NLP
NLU
NLG

Natural Language Processing

Natural Language Understanding

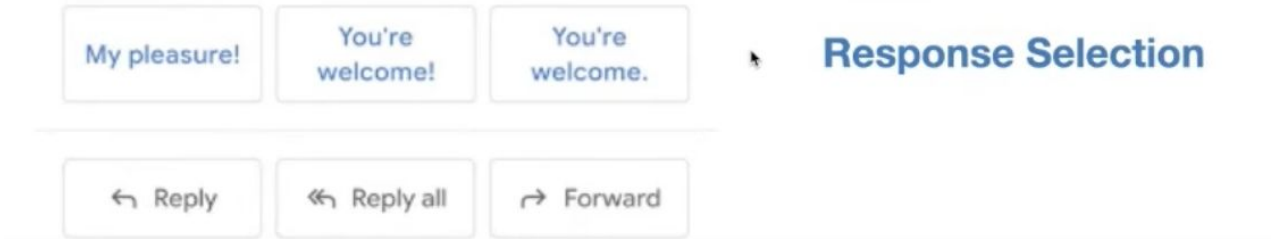
Natural Language Generation

Make machines
learn and use language
like humans do

Use cases

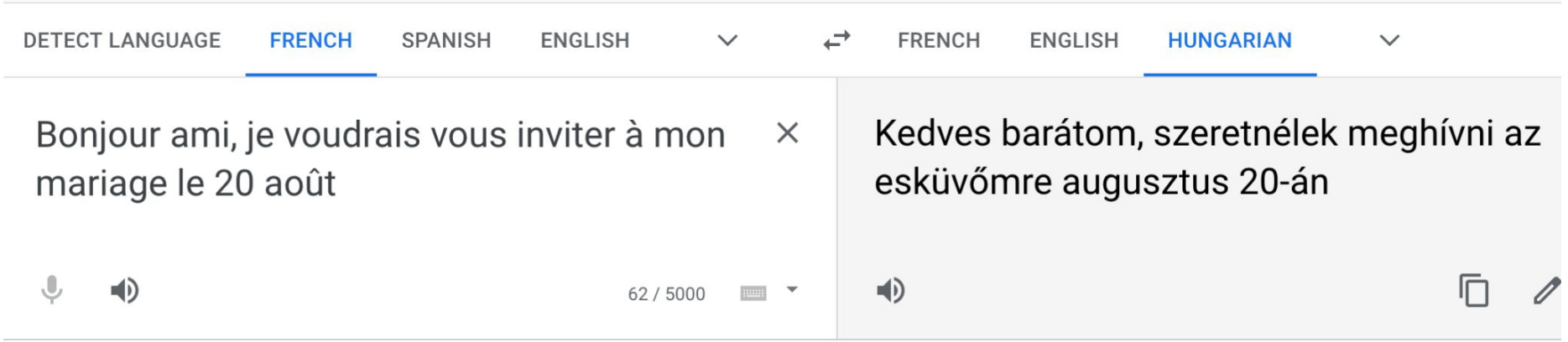
Use cases

Auto Complete

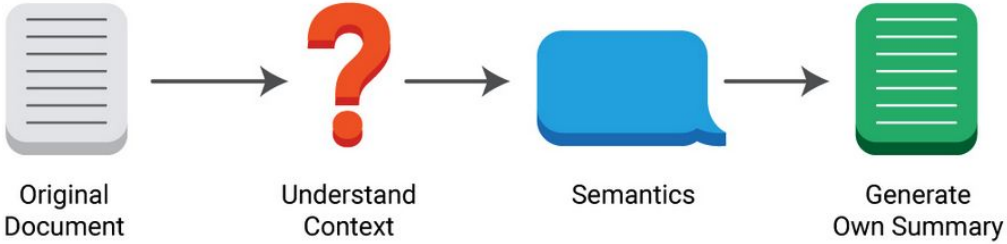


Response Selection

Use cases

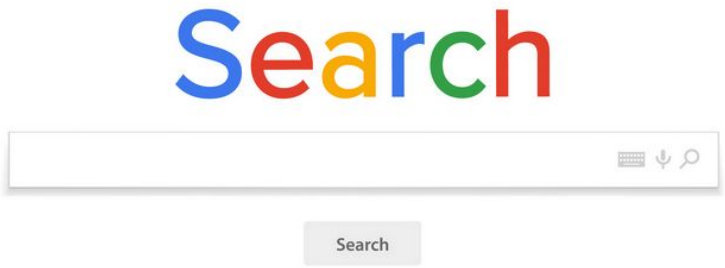

DETECT LANGUAGE
FRENCH
SPANISH
ENGLISH
FRENCH
ENGLISH
HUNGARIAN
Bonjour ami, je voudrais vous inviter à mon mariage le 20 août
62 / 5000
Kedves barátom, szeretnélek meghívni az esküvőmre augusztus 20-án

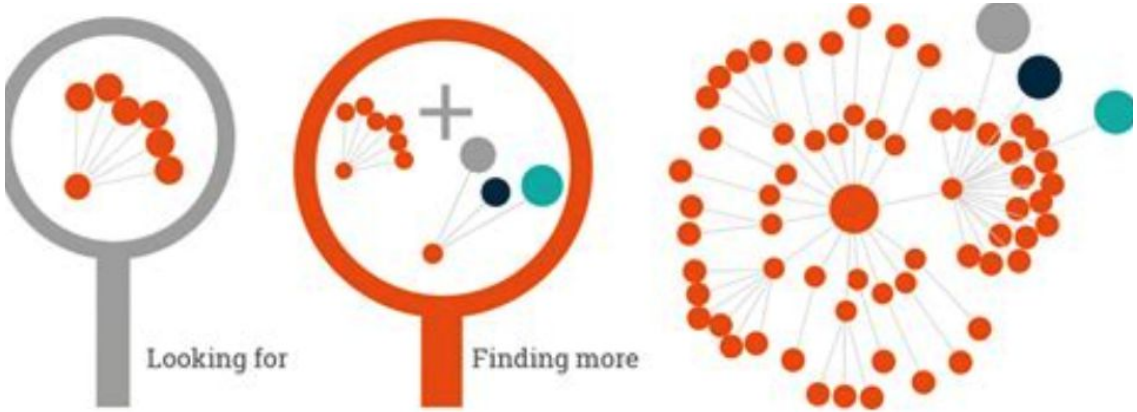
Use cases



Text Summarization **Question Answering**

Use cases

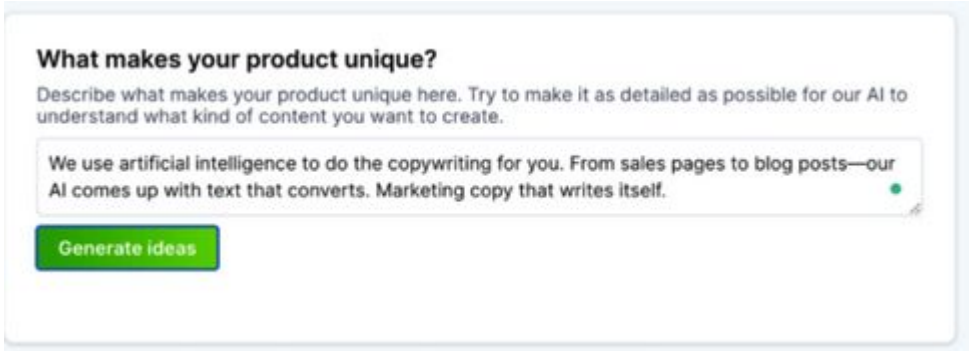




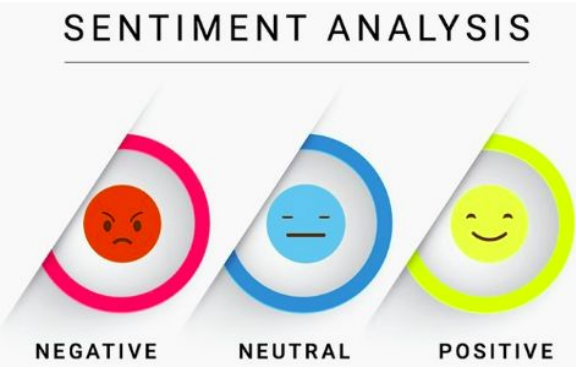
Use cases

Use cases

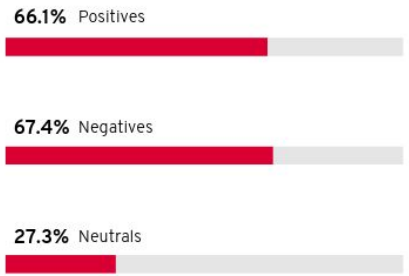

Why didn't I receive my order?
I am always there to help you. Please enter your order id.


What makes your product unique?
Describe what makes your product unique here. Try to make it as detailed as possible for our AI to understand what kind of content you want to create.
We use artificial intelligence to do the copywriting for you. From sales pages to blog posts—our AI comes up with text that converts. Marketing copy that writes itself.
Generate ideas

Use cases


SENTIMENT ANALYSIS
NEGATIVE
NEUTRAL
POSITIVE

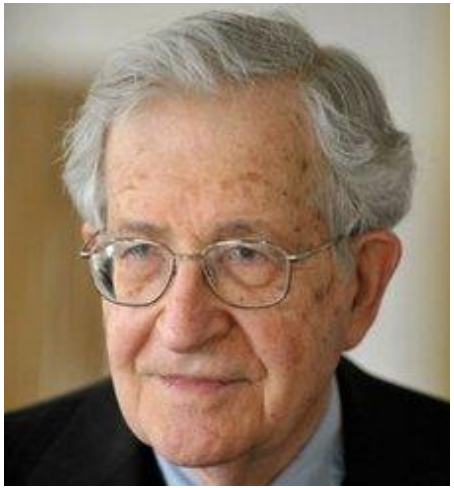

HATE
SPEECH

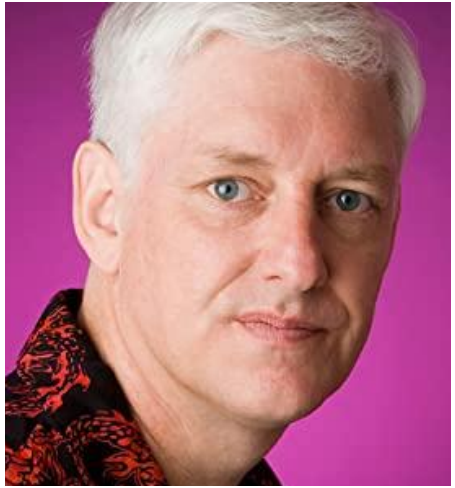

66.1% Positives
67.4% Negatives
27.3% Neutrals

Language is the
API for humans

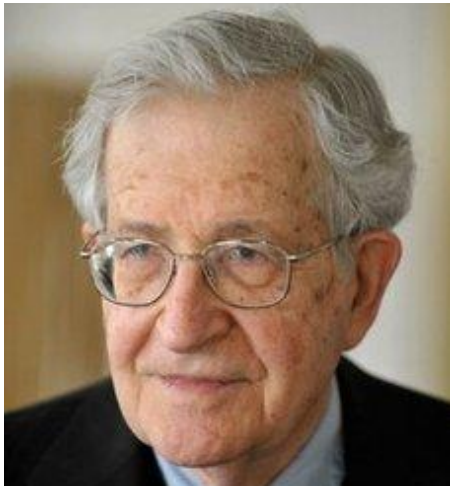
Famous Debate I

How to model language learning?



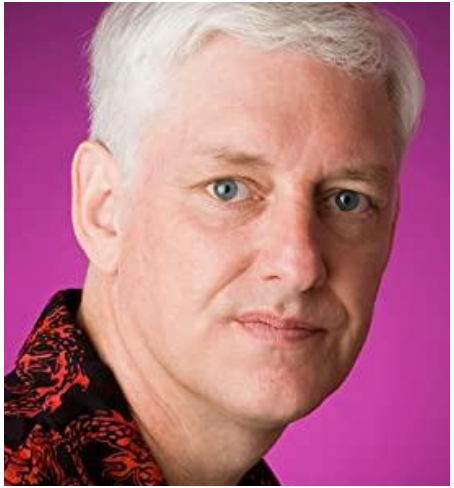


How to model language learning?



Noam Chomsky

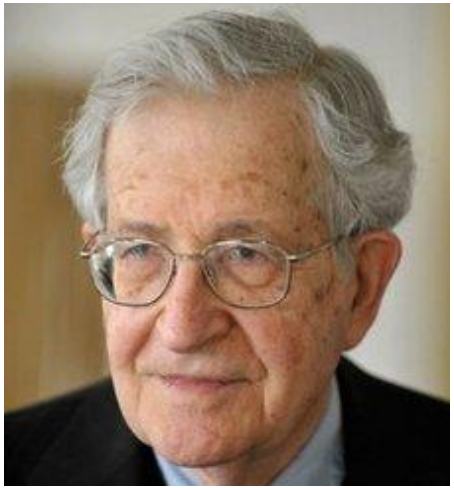
MIT emeritus professor
the “father” of modern linguistics and cognitive science



Peter Norvig

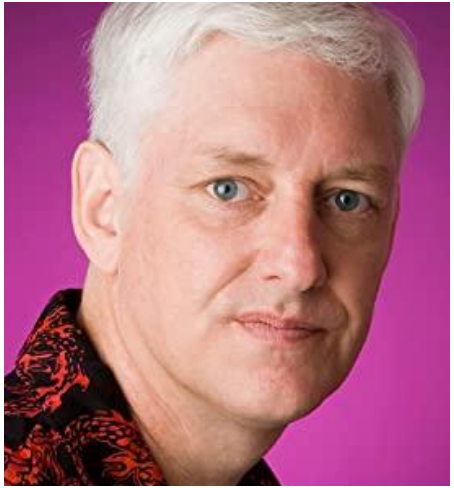
Google, Director of Research

How to model language learning?



Human brain has a special language acquisition device

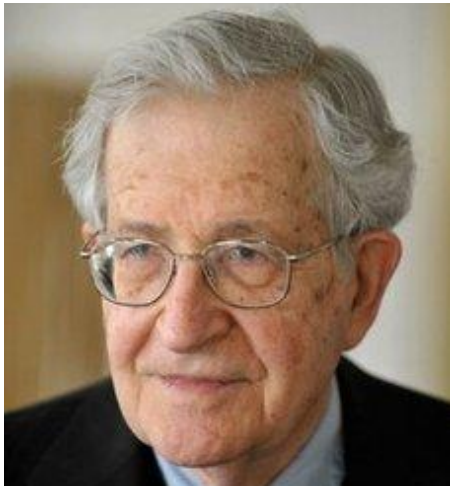
To make progress we need to understand and replicate the underlying mechanisms (grammar rules, syntax, parse trees)



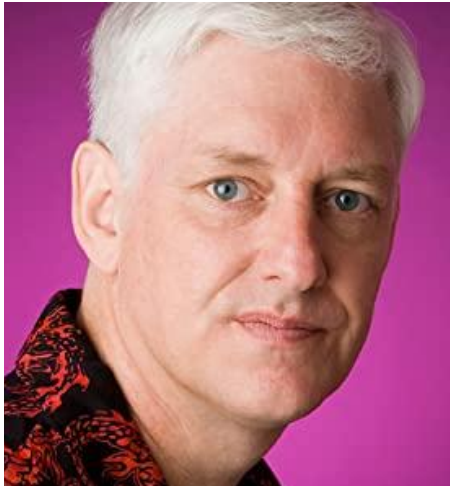
Give up the idea that we can truly model nature - black box

It is enough to use observed data and statistics to create useful models which give good results, without necessarily understanding mechanism

How to model language learning?



Purely statistical methods could perfectly predict how a bee will perform a dance upon returning to the hive, but will not explain why the bee is behaving this way - less useful



Chomsky focused on the generative side - I know the idea I want to express (deterministic).

On the other side, interpretation, the listener receives a noisy, ambiguous signal and needs to decipher the most likely message (probabilistic)

Famous Debate II

How to improve language learning?

How to improve language learning?

Christopher Manning

Stanford professor
Computational Linguist - with important NLP contributions

Yann LeCunn

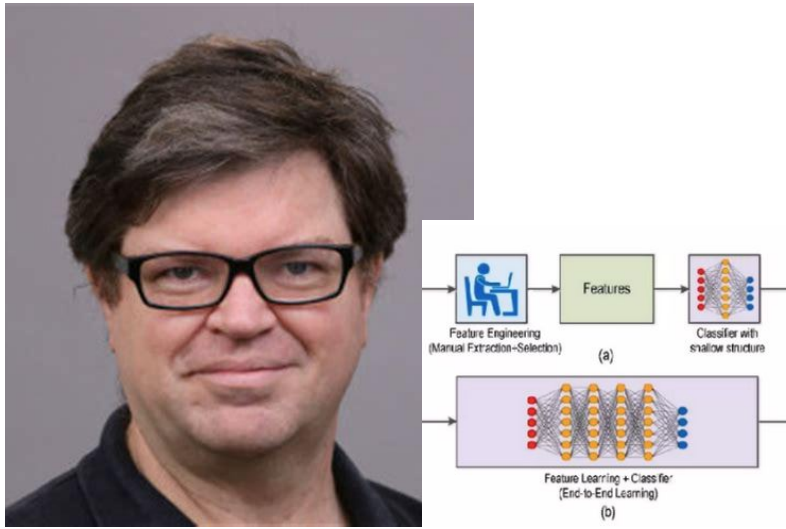
Facebook, VP and Chief AI Scientist
One of the “fathers” of Deep Learning

How to improve language learning?

Structure is the necessary good - can improve performance

Compared to babies, our current learning systems are very inefficient - they need lots of data and training

We need to add more linguistic structure, priors, higher level abstractions to improve learner systems



Structure is the necessary evil - can limit performance

Adding more structure relies on more assumptions, which might be wrong (for a portion of the data)

Looking at the history of AI - using less structure and more data/compute always resulted in better systems (object detection using hand engineered features vs e2e)

References

- Chomsky vs Norvig
- Manning vs LeCunn