

Symbolic Artificial intelligence

SD213

Natural Language Processing

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Turing's imitation game

☀ The Imitation Game

- H. Hi. Who are you?
M. My name? Martine. And you?
H. What is the square root of 17684?
M. Don't know. I'm a dunce at maths.
H. What does the scent of violets mean to you?
M. It reminds me of the bed sheets in my grand-mother's cupboard.
[. . .]



Alan Turing

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Robot writes LA Times earthquake breaking news article

Robo-report – 17 March 2014

A shallow magnitude 4.7 earthquake was reported Monday morning five miles from Westwood, California, according to the U.S. Geological Survey. The temblor occurred at 6:25 a.m. Pacific time at a depth of 5.0 miles.

According to the USGS, the epicenter was six miles from Beverly Hills, California, seven miles from Universal City, California, seven miles from Santa Monica, California and 348 miles from Sacramento, California. In the past ten days, there have been no earthquakes magnitude 3.0 and greater centered nearby.

This information comes from the USGS Earthquake Notification Service and this post was created by an algorithm written by the author.

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La Cigale, ayant chanté

La cigale ayant chanté
 Tout l'été,
 Trouvé lui-même très manquant
 Lorsque la bise fut venue :
 Pas même un petit morceau
 Mouche ou ver.
 Elle est allée mendier
 Avec son voisin la fourmi,
 La prier de le prêter
 Du grain pour survivre
 Jusqu'à la nouvelle saison.
 "Je te paierai," dit-elle,
 Avant août, la foi animale,
 Principal et intérêt. "
 La fourmi ne prête pas:
 C'est le moindre de ses problèmes.
 Que faisiez-vous par temps chaud?
 Elle a dit à cet emprunteur.
 - Jour et nuit à tous les arrivants
 J'ai chanté, ne te déplaît pas.
 - Tu chantaient? Je suis content.
 Bien! danse maintenant.

Eh bien! dansez maintenant.

The cicada having sung
 All summer,
 Found himself very lacking
 When the North wind came :
 Not even a small piece
 Maggot or worm.
 She went begging
 With its neighbor the ant,
 Begging her to lend him
 Some grain to survive
 Until the new season.
 "I will pay you," said she,
 Before August, animal faith,
 Principal and Interest. "
 The ant is not lending :
 That's the least of his problems.
 What were you doing during hot
 weather ?
 She said to this borrower.
 - Day and night to all comers
 I sang, do not displease yourself.
 - You were singing ? I am glad.
 Well! dance now.

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Traduction: Example

I come from Alabama with my banjo on my knee
 I'm going to Louisiana, my true love for to see
 It rained all night the day I left
 The weather it was dry
 The sun so hot, I froze to death
 Susanna, don't you cry
 Chorus:
 Oh, Susanna,
 Oh don't you cry for me
 For I come from Alabama
 With my banjo on my knee

2. I had a dream the other night when
 everything was still
 I thought I saw Susanna a-coming down the hill
 The buckwheat cake was in her mouth
 The tear was in her eye
 Says I, I'm coming from the south
 Susanna, don't you cry

Je viens d'Alabama avec mon banjo
 sur mon genou

I'm from Alabama with my banjo on my knee
 I'm going to Louisiana, my true love to see
 It rained all night the day I left
 The weather was dry
 The sun so hot, I froze to death
 Susanna, do not you cry?
 Refrain:
 Oh, Susanna,
 Oh you do not cry for me
 Because I come from Alabama
 With my banjo on my knee

2. I had a dream the other night when
 everything was still
 I thought I saw Susanna go down the hill
 The buckwheat cake was in his mouth
 The tear was in his eye
 Tell me, I come from the south
 Susanna, do not you cry?

Le gâteau de sarrasin était dans sa
 bouche
 La larme était dans son oeil
 Dit moi, je viens du sud
 Susanna, ne pleures-tu pas?

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1 pick up a red block
OK
in order to pick up the red block it had to find a space to place the green one on top.

2 grasp the pyramid
I DONT UNDERSTAND WHICH PYRAMID YOU MEAN
there are three pyramids so nothing is done

3 find a block which is taller than the one you are holding and put it in the box
BY "IT" I ASSUME YOU MEAN THE BLOCK WHICH IS TALLER THAN THE ONE I AM HOLDING
OK
the system interprets one and it and puts down the red block and picks up the taller blue block reach figure 4

4 what does the box contain?
THE BLUE PYRAMID AND THE BLUE BLOCK
5 what is the pyramid supported by?
THE BOX
earlier the system did not know which pyramid now it assumes the one in the box

6 how many blocks are not in the box?
FOUR OF THEM

7 is at least one of them narrower than the one which I told you to pick up?
YES THE RED CUBE
the phrases "at least one of" and "the one which" refer back to previous questions and the form of noun groups ie the syntactic structure helps here.

8 is it supported?
YES BY THE TABLE
passive

9 can the table pick up blocks?
NO
the semantic rules make this silly thus false

10 can a pyramid be supported by a block?
YES
the deductive system can find an example of this occurring

11 can a pyramid support a pyramid?
I DONT KNOW
the deductive system cannot find an example

12 stack up two pyramids
I CANT
the system tries and fails

13 the blue pyramid is mine
I UNDERSTAND

14 I own blocks which are not red but I don't own anything which supports a pyramid
I UNDERSTAND

15 do I own the box?
NO
the box supports a pyramid

16 do I own anything in the box?
YES TWO THINGS THE BLUE PYRAMID AND THE BLUE BLOCK

17 will you please stack up both of the red blocks and either a green cube or a pyramid?
OK
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it places the green block on the big red block removes the green pyramid and then puts the red block on the top

18 which cube is sitting on the table?
THE LARGE GREEN ONE WHICH SUPPORTS THE RED PYRAMID
this helps to distinguish the correct cube

19 is there a large block behind a pyramid?
YES THREE OF THEM A LARGE RED ONE A LARGE GREEN CUBE AND THE BLUE ONE

20 put a small one onto the green cube which supports a pyramid
OK
a small one means a small block

21 put the litttest pyramid on top of it
OK
litttest must be interpreted from its root

22 how many things are on top of green cubes
I'M NOT SURE WHAT YOU MEAN BY "ON TOP OF" IN THE PHRASE
"ON TOP OF GREEN CUBES"
DO YOU MEAN
1 DIRECTLY ON THE SURFACE
2 ANYWHERE ON TOP OF?
2
THREE OF THEM
where there is ambiguity questions involving paraphrases are developed using heuristics

23 had you touched any pyramid before you put the green one on the little cube?
YES THE GREEN ONE
the system needs to find the correct event which involves the tenses of verb groups

24 why did you pick it up?
WHILE I WAS STACKING UP THE RED CUBE I LARGED RED BLOCKS AND A LARGE GREEN CUBE
the time consists of

25 why?
26 GET RID OF IT
26 why did you do that?
TO CLEAN OFF THE RED CUBE
the system involves considering the subgoals in the trace

27 why are you clear off the table?
28 PUT IT ON A LARGE GREEN CUBE
28 why did you do that?
TO STACK UP THE RED CUBE A LARGE RED BLOCK AND A LARGE GREEN CUBE
29 why did you do that?
BECAUSE YOU ASKED ME TO DO IT
it cannot remember the command

30 how did you do it?
BY PUTTING A LARGE RED BLOCK ON THE TABLE THEN LETTING GO OF IT THEN PUTTING A LARGE GREEN CUBE ON IT THEN LETTING GO OF THAT CUBE THEN PUTTING THE RED CUBE ON THAT CUBE THEN LETTING GO OF THAT CUBE

→ SHRDLU

A small grammar

Rules

Gram

the daughter likes the cousin of her neighbour

s

__np

| __det : the

| __n : daughter

__vp

__v : likes

__np

| __det : the

| __n : cousin

__pp

__p : of

__np

__det : her

__n : neighbour

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NLP industry

MARKET BY TYPES

- Statistical NLP
- Hybrid based NLP
- Rule NLP

MARKET BY TECHNOLOGY

- Recognition technologies
- Operational technologies
- Analytics technologies

MARKET BY APPLICATIONS

- Machine translation
- Information extraction
- Report generation
- Question answering
- Others

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A growing number of businesses are now using NLP.
In fact, a recent report by research firm [MarketsandMarkets](https://www.marketsandmarkets.com/) predicts the NLP market will reach \$13.4 billion by 2020, a compound annual growth rate of 18.4 percent.

2018 Language Industry Survey –
Expectations and Concerns of the European Language Industry
https://ec.europa.eu/info/sites/info/files/2017_language_industry_survey_report_en.pdf

A Review of Natural Language Processing Research
<http://sentic.net/jumping-nlp-curves.pdf>

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Natural Language Processing Market Worth \$13.4 Billion by 2020

Jun 15, 2015, 15:00 ET from [MarketsandMarkets](#)



DALLAS, June 16, 2015 /PRNewswire/ --

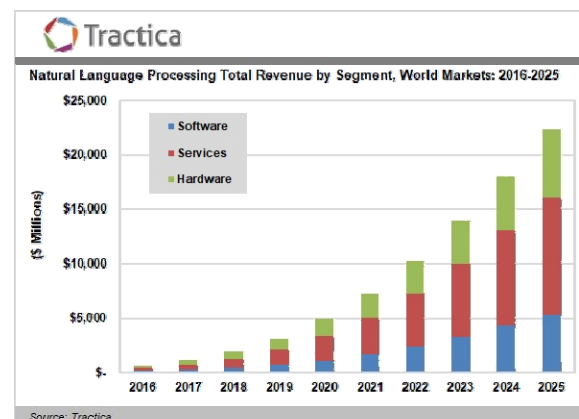
According to a new market research report **"Natural Language Processing Market by Type (Rule-Based, Statistical, and Hybrid), Technologies (Recognition, IVR, OCR, Pattern & Image Recognition) - Worldwide Forecast to 2020"** published by MarketsandMarkets, The Natural Language Processing Market is expected to grow to \$13.4 Billion at a CAGR of 18.4% for the forecast period 2015-2020.

Journal
Bloggers

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market data Tables and

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Examples of NLP use

- spelling
- machine translation
- summary
- automatic reading
- linguistic processing after speech recognition
- contextual help
- human-machine interaction
- text mining
- relevant information mining
- . . .

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Applications

Les applications du TALN dans l'entreprise

■ Marché

- Portails et moteurs de recherche
- Analyse de logs
- Réponse automatique
- Gestion de campagne marketing
- m-commerce (mobile-commerce)
- Fouille de textes
- Classification automatique
- Web sémantique

■ Environnement

- Intelligence économique
- Veille
 - Concurrentielle
 - Technologique
 - de notoriété
 - Logistique

■ Gestion de la relation clients

- e-commerce
- Support en ligne
- Réponse automatique
- Traitement des courriels
- Traduction automatique
- Agents conversationnels

■ Ressources internes

- Travail collaboratif
- e-learning
- Gestion du capital intellectuel
- Documentation
- Gestion de l'innovation
- Recherche d'experts
- Gestion des meilleures pratiques
- Gestion de CV

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