

Natural Language Processing

One morning I **shot** an **elephant**
in my pyjamas. How he got into
my **pyjamas** I'll never know.

- Groucho Marx

Dheeren Vélú

dheeren@velu.me

dheeren.velu@gmail.com

[LinkedIn : Dheeren Velu](#)



Quiz Time

If Man is to Woman | King is to Queen ?

What do you think?

If Einstein \leftrightarrow Science

Messi \leftrightarrow **Midfielder**
----- ?

Picasso \leftrightarrow **Painter**
----- ?

What do you think?

If Japan \leftrightarrow Sushi

Germany \leftrightarrow Bartwurst ?

France \leftrightarrow Tapas ?

U.S.A \leftrightarrow Pizza ?



Marketing Good or Bad?

Sentiment analysis by an algorithm : **Negative**

Computer or Human?

"Benner had a good game at the plate for Hamilton A's-Forcini. Benner went 2-3, drove in one and scored one run. Benner singled in the third inning and doubled in the fifth inning."

"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."

"Apple's holiday earnings for 2014 were record shattering. The company earned an \$18 billion profit on \$74.6 billion in revenue. That profit was more than any company had ever earned in history."

What is NLP?

Computer Science meets Linguistics

***Natural language processing (NLP)** is the ability of a computer program to **understand human language** as it is spoken. **NLP** is a component of artificial intelligence (AI).*

Natural language understanding (NLU) deals with machine reading comprehension.

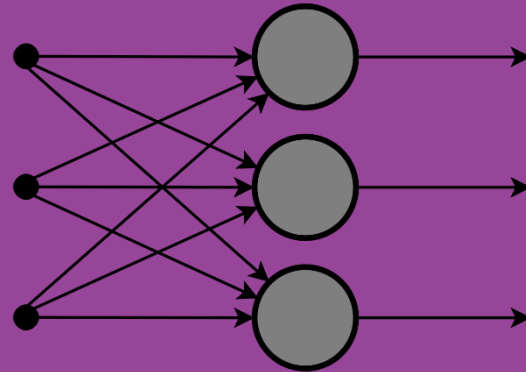
Natural language generation (NLG) is the task of generating natural language from a machine representation system (Data → Language)

NLP is not all that new

Spam Filtering



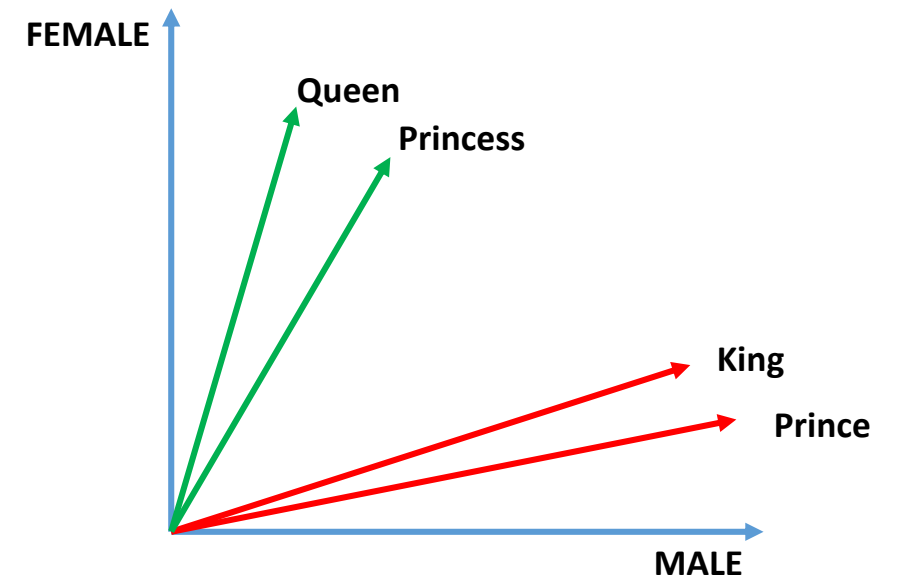
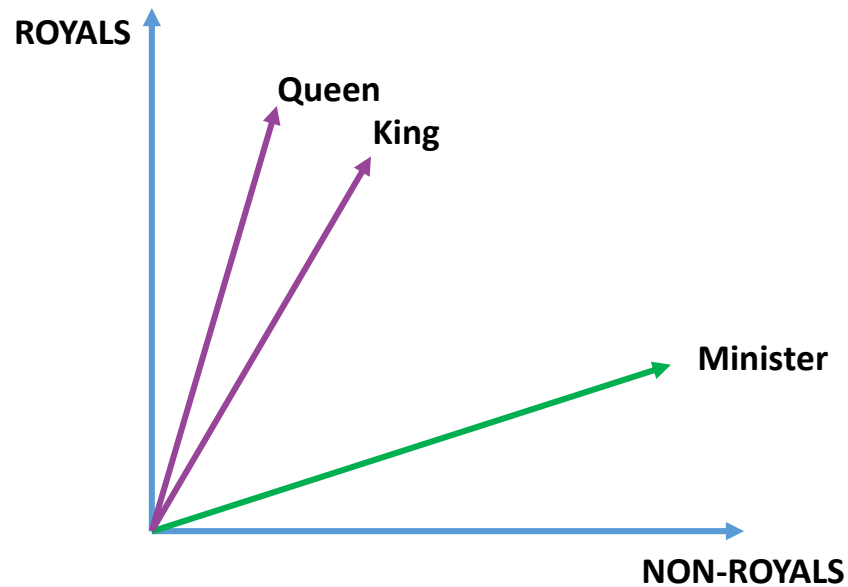
Translate & Transcribe



Large impacts from recent developments in Neural Nets and Deep Learnings

How does it work?

Words in a high-dimensional space (semantic space) - each dimension represents an aspect.
Concepts and words that are similar live close together in this space.



If Man is to Woman | King is to Queen

NLP Algorithms need Data....and a lot of it

Queen ?

Her majesty the **queen**.
The **queen's** speech during the **state** visit
Buckingham **palace** is the **Queen's** official
residence
The **Crown** of **queen** Elizabeth
The **Queen** Mother



Queen's earliest works were influenced by
progressive **rock**
Legendary rock band **Queen** arrive at East
Midlands Airport
1977 was a milestone year for the iconic and
legendary British rock and roll band, **Queen**



Remember
Bratwurst ?

German **beer** is considered to be a
beer- drinker's paradise on Earth.
Germans love to drink **beer**, with their
beer consumption ranking third
behind the **Czech** and the **Irish**.
Good **German beer** is simple,
traditional, perfectly balanced with
clean, wholesome flavors.



Why is this is Important now?

90% of the world's data was created in the last **2 years**

80% of that is **unstructured** - in some form of natural language (blogs, emails, tweets, customer reviews, etc;



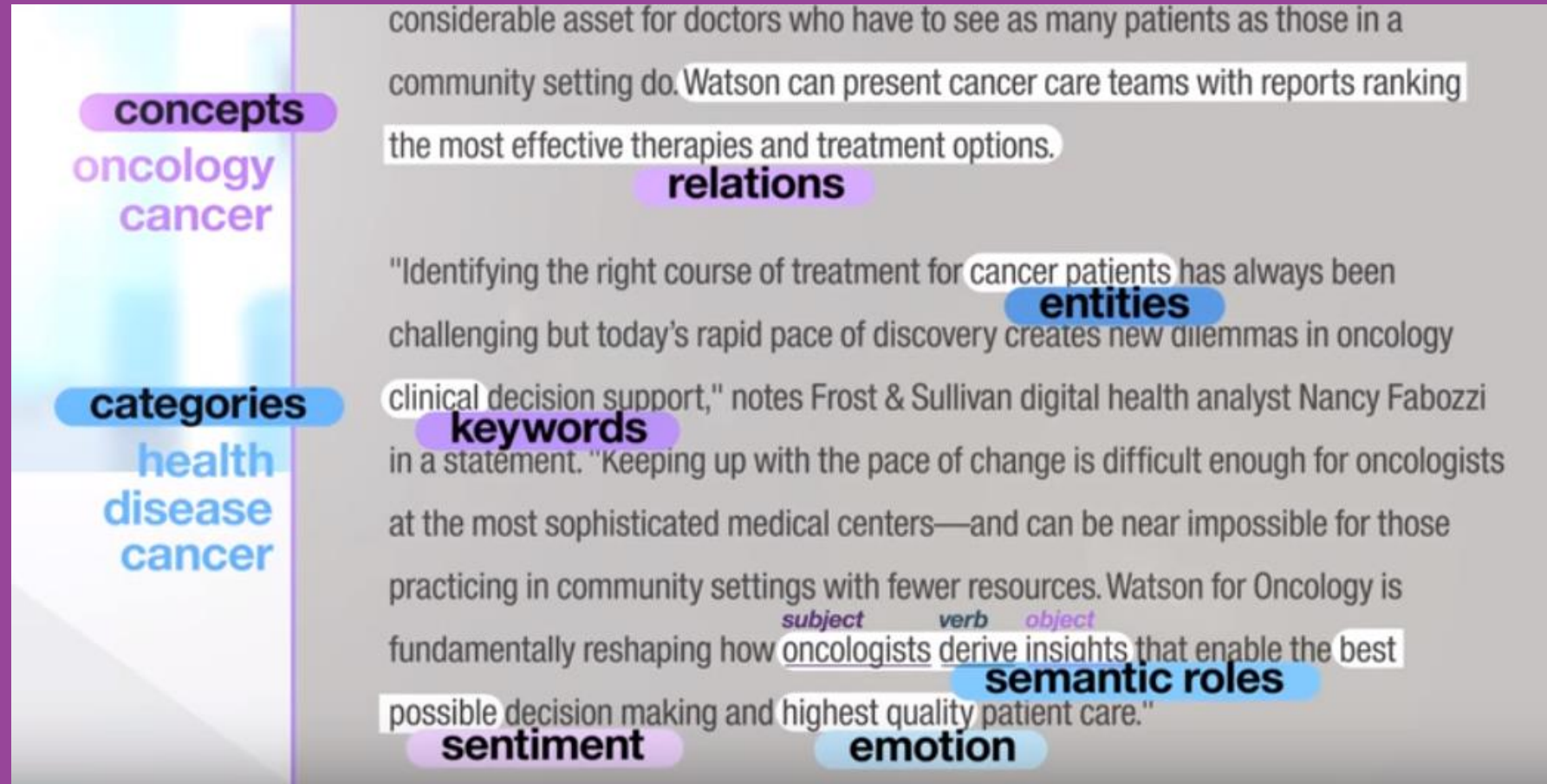
What can I do with NLP today?



- Intent & Entity Detection
- Language Translation
- Info Extraction
- Prediction
- Sentiment Analysis
- Classification
- Analytics and Mining
- Language Generation

Info Extraction

Processing a body of text so that it can be entered into a structured form for analysis



Info Extraction - Example

Sentiment



Concepts

Concept	Score
Natural language processing	0.92
Natural language	0.77
Linguistics	0.72
Instant messaging	0.68
Conversation	0.64

Keywords

brief industry news	0.96
chatbots	0.72
group discussion	0.65
bots	0.57
events	0.42

Category

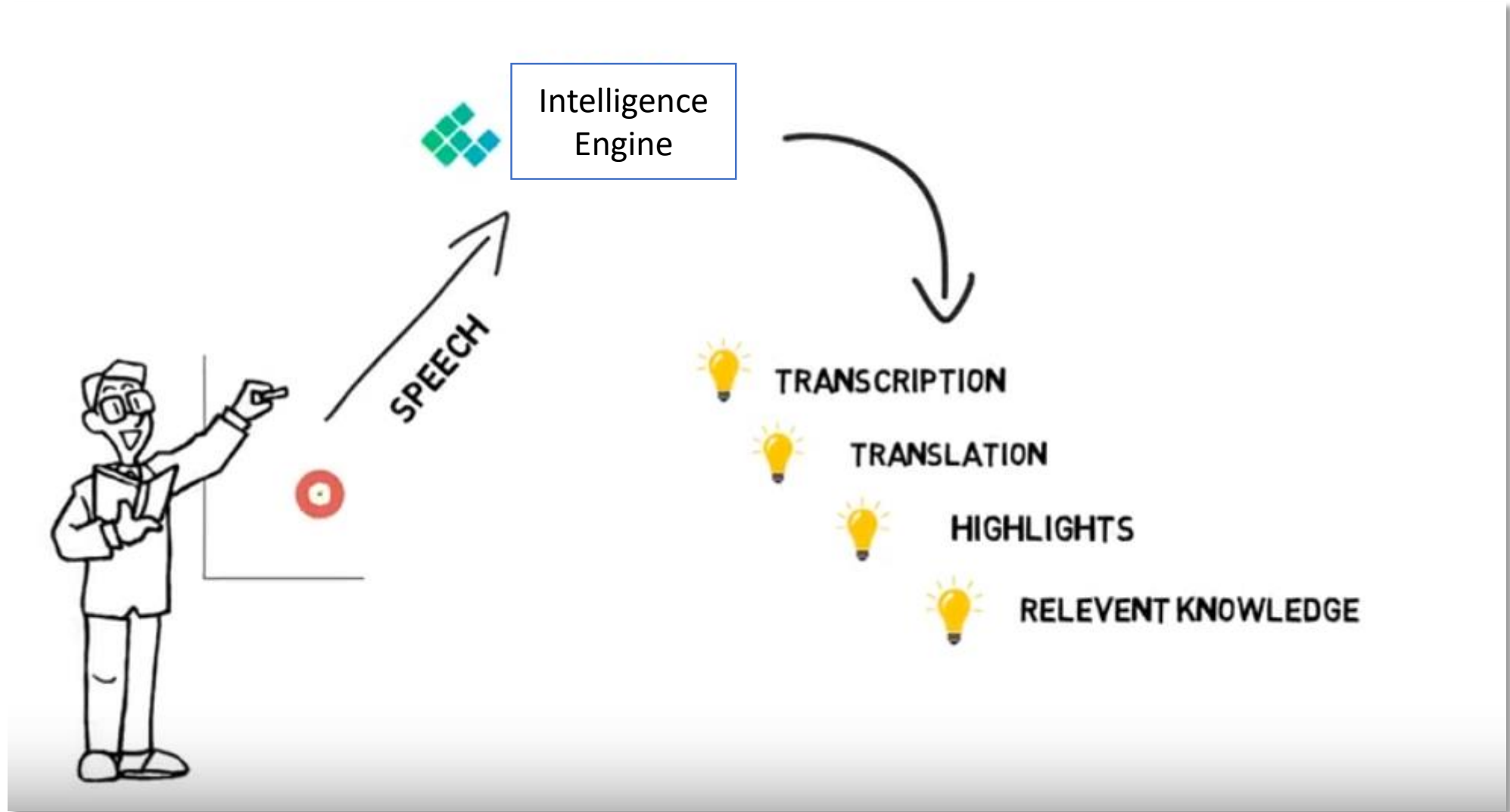
/ science / computer science / artificial intelligence	0.58
/ art and entertainment / visual art and design / design	0.58
/ technology and computing / software / net conferencing	0.54

Reboot the bots! The group is resuming events, join us.
Hosted by Tim Kinnane
From Chatbots, Messaging & AI
We'll hear talks from practitioners of different skill sets and experience levels, to ensure there's some key takeaways no matter your background.
Topics
- Applying Natural Language Processing beyond ChatBots | Dheeren Velu
- A quick look at conversation design with BotEngine.ai | Sarah Mare
- Introduction to building bots for the Slack platform | Benoit Lavigne
We'll start with a brief industry news and resources round-up and end with group discussion and feedback session. Please share your thoughts to keep these events relevant and helpful.

Name	Type	Score
Benoit Lavigne	Person	0.82
Dheeren Velu	GeographicFeature	0.79
Sarah Mare	Person	0.75
Tim Kinnane	Person	0.56

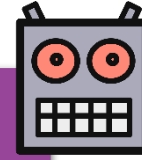
Case-Study

Augmented Intelligence – Learning Platform



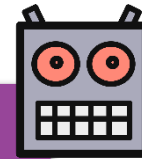
Language Generation (NLG)

"Benner had a good game at the plate for Hamilton A's-Forcini. Benner went 2-3, drove in one and scored one run. Benner singled in the third inning and doubled in the fifth inning."



This was a [sample report](#) done by Quill, a Narrative Science product

"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."



This excerpt of an initial report about a March 2014 earthquake was written [by an algorithm](#).

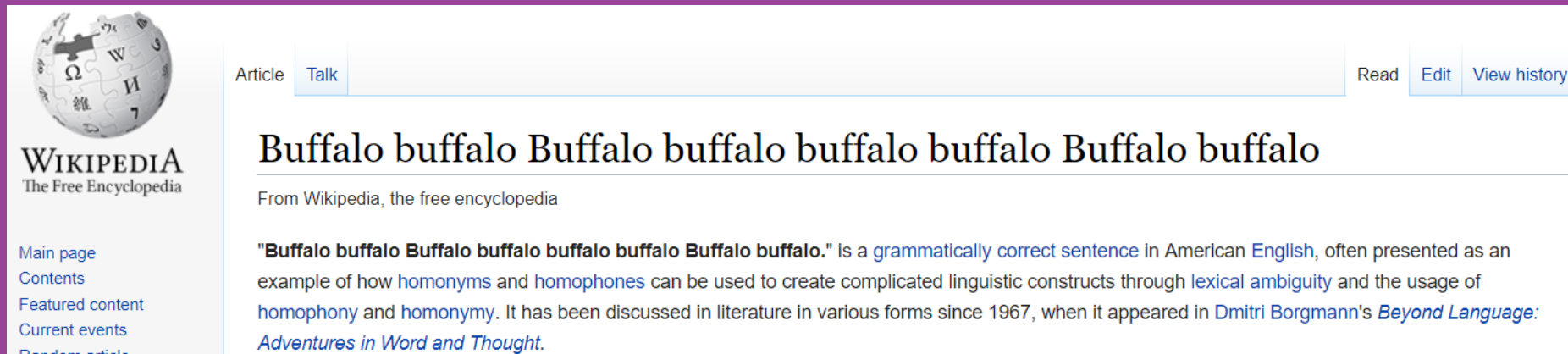
"Apple's holiday earnings for 2014 were record shattering. The company earned an \$18 billion profit on \$74.6 billion in revenue. That profit was more than any company had ever earned in history."



This was an excerpt from an article on [Business Insider](#)

Thank you

"Buffalo buffalo Buffalo buffalo buffalo buffalo Buffalo buffalo."



Dheeren Vélú

dheeren@velu.me

dheeren.velu@gmail.com

[LinkedIn : Dheeren Velu](#)