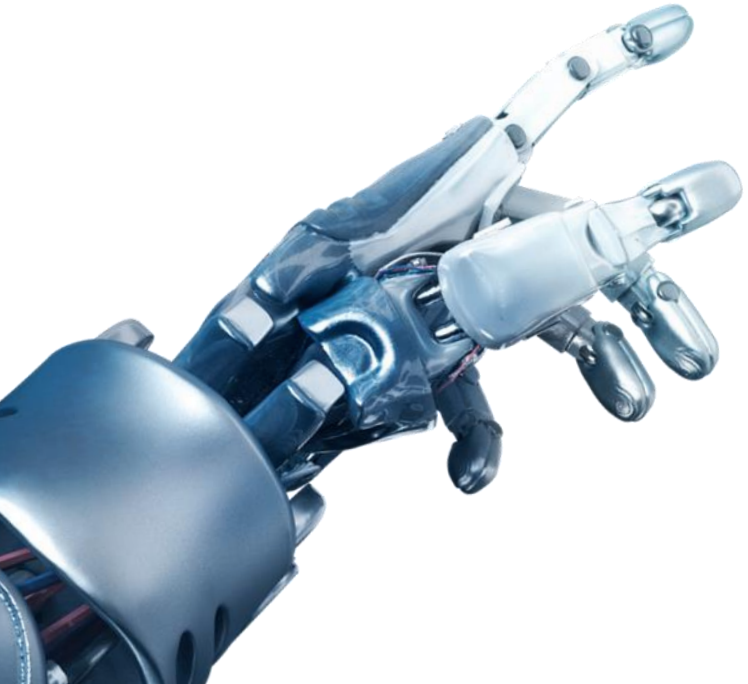
The Past...

Paradigm Shift:
The machine reaches out to us.



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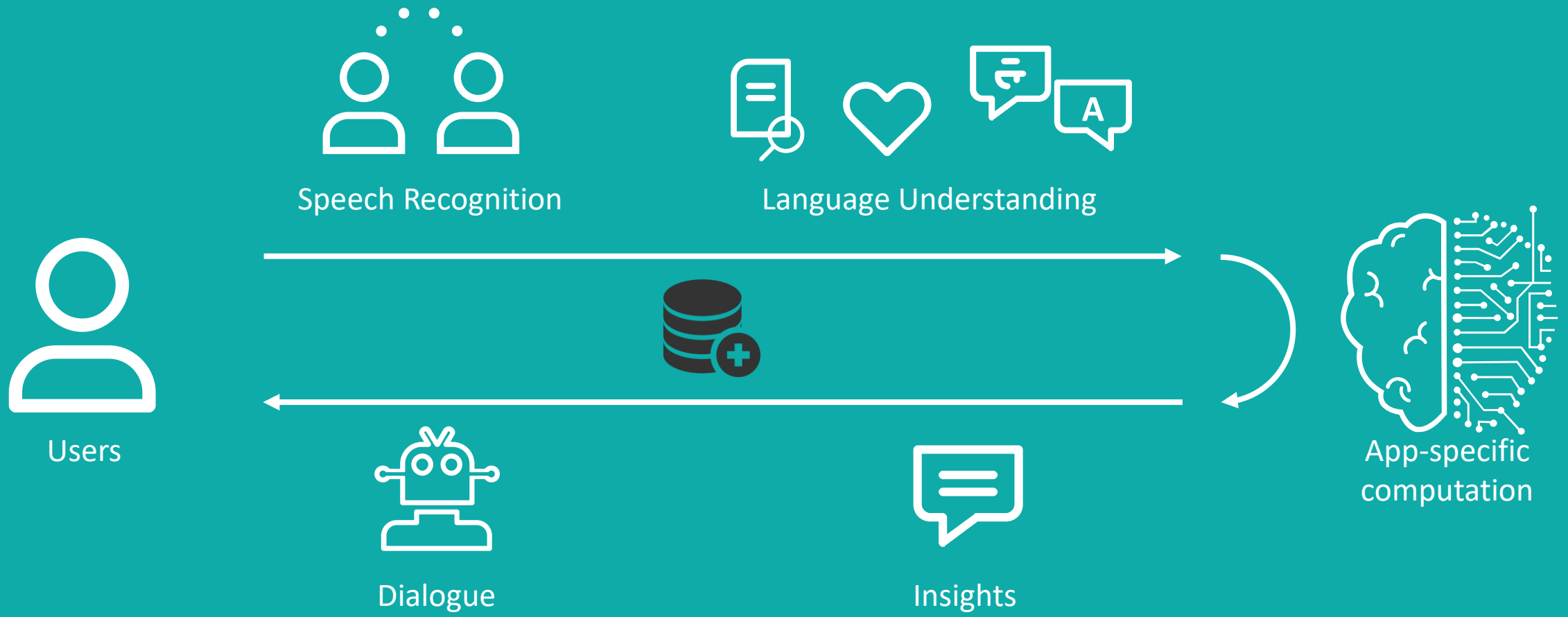
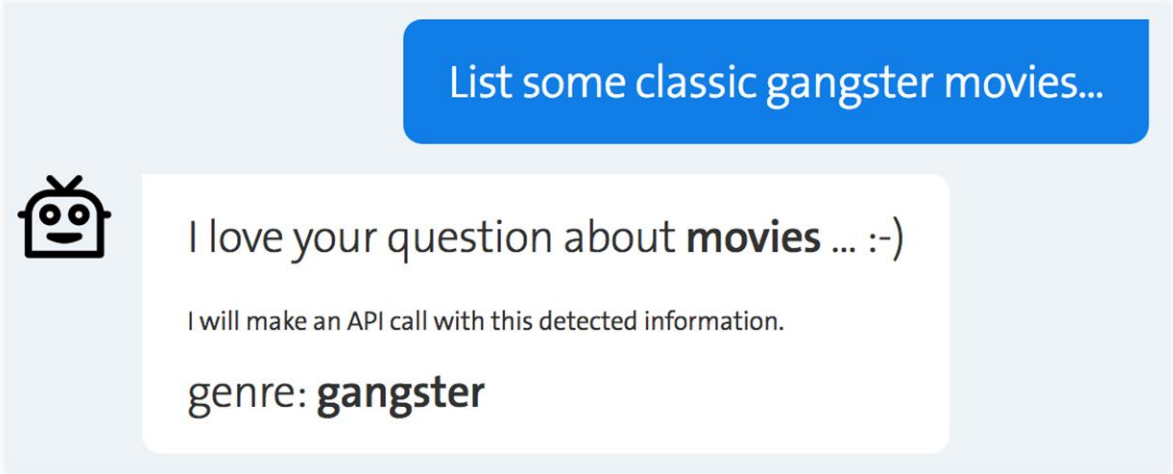
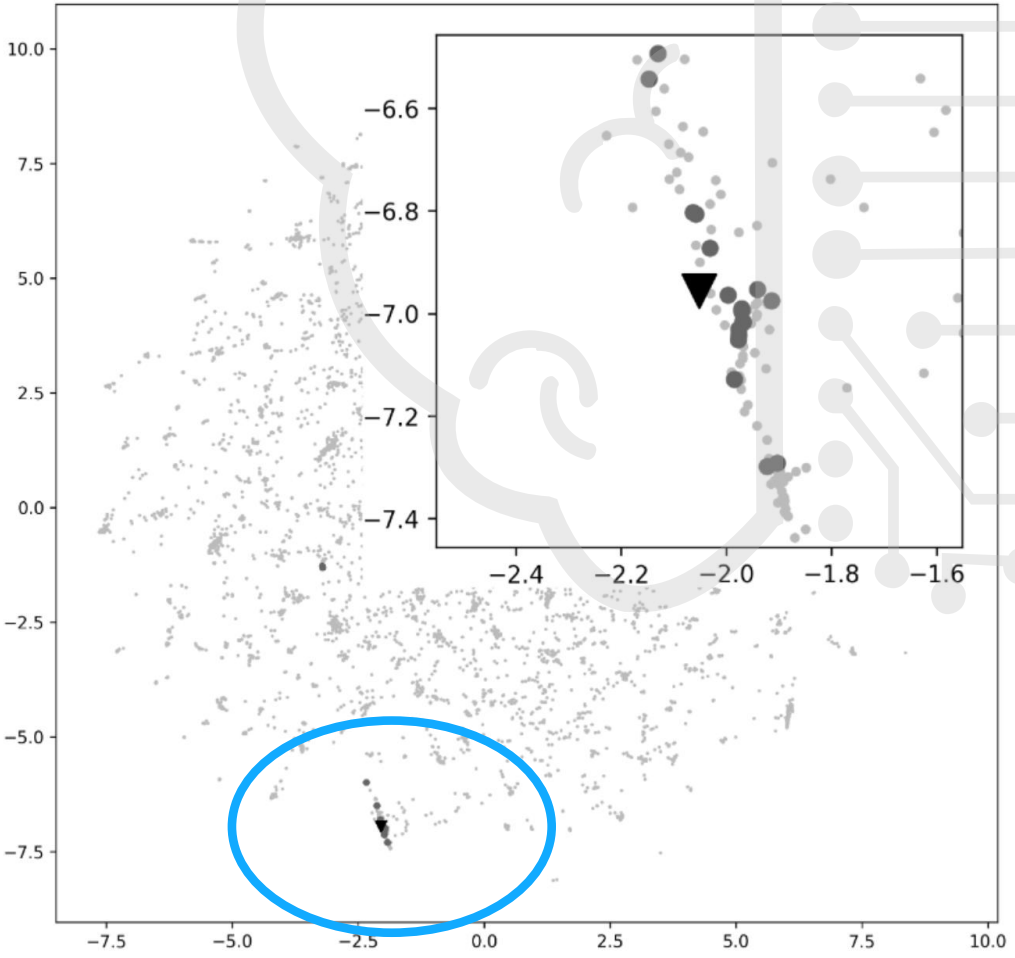
Useful AI Cycle



Data-constrained NLU – Sequence Tagging



what was the movie that featured that song over the rainbow
find me the movie with the song over the rainbow
what movie was the song somewhere out there featured in
what movie features the song hakuna matata
sow me a movie from the 1930s with the song somewhere over the rainbow
what movie uses the song tubthumping



- *Submodularity–inspired data selection for goal–oriented chatbot training based on sentence embeddings*

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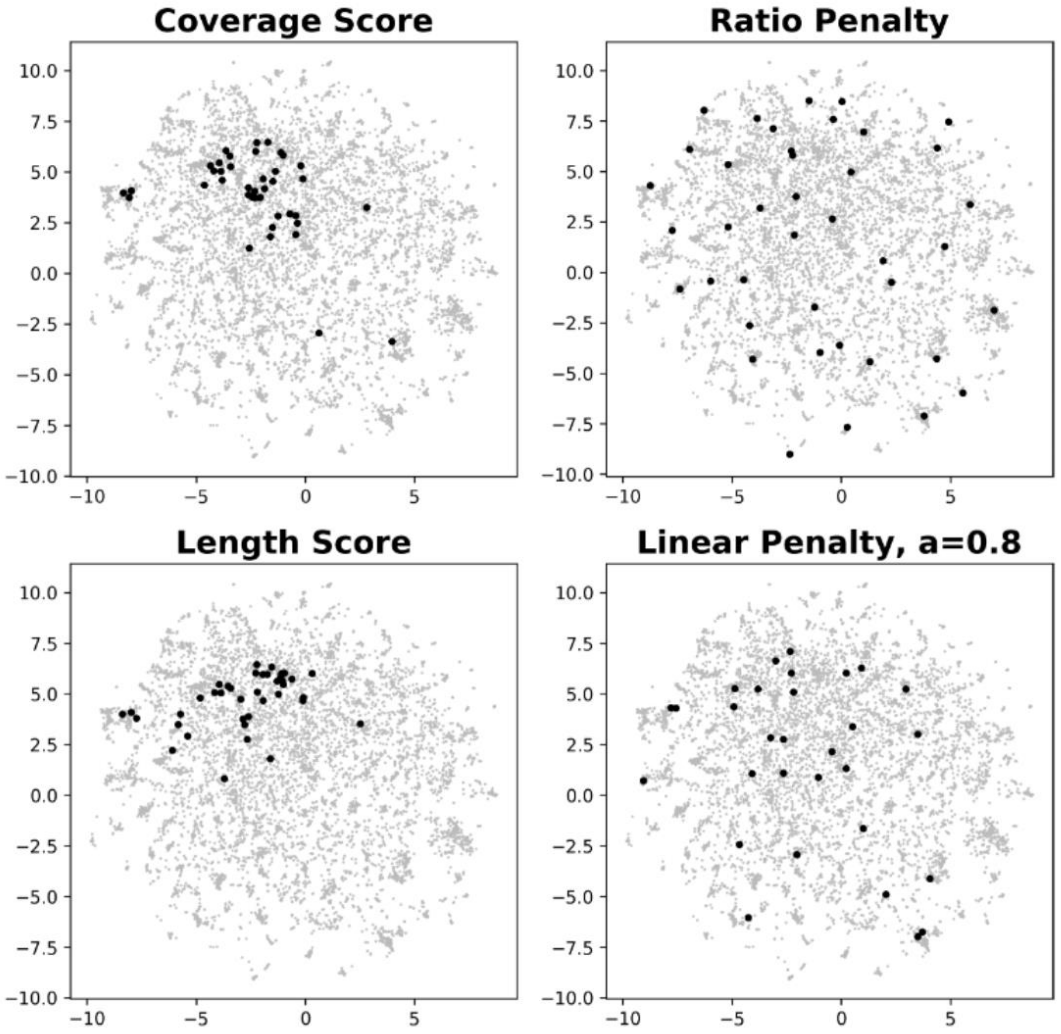
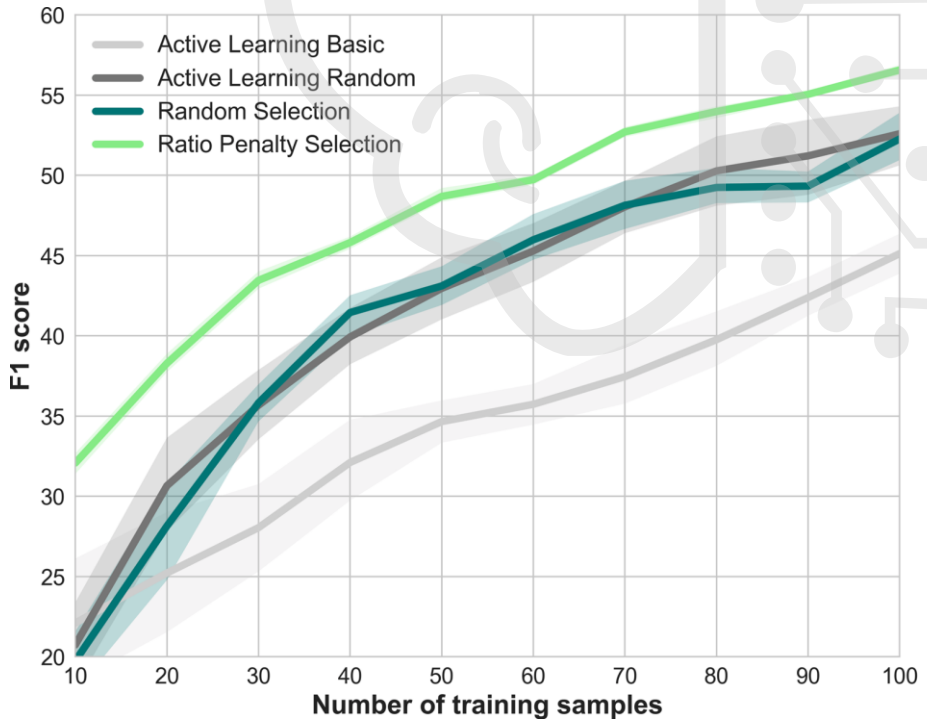
Data-constrained NLU – Sequence Tagging



$$F(s|X) = \frac{\sum_{y \in V} \text{sim}(s, y)}{1 + \sum_{x \in X} \text{sim}(s, x)}.$$



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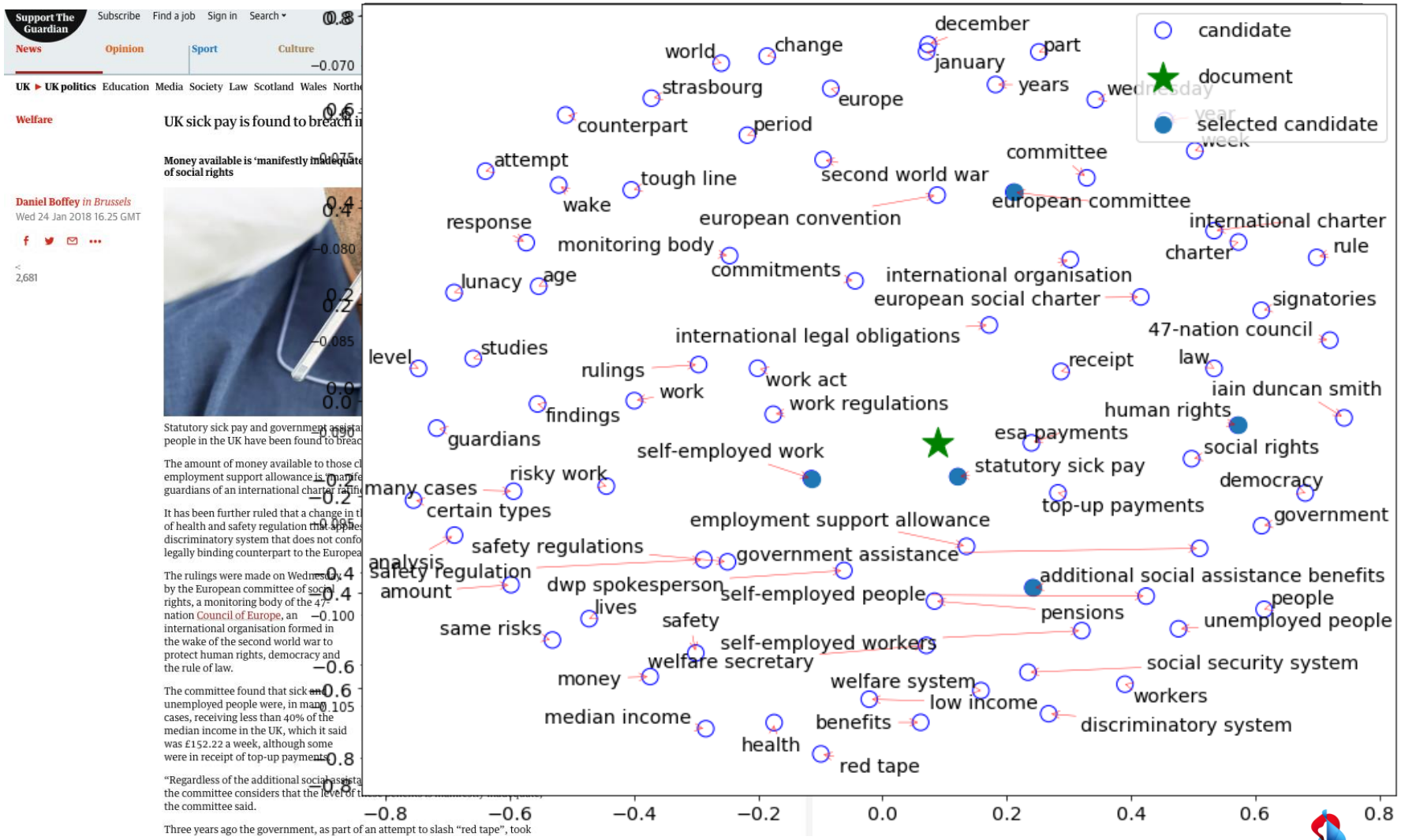
Data-constrained NLU – Key Phrases



- *EmbedRank: Unsupervised Keyphrase Extraction using Sentence Embeddings*

Data-constrained NLU – Key Phrases

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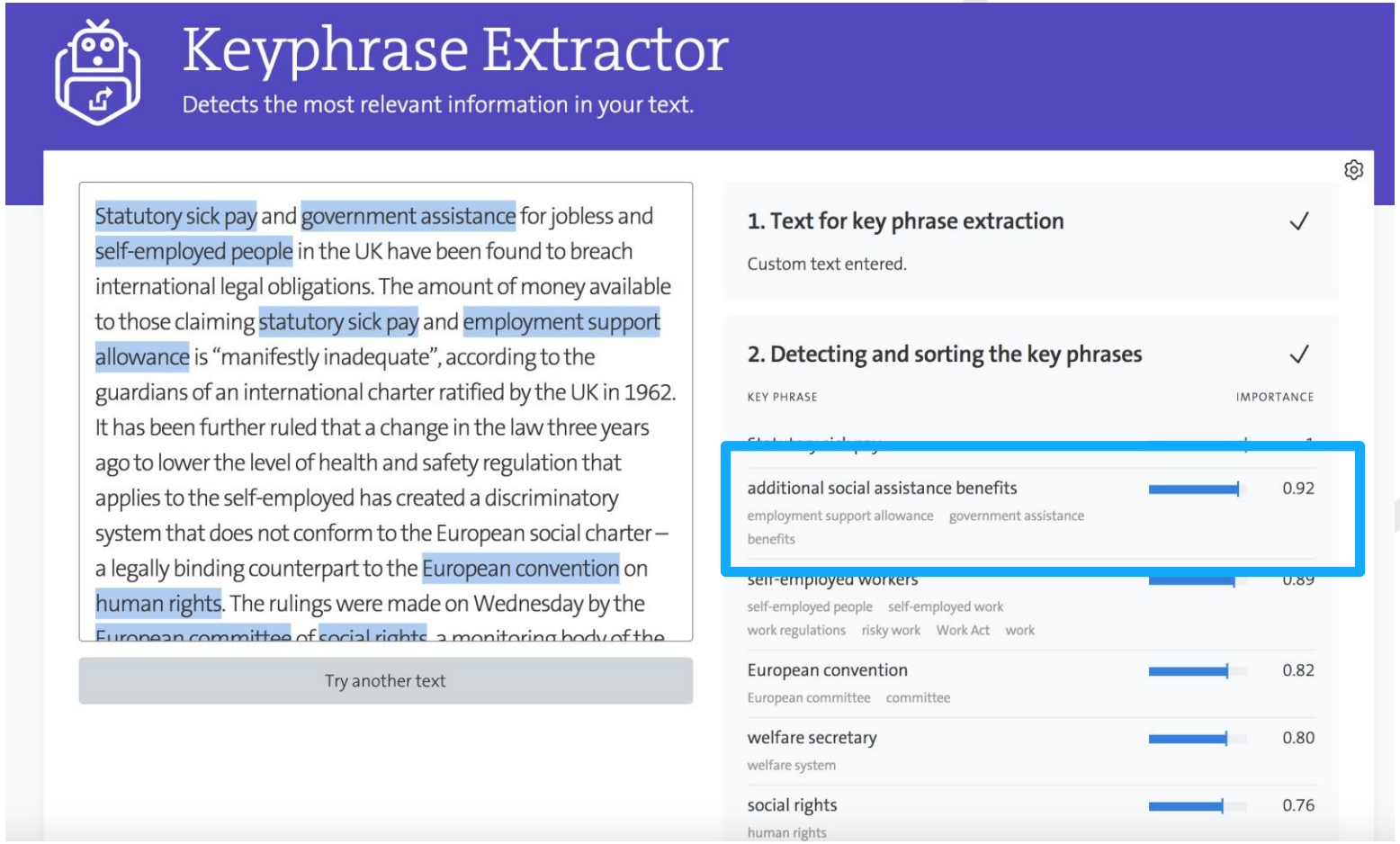
Data-constrained NLU – Key Phrases



- *EmbedRank: Unsupervised Keyphrase Extraction using Sentence Embeddings*

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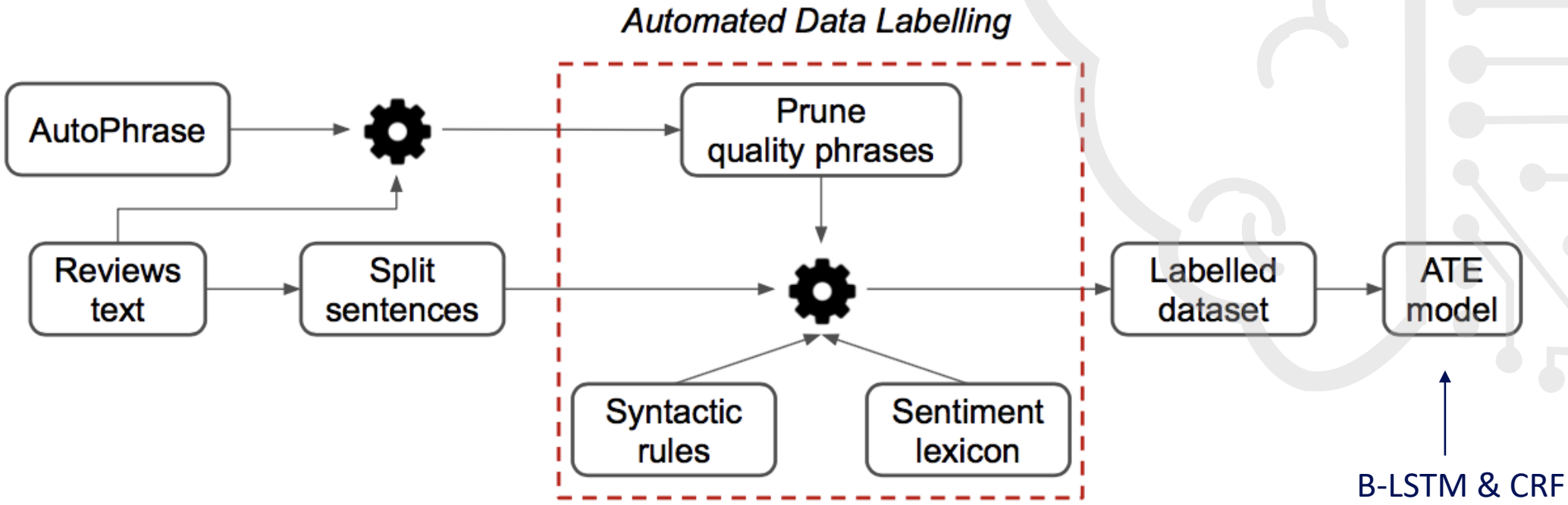
Data-constrained NLU – Opinion Targets



- *Unsupervised Aspect Term Extraction with B-LSTM & CRF using Automatically Labelled Datasets*
- *Dataset Construction via Attention for Aspect Term Extraction with Distant Supervision*

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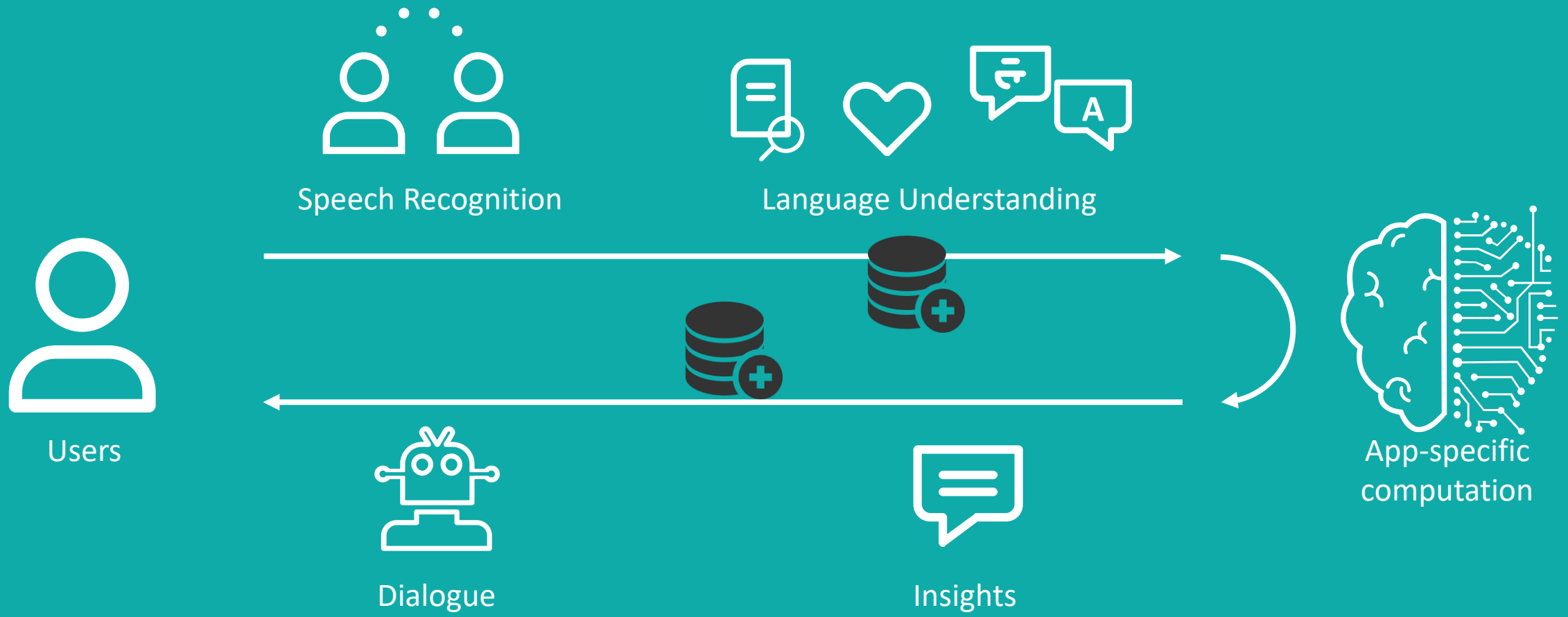
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Language Understanding
A
Users
App-specific computation
Dialogue
Insights

Data-constrained Dialogue Managers

Movie Booking Domain

- Source Domain
- Baseline paper
- Slots:
  - **city**
  - **date**
  - **number of people**
  - movie name
  - start time
  - theater
- User Goals
- Searchable Knowledge Base (KB)

inform_slots: {movie_name: "avengers", number_of_people: "3", date: "tomorrow"}, request_slots: {city, theater, start_time}

Restaurant Booking Domain

- Target Domain
- Derived from DSTC 2
- Slots:
  - **city**
  - **date**
  - **number of people**
  - food
  - price range
  - address
- User Goals
- Searchable Knowledge Base (KB)

inform_slots: {food: "Chinese", city: "London", number_of_people: 2}, request_slots: {price_range, date, addr}

- *Goal-Oriented Chatbot Dialog Management Bootstrapping with Transfer Learning*

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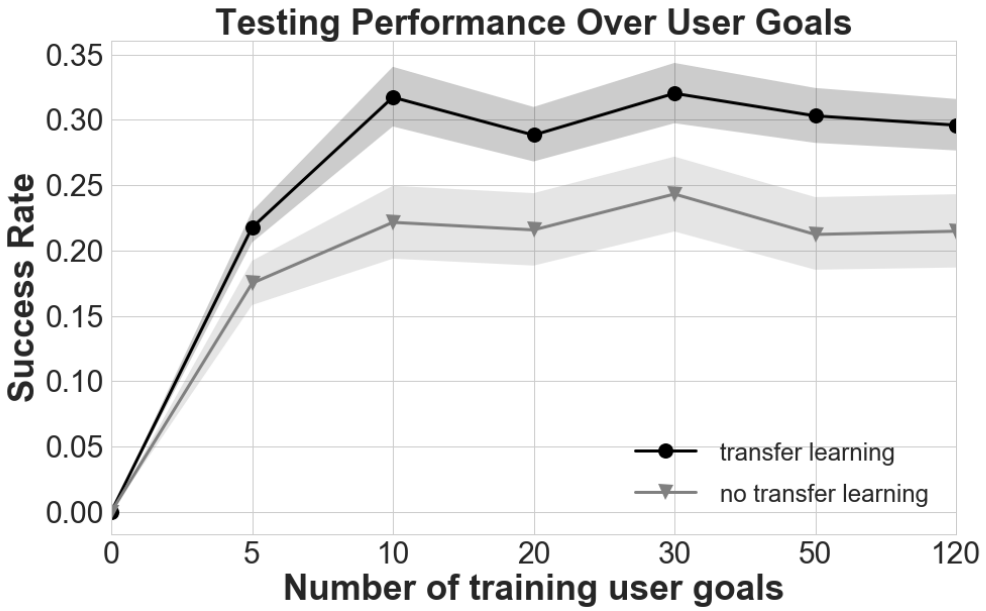
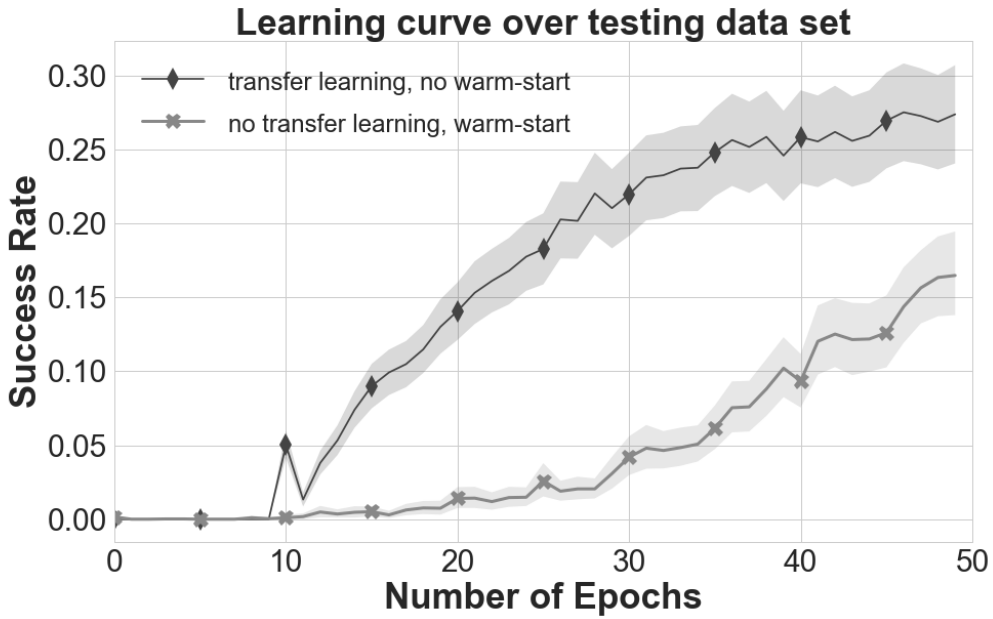
Transfering dialogue policies





- *Goal-Oriented Chatbot Dialog Management Bootstrapping with Transfer Learning*

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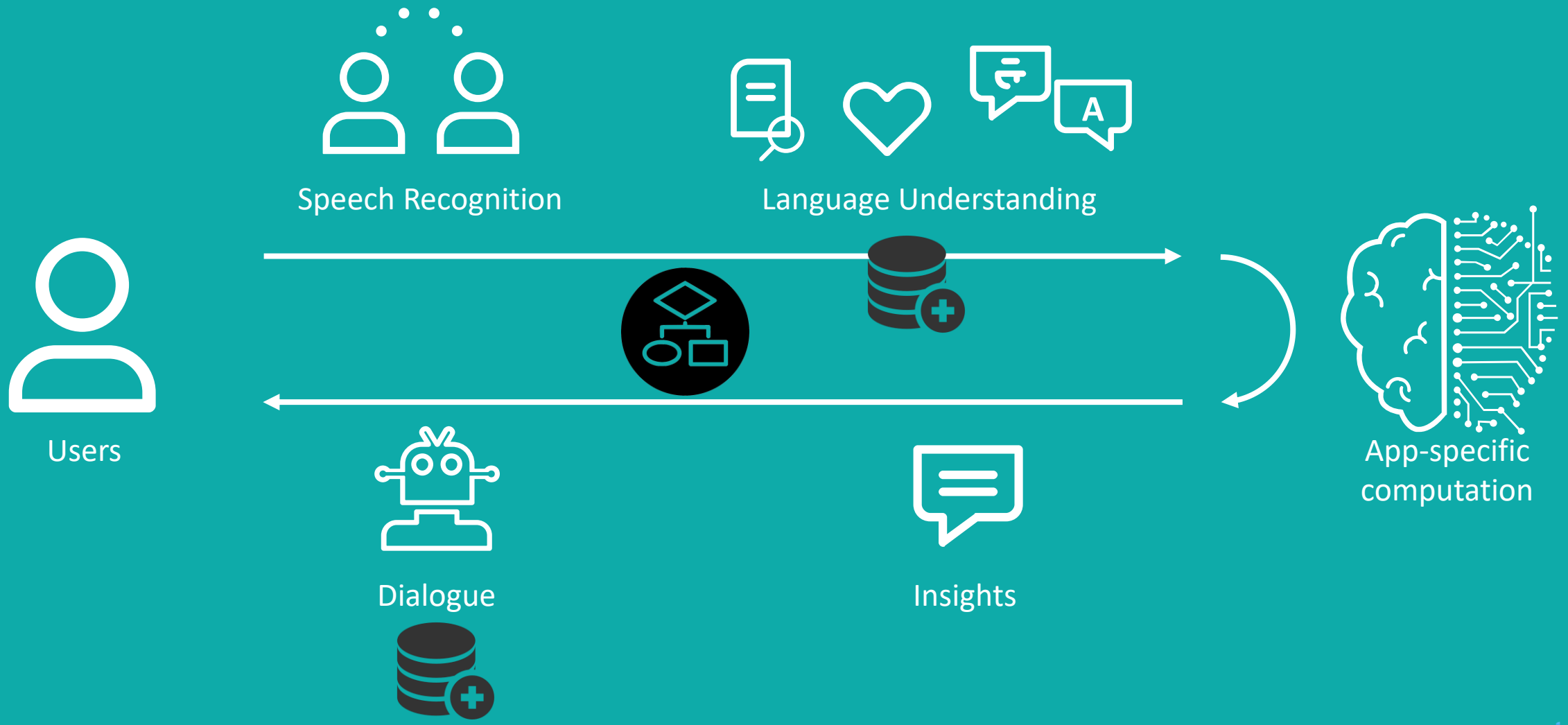
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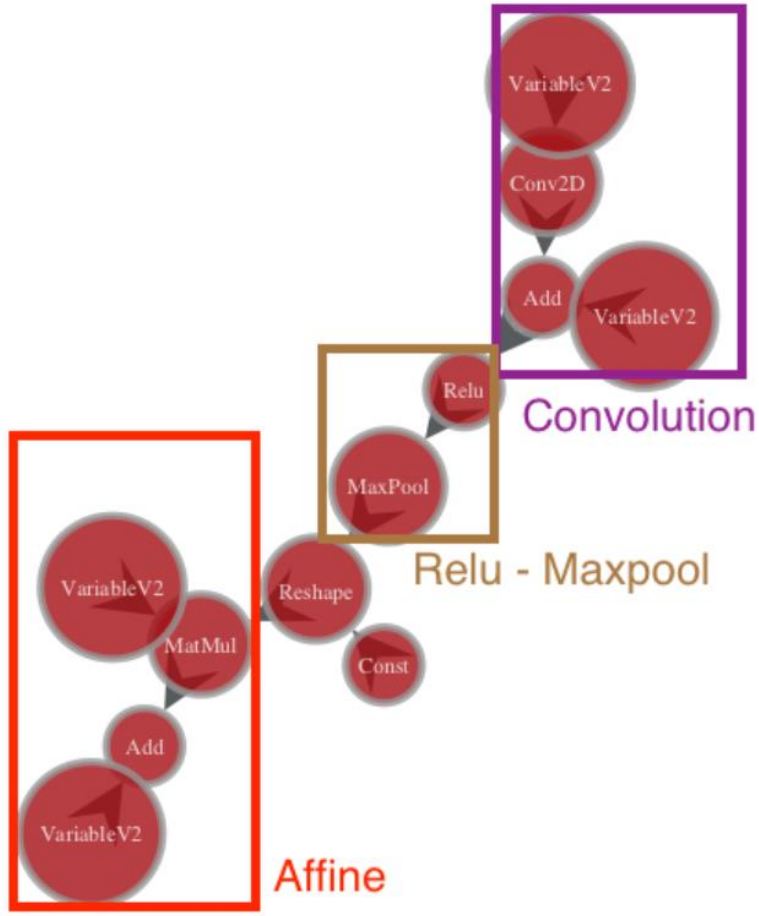
Auto ML: Use Github to for a better search space



GitGraph - Architecture Search Space Creation through Frequent Computational Subgraph Mining

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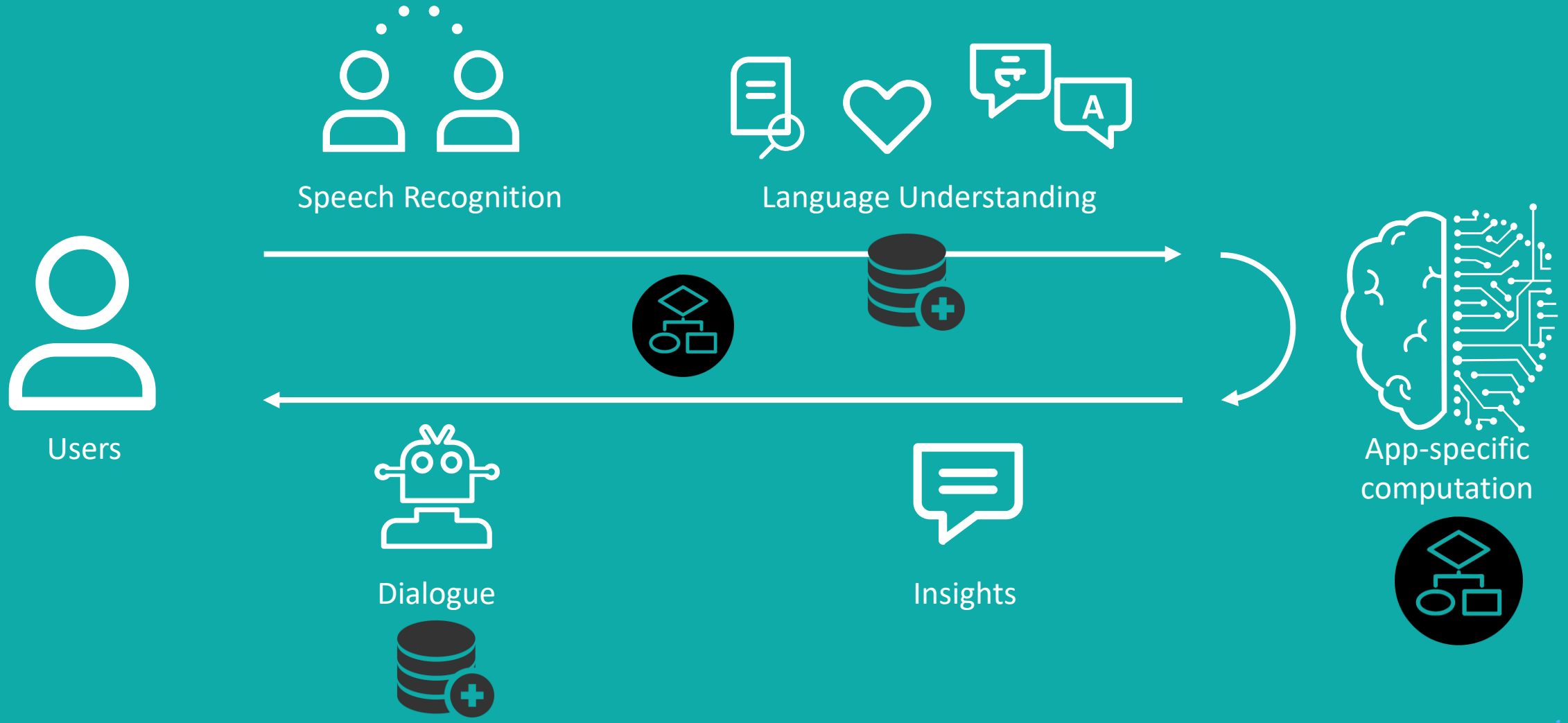
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Diverse Beam Search for Increased Novelty in Abstractive Summarization

by . rob preece . published : . 07:47 est , 30 june 2012 . | . updated : . 08:14 est , 30 june 2012 . tony blair has reiterated his desire to return to frontline politics , speaking about it for the second time in a week . the former labour premier , who left downing street in 2007 after 10 years in power , said he missed being prime minister and was keen to secure a top international job . he said he would have considered the posts of president of the eu or the world bank if they had been offered to him . and he suggested that the experience [...] he admitted in another interview that he would like to be prime minister again . mr blair , now 59 , has used his contacts made in downing street to build a multi-million-pound business empire since leaving office . [...]

the former labour premier , who left downing street in 2007 after 10 years in power , said he missed being prime minister and was keen to secure a top international job . he said he would have considered the posts of president of the eu or the world bank if they had been offered to him .

he said he missed being prime minister and was keen to **come back** to frontline politics . blair **, a middle east envoy ,** has used contacts made in downing street to build a multi-million-pound business empire since leaving office . he said he would have considered the posts of president of the eu or the world bank if they had been offered to him .

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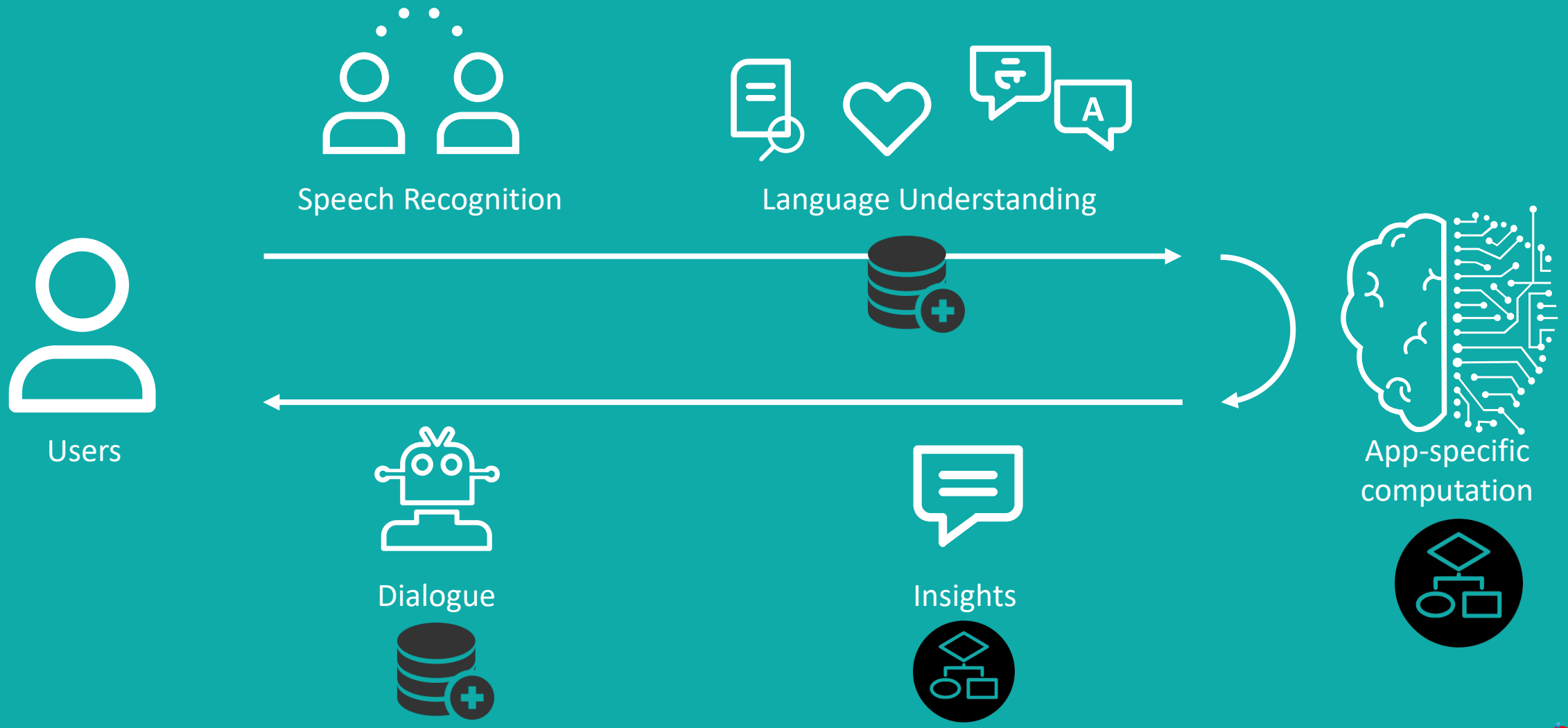
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