

Artificial intelligence Seminar

John Aoga



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BIOGRAPHY

Egelsach Seminar
07th feb, 2022



John Aoga, PhD

Who am I?

Doctor & Engineer in Science and Technology
Specialist in Data science & AI
Online Content author and Teacher
Co Founder of MIFY SRL company

Goals and Aspirations

Promote and develop AI 4 Africa In Africa
Promote and develop Education tools

Domains & Interests

Algorithms and Optimization
Data/Pattern Mining Approches and applications
Deep Learning & NLP for local languages
Social Data Analysis

Scientific References



AI Seminar

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MIFY-SARL (MACHINE INTELLIGENT FOR YOU)

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IOT

Build IA objects to help people in their daily workflow



2

AI/OPTIMIZATION

- Covid assistant
- NLP products
- MAIC

3

DATA SCIENCE & IS

- Help Entreprise to build IS
- Data Analysis and BI

4

OTHER SERVICES

- Training
- App Dev.

Aoga John (

)

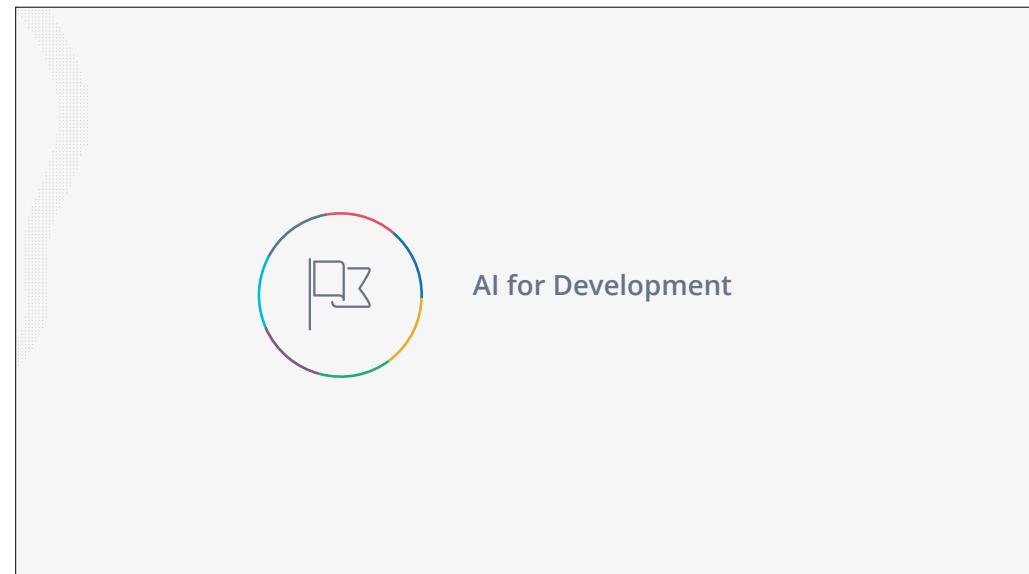
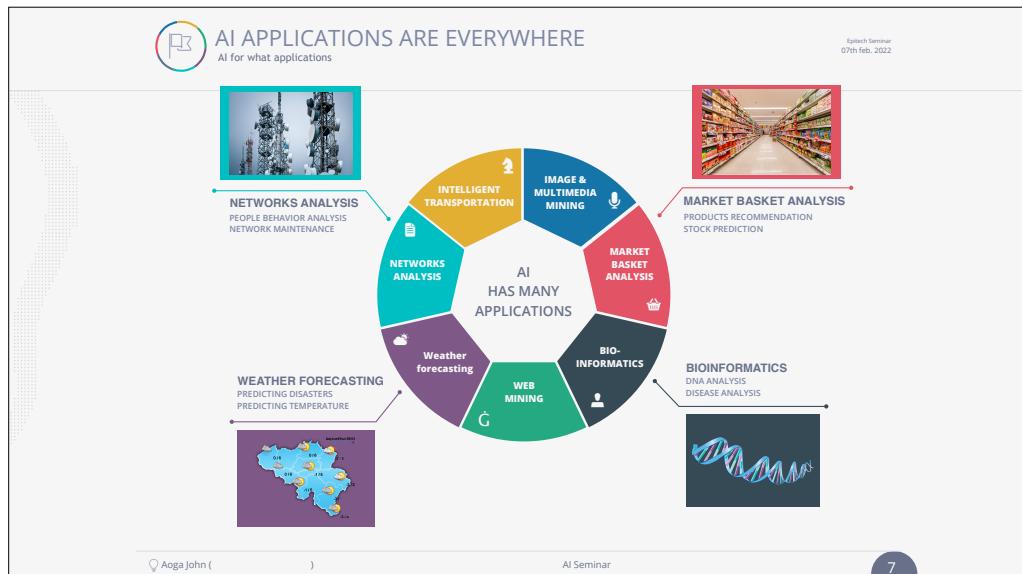
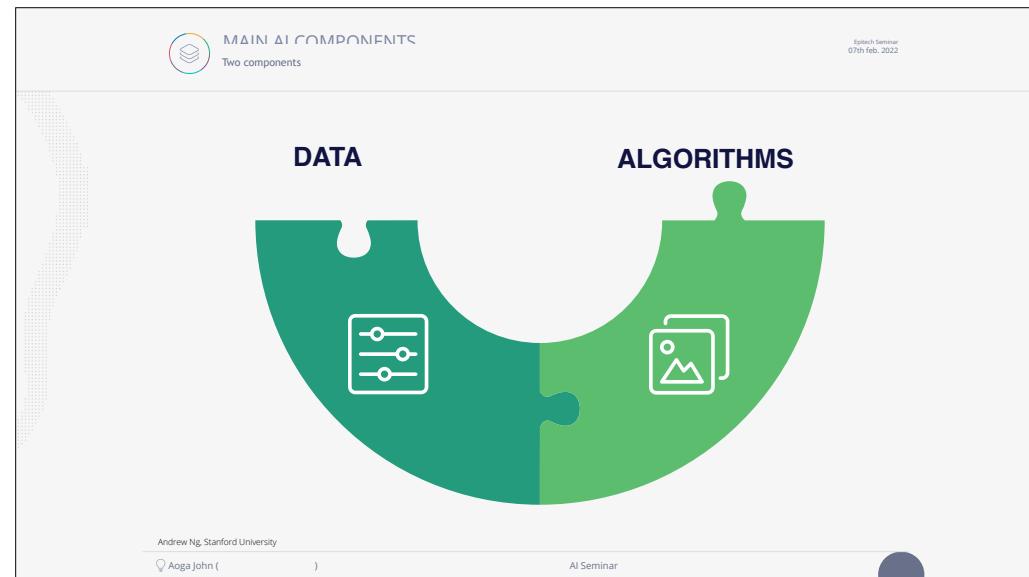
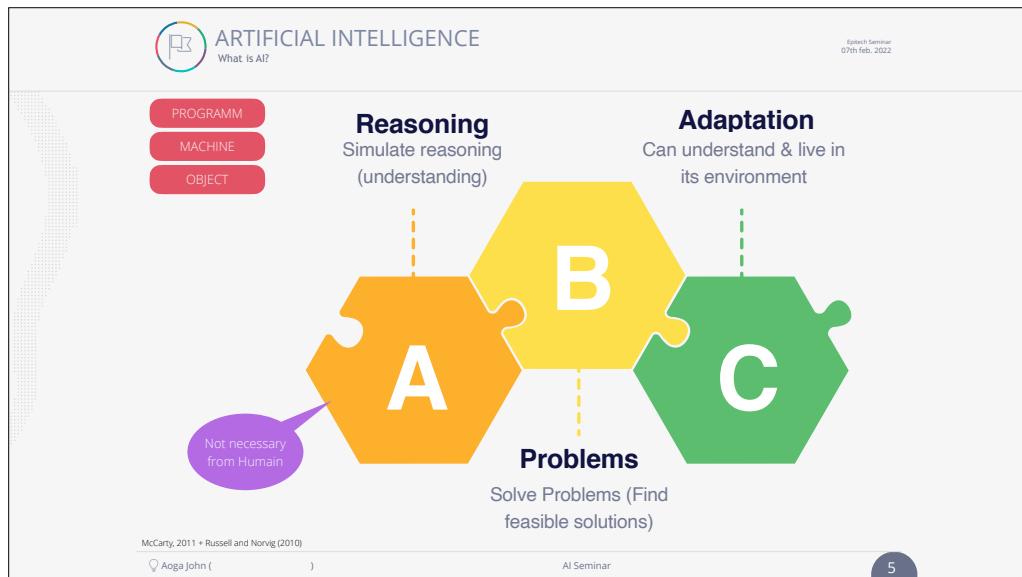
AI Seminar

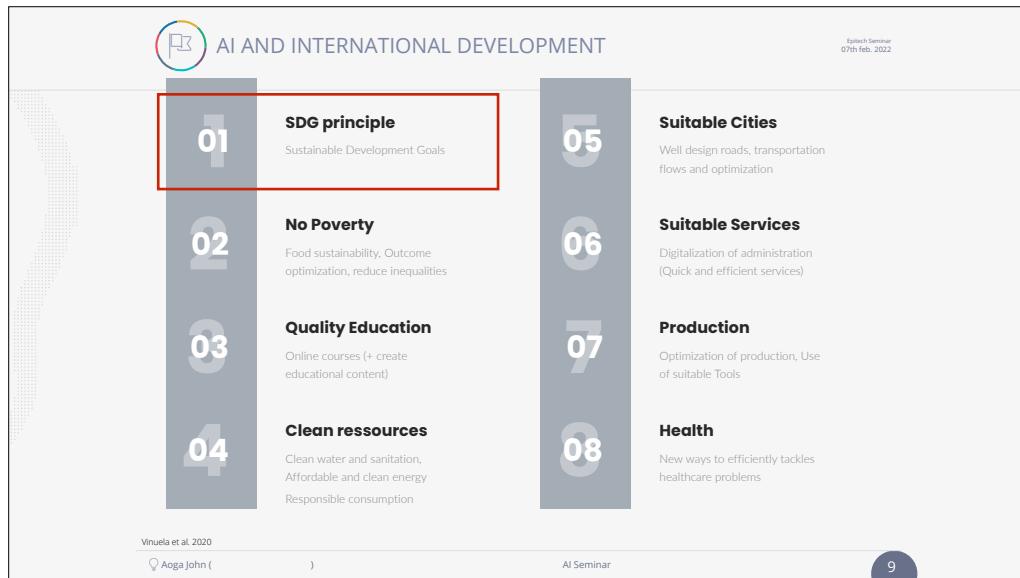
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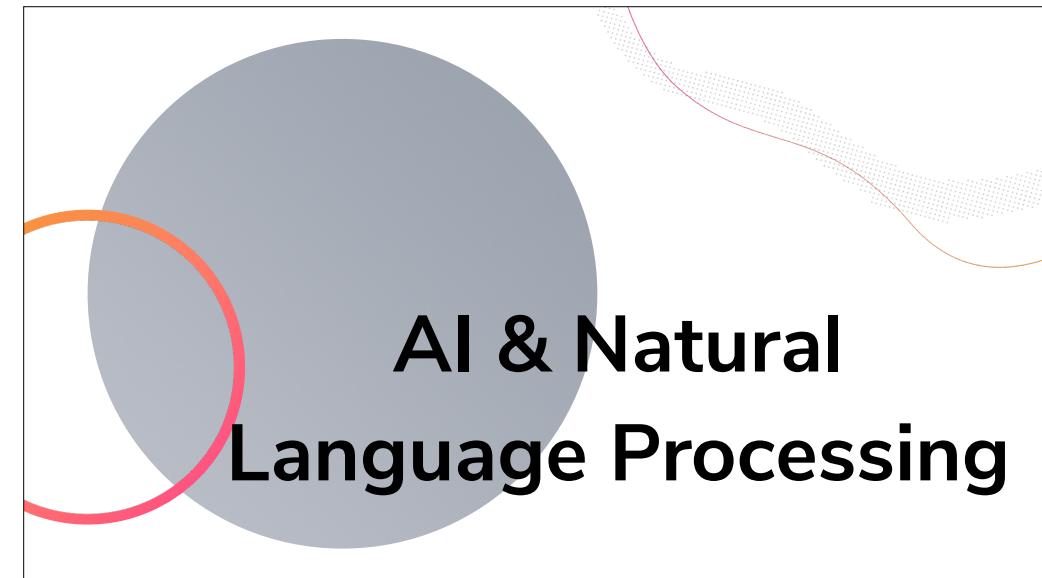
What's AI?

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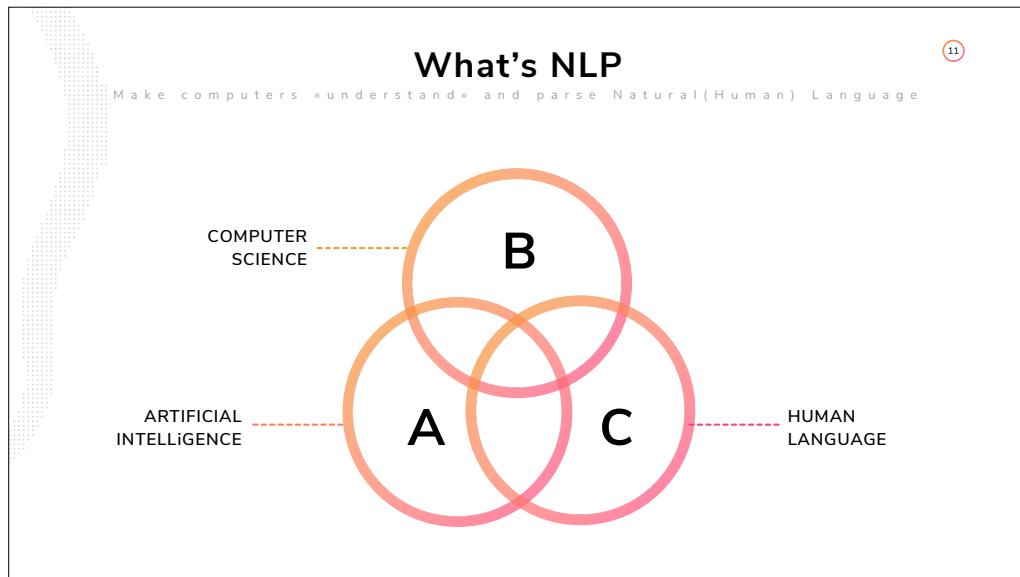




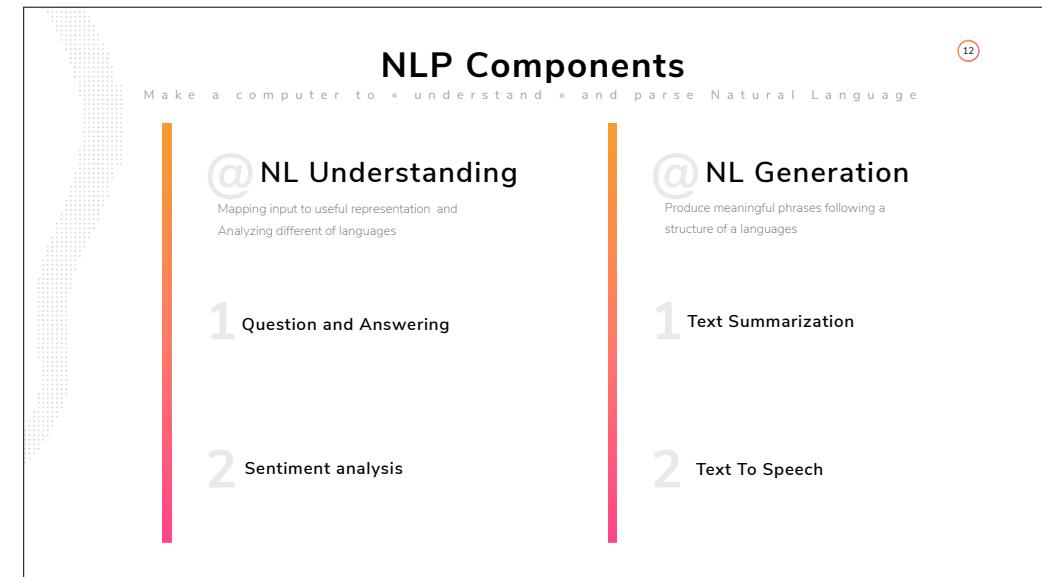
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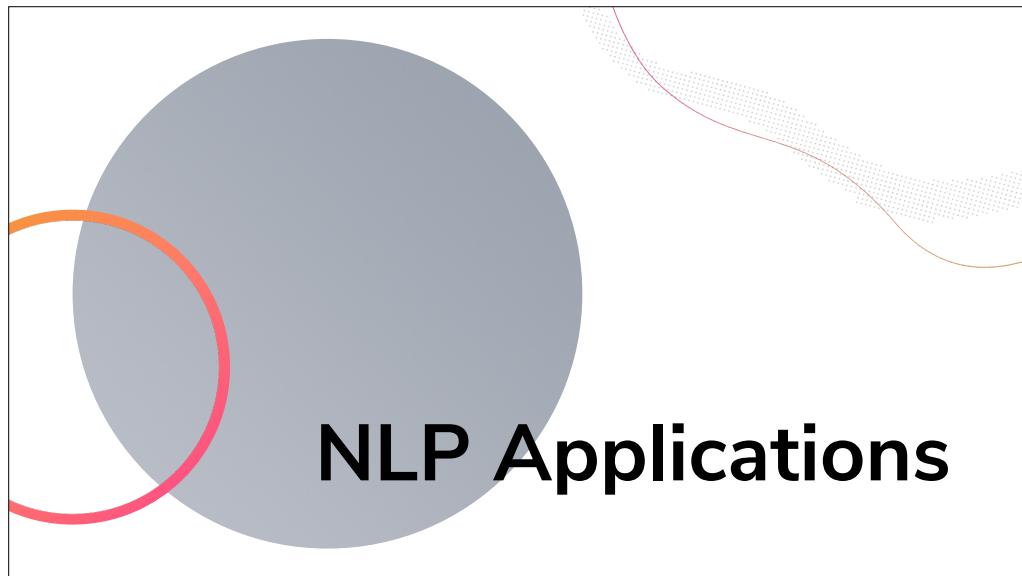
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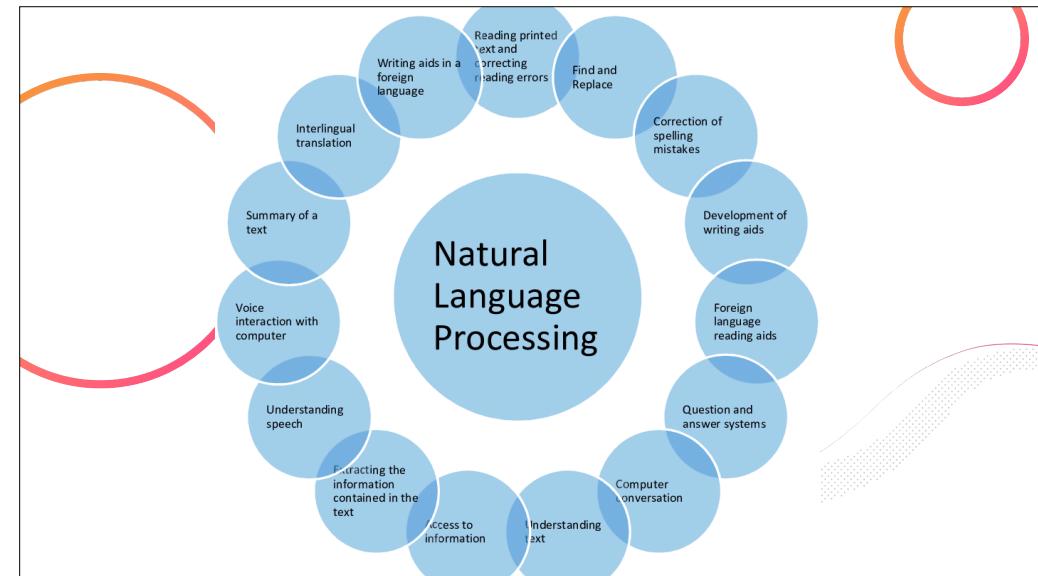
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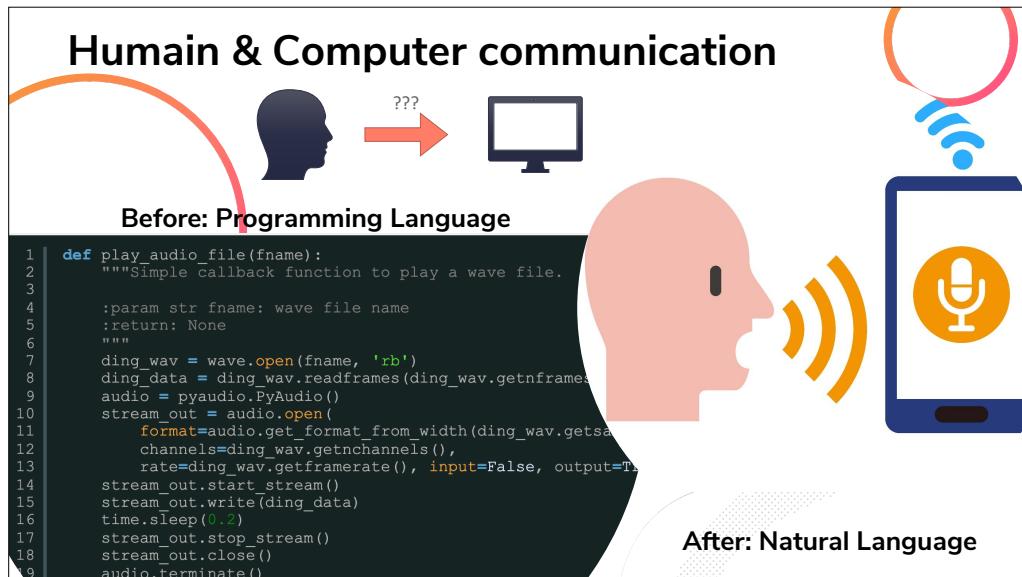
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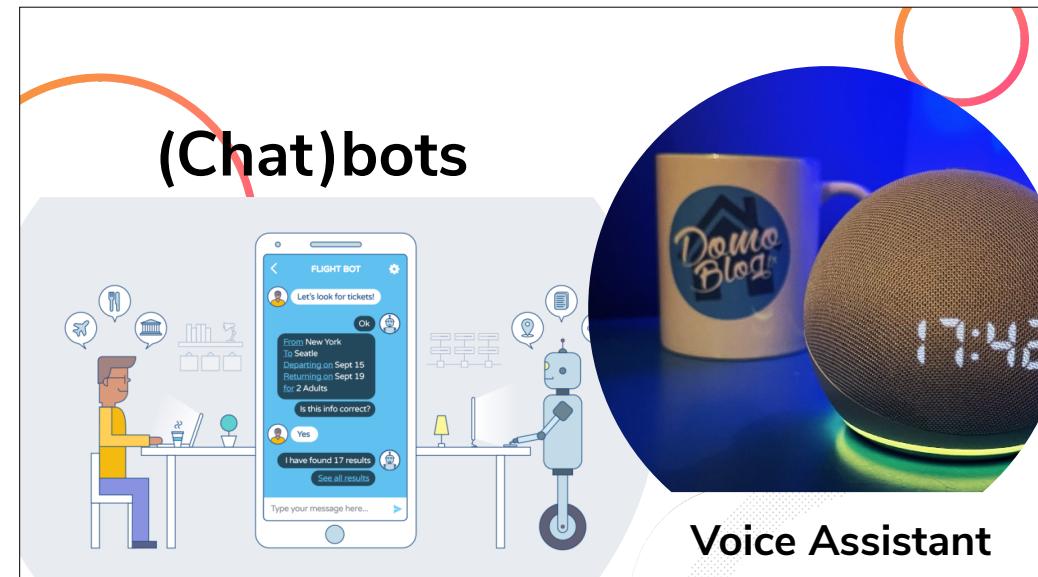
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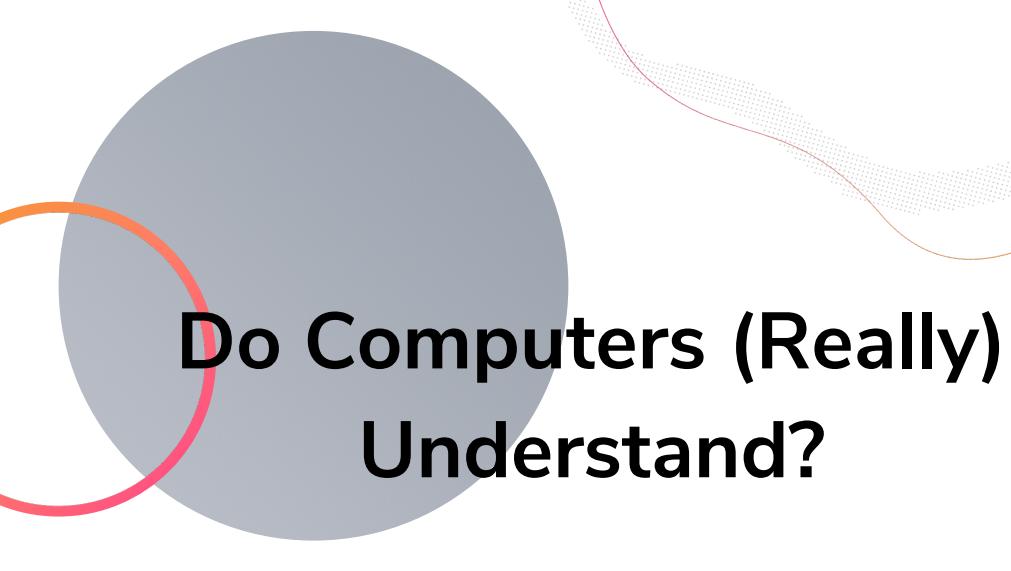
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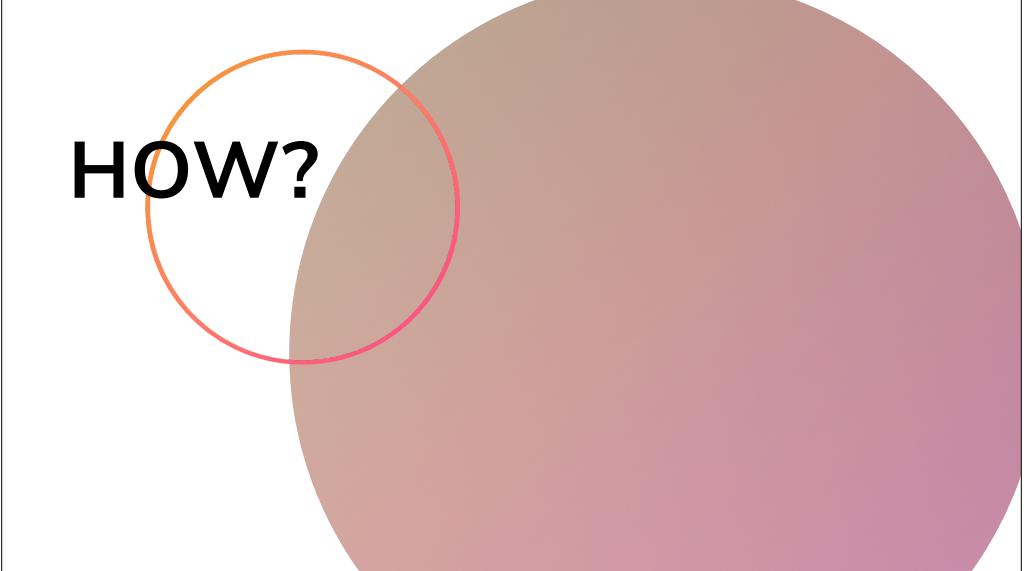


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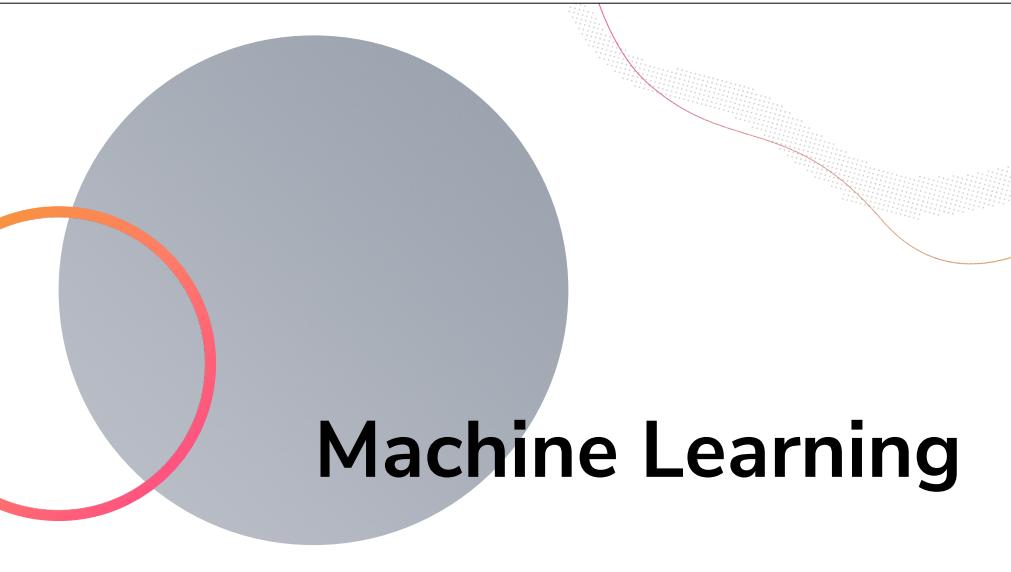
**Do Computers (Really)
Understand?**

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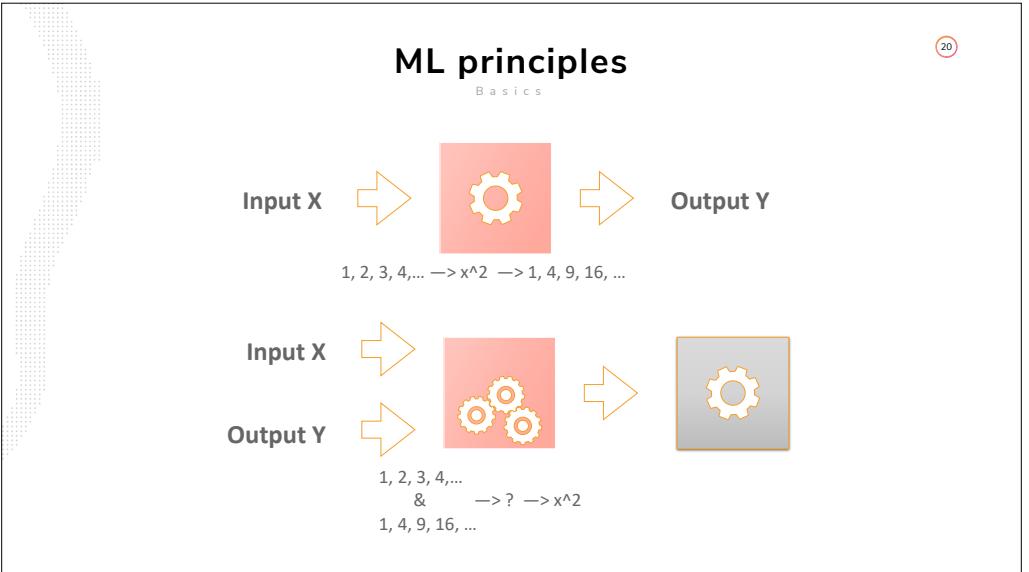
HOW?

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Machine Learning

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ML principles

Basics

Input X →  → Output Y

$$1, 2, 3, 4, \dots \rightarrow x^2 \rightarrow 1, 4, 9, 16, \dots$$

Input X →  → Output Y

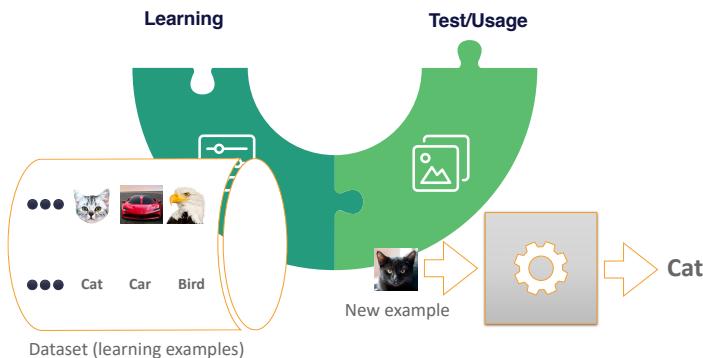
Output Y →  → ? → x^2

$$1, 4, 9, 16, \dots$$

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ML Phases

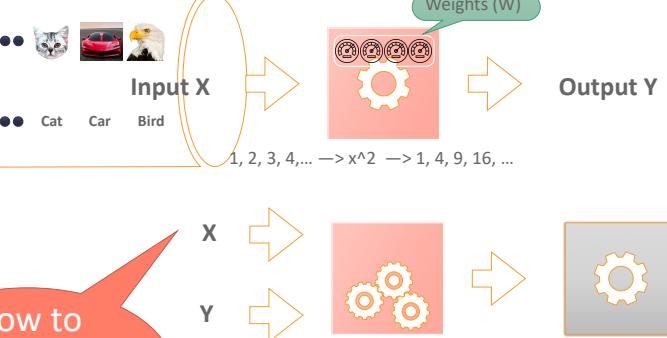
Learning & tests



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ML Phases

Learning & tests



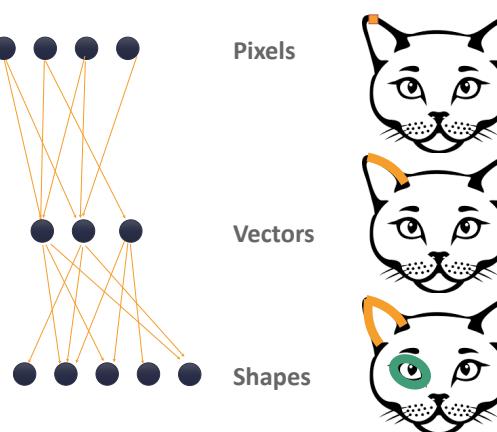
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Deep Learning

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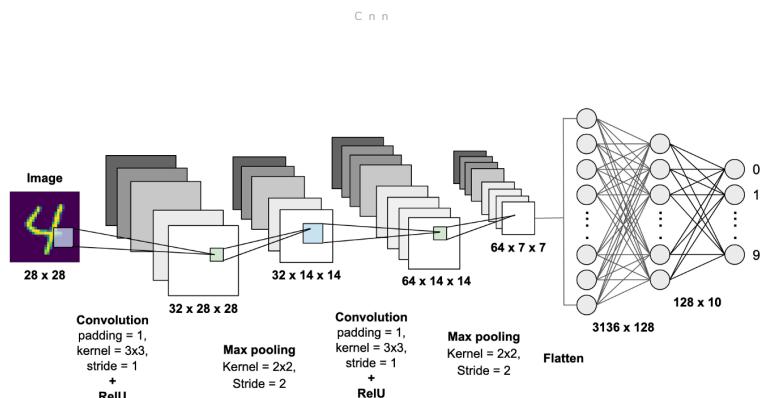
Convolutional Neural Network

Cnn



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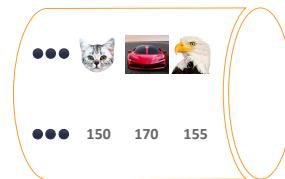
Convolutional Neural Network



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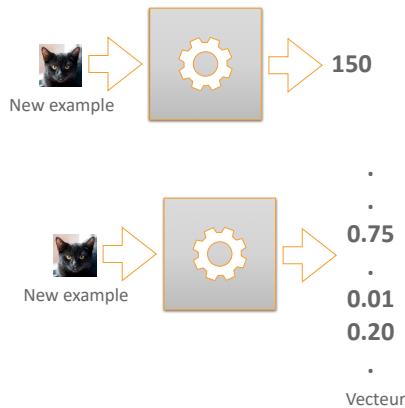
Solve number's Problems

165	187	209	58	7
14	125	233	201	36
263	144	120	251	41
67	100	32	241	23
209	118	124	27	59
210	236	105	169	19
35	178	199	197	4
115	104	34	111	19
32	69	231	203	74
156	147	204	79	



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Solve number's Problems



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Deep Learning
With Language

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Language Processing Pain Points

0 4 pain points highlights here

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1 Text -> numbers

2 Text with different sizes

Image with fix size at the begin, if not resize

3 Order is really important

Difficult to split the sentence without loosing information

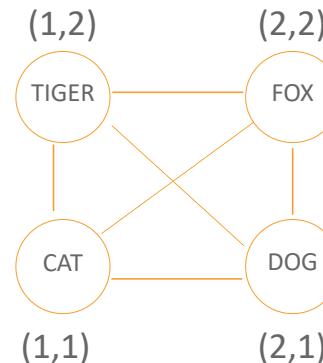
4 Meaning

Emotion detection in a sentence

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Text to numbers

NLP



In Real, more than 300 dimensions

Word2vec
GloVe

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Glove - Google

NLP

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Glove: Global Vectors for Word Representation

Jeffrey Pennington, Richard Socher, Christopher D. Manning

Introduction

Glove is an unsupervised learning algorithm for obtaining vector representations for words. Training is performed on aggregated global word-word co-occurrence statistics from a corpus, and the resulting representations showcase interesting linear substructures of the word vector space.

Getting started (Code download)

- Download the latest [latest code](#) licensed under the [Apache License, Version 2.0](#)
- Look for 'Clone or download'
- Unpack the file, cd to master.zip
- Compress the folder, cd to master & make
- Run the demo script, ./demo.sh
- Consult the included README for further usage details, or ask a question

Download pre-trained word vectors

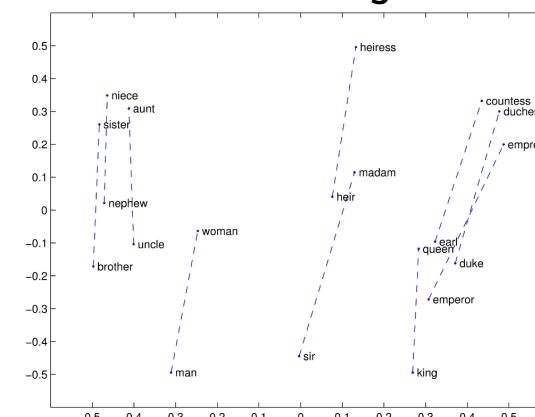
- Pre-trained word vectors. This data is made available under the [Public Domain Dedication and License](#) v1.0 whose full text can be found at: <https://creativecommons.org/licenses/by/1.0/>
 - Wikpedia 2014 - [Glovewiki5.6B tokens, 400K vocab, uncased, 50d, 100d, 200d, & 300d vectors, 822 MB download: glove4B.zip](#)
 - Common Crawl (42B tokens, 1.9M vocab, uncased, 300d vectors, 1.75 GB download) [glove42B.300d.zip](#)
 - Common Crawl (840B tokens, 2.2M vocab, cased, 300d vectors, 2.03 GB download) [glove840d.300d.zip](#)
 - Twitter (2B tweets, 275 tokens, 1.2M vocab, uncased, 256, 50d, 100d, & 200d vectors, 1.62 GB download) [glove.twitter.27B.zip](#)
- Ruby [script](#) for preprocessing Twitter data

<https://nlp.stanford.edu/projects/glove/>

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Glove - Google

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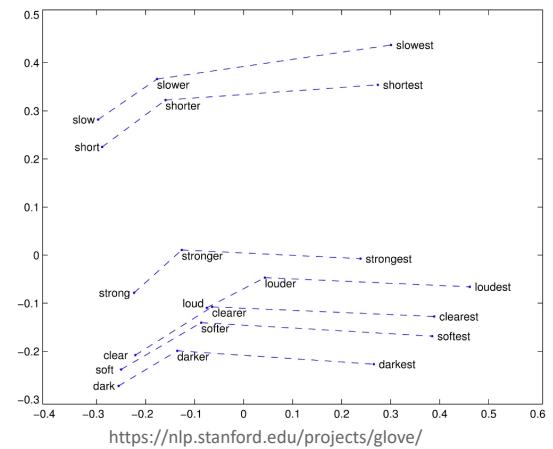


<https://nlp.stanford.edu/projects/glove/>

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Glove - Google

NLP



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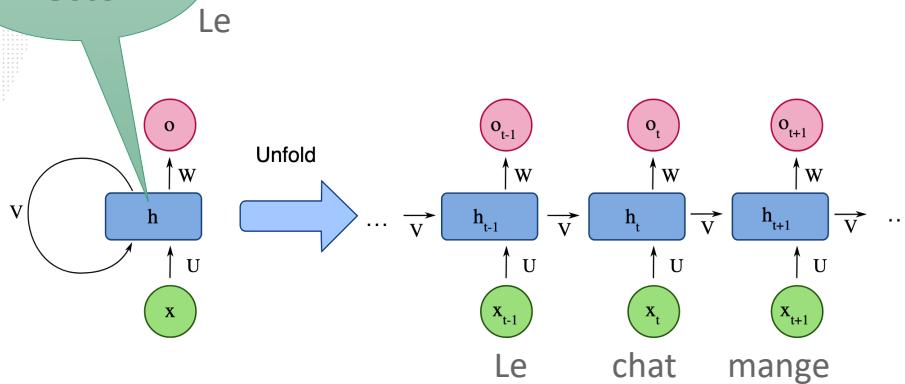
Recurrent NN

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Thinking
vector

Recurrent Neural Network

RNN



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«Thinking » vector?

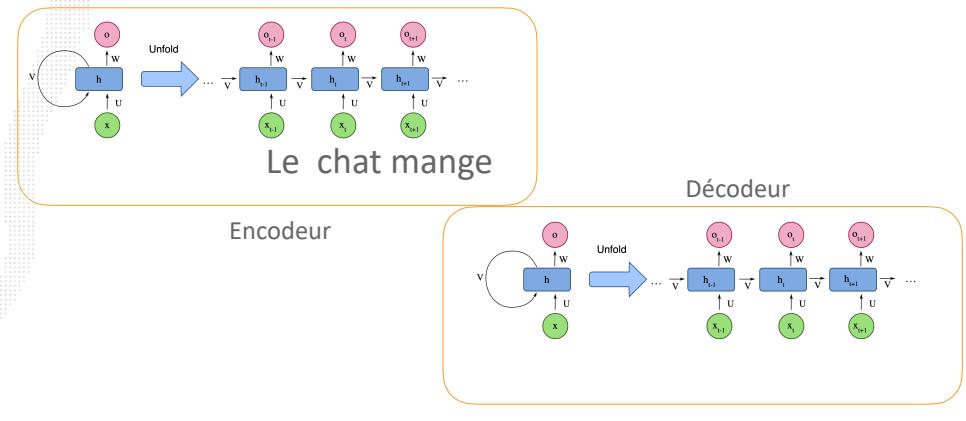
Recurrent NN

34

Recurrent Neural Network

RNN

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Recurrent Neural Network

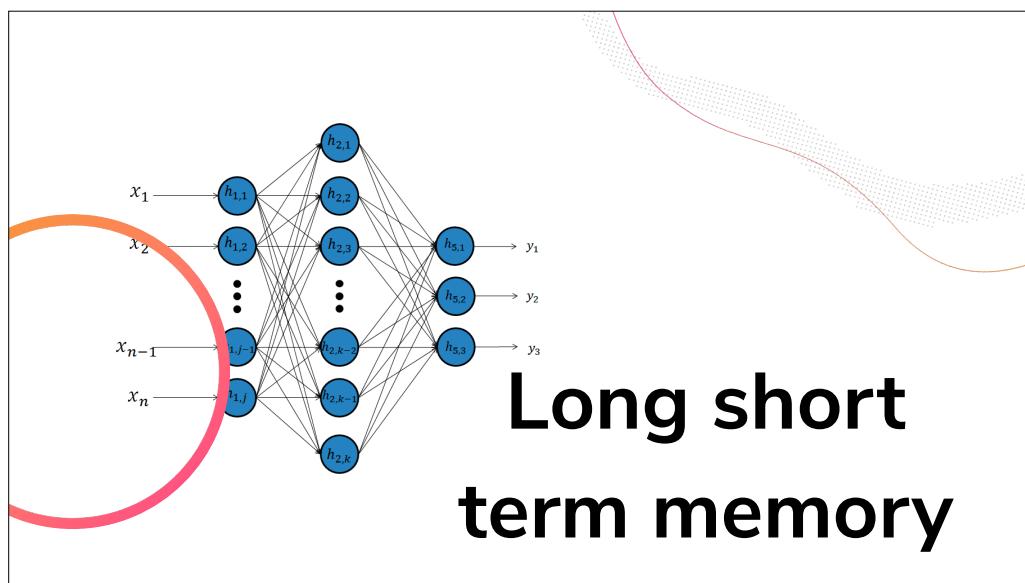
Issue

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Bohicon est une très belle ville du Benin, j'est vécu cinq et c'est là j'ai appris à parler ...

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Long short term memory

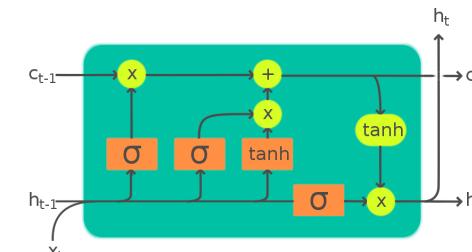


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Long Short Term Memory

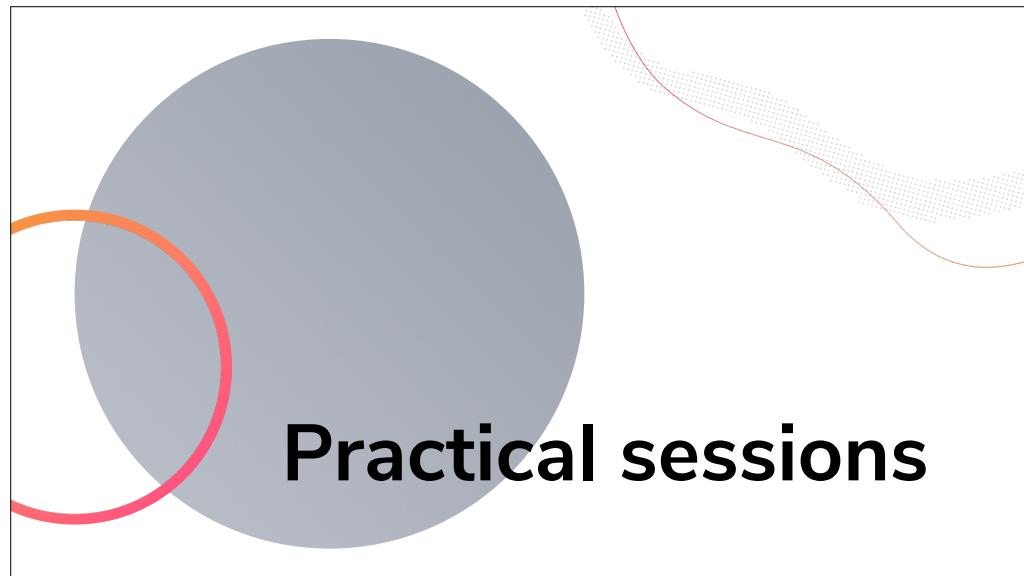
LSTM

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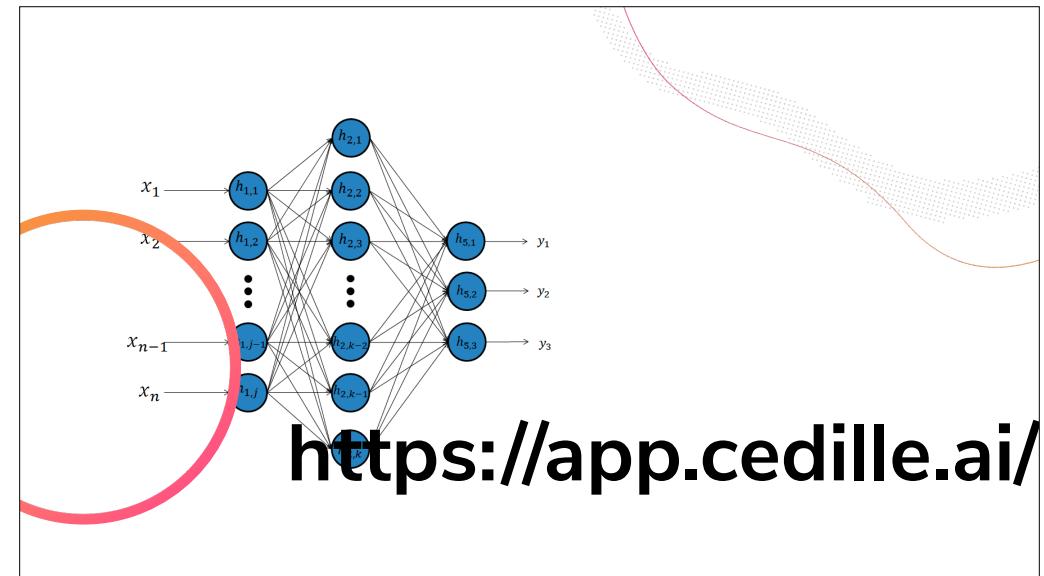


Legend: Layer ComponentwiseCopy Concatenate

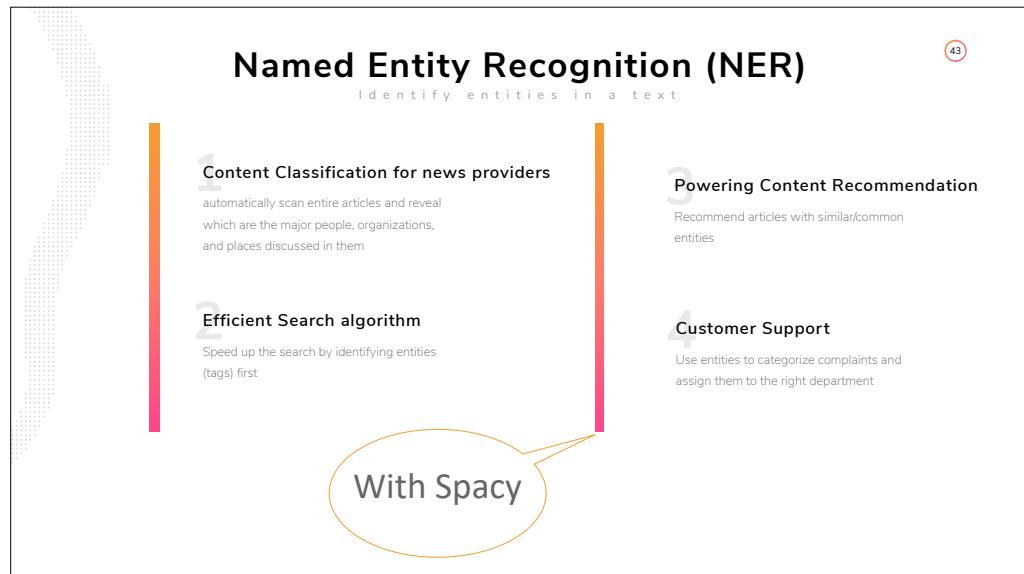
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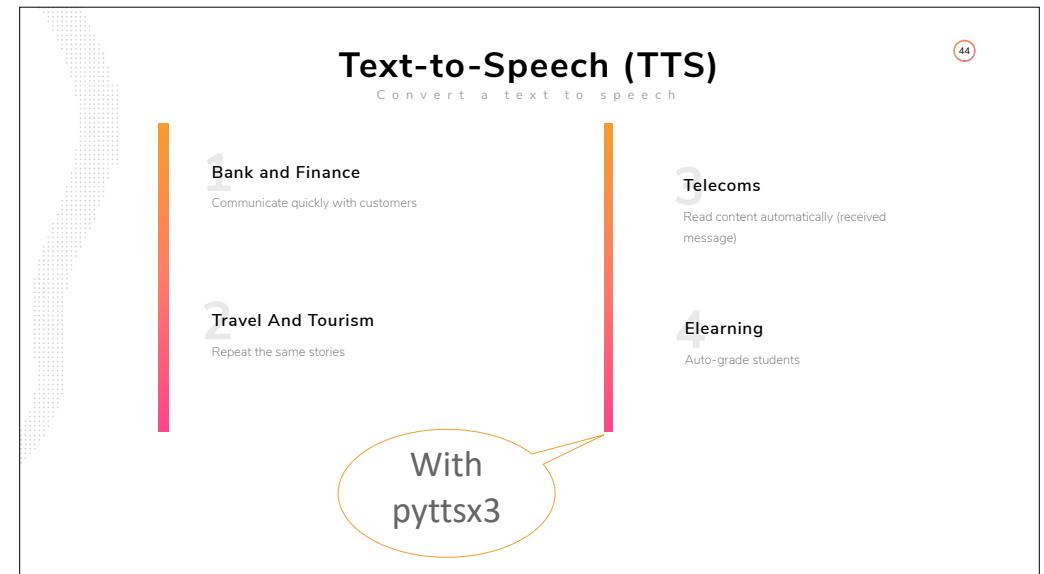
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Next Steps

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**ANY
QUESTIONS?**

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