Smart Teddy Bear Team Dialogue

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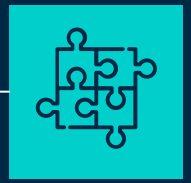


01

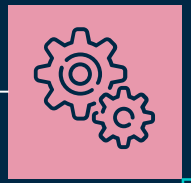
PROBLEM & DOMAIN

Creating a machine learning algorithm for the smart teddy bear

02

GOAL

Monitoring dementia patients' conversations to improve QoL



03

OUR PROGRESS

Creating research questions, exploring datasets & python programming

Problem & Domain

Smart Teddy Bear
Quality of Life of Dementia patients
Machine learning algorithm

What is dialogue?

- At least two speakers or more
- A minimum & maximum amount of participation
- Filter out background noise & television voices

Goal

Assisting Dementia Coaches
By Monitoring Dementia Patients
Improving Patients' Quality Of Life

Project Goal

- Measuring social interaction as a factor of QoL
- Acquiring the best possible accuracy
- Writing research paper

OUR WORK PROCESS

Doing research

Creating a research question & subquestions, finding related work

Data processing

Finding datasets, preparing and loading them

Making algorithms

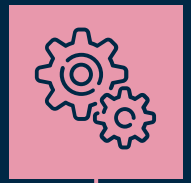
Writing code to process audio data, using different models and comparing

Learning

Optimizing the data & python code, learning from other projects & academic papers

Our Progress

Exploring data
Measuring accuracy of different models
Using previous research as a springboard



Finding Datasets

- Locating open datasets
- Splicing and normalizing audio
- Preparing transcripts
- Processing it with Python (numpy, pandas, pydub)

	interval	isSpeaking
0	2021-10-01 01:29:59.000	False
0	2021-10-01 01:29:59.500	False
0	2021-10-01 01:30:00.000	True
0	2021-10-01 01:30:00.500	True
0	2021-10-01 01:30:01.000	True
0	2021-10-01 01:30:01.500	True
0	2021-10-01 01:30:02.000	False
0	2021-10-01 01:30:02.500	True
0	2021-10-01 01:30:03.000	True
0	2021-10-01 01:30:03.500	True

	filename	category	isSpeaking
0	1-100032-A-0.wav	dog	False
1	1-100038-A-14.wav	chirping_birds	False
2	1-100210-A-36.wav	vacuum_cleaner	False
3	1-100210-B-36.wav	vacuum_cleaner	False
4	1-101296-A-19.wav	thunderstorm	False
...	...	...	...
1995	5-263831-B-6.wav	hen	False
1996	5-263902-A-36.wav	vacuum_cleaner	False
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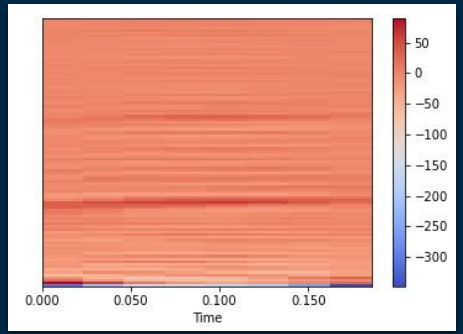
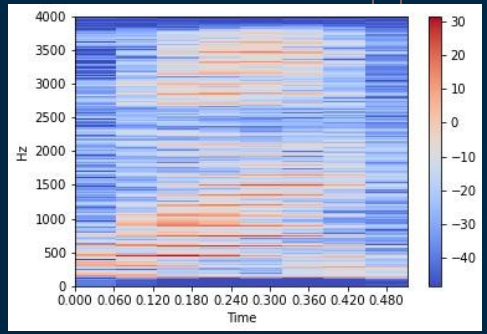
1999	5-9032-A-0.wav	dog	False

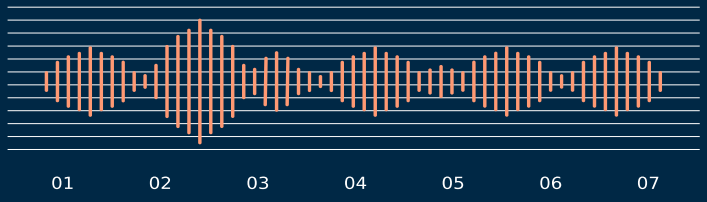




Making the algorithm

- Practice with different models
- Image vs Audio processing
- Training the algorithm
- Evaluation of accuracy

Image (SVM)	Audio (RFC)
68,6%	100%
68,3%	95%



Analyzing Research

- Studying literature from related work
- Investigating methods for us to use
- Keep contact with the other Teddy bear projects

In the coming weeks

- Look into neural networks
- Develop a functional prototype
- Continue improving the datasets

Thank you for listening!