Data4Autism

Speech to pictogram

Omidreza Amrollahinasab

4 November 2022

Agenda

01–problem

02–solution

03–case study

04–next steps

Challenge Description

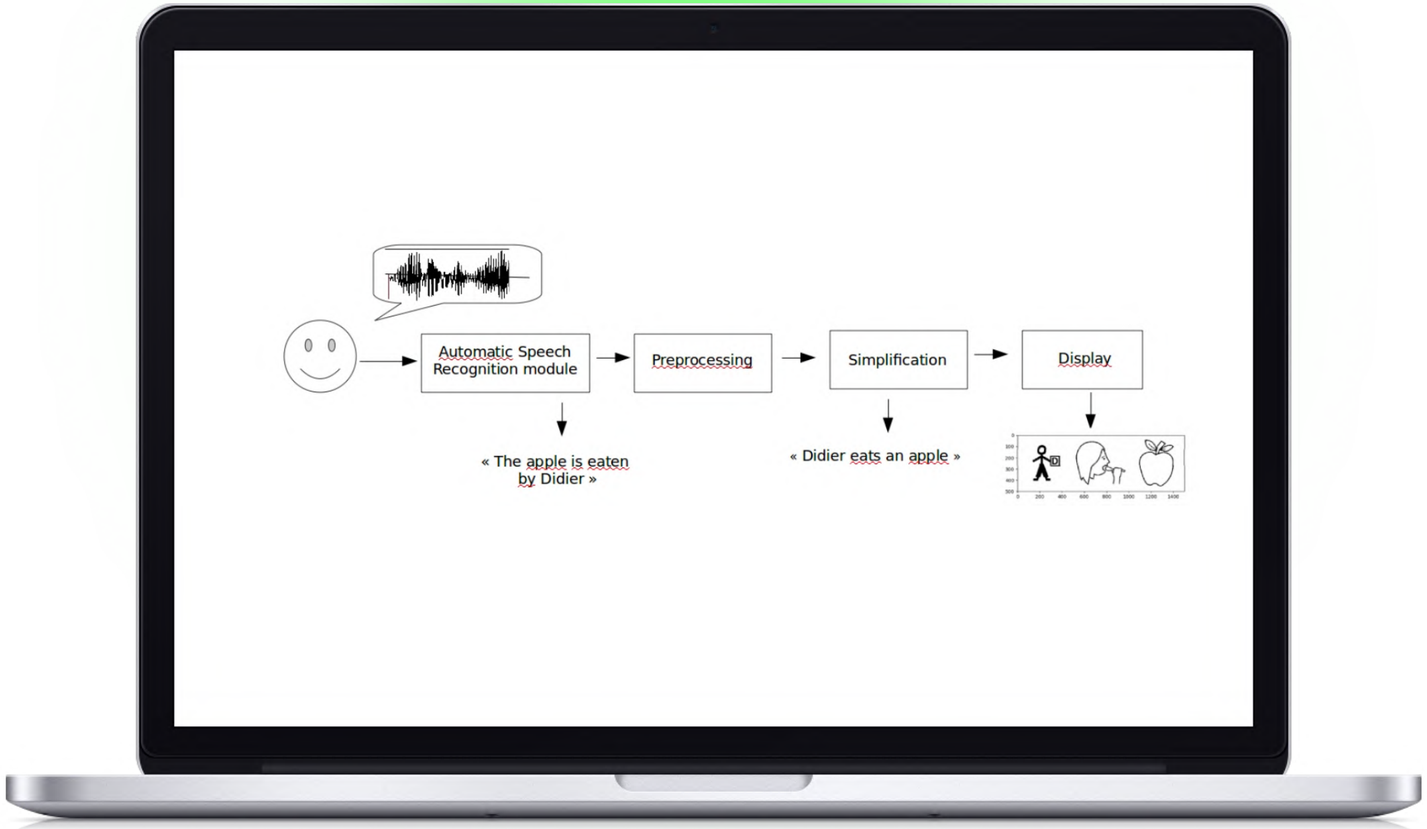
Autistic people tend to be visual learners. Several of non–verbal autistic use electronical devices to communicate using pictures. This challenge consists of implementing the other way around, recognizing voices and translating it to pictures to increase the understanding of autistic people with limited verbal language.

Around 95% of what they learn comes from visual information. Although they can hear and several times understand what you say, the pictograms would increase their understanding of what it has been said.

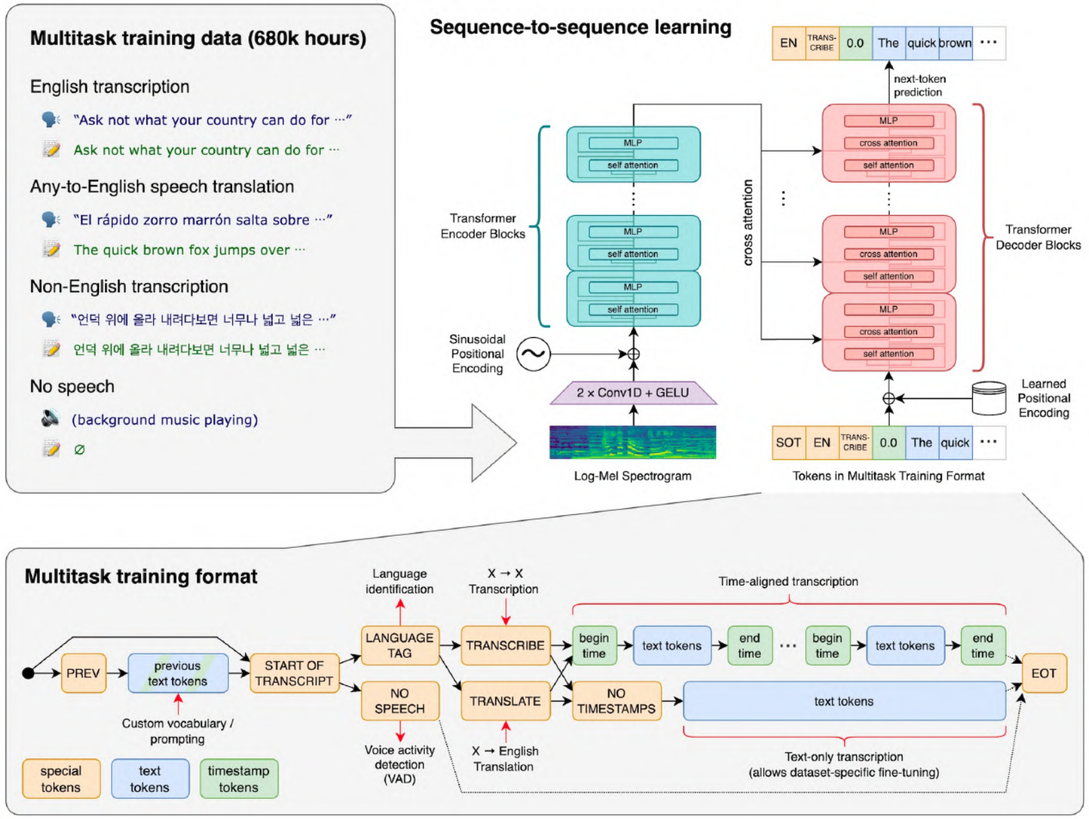
02-solution

Graphical Explaination

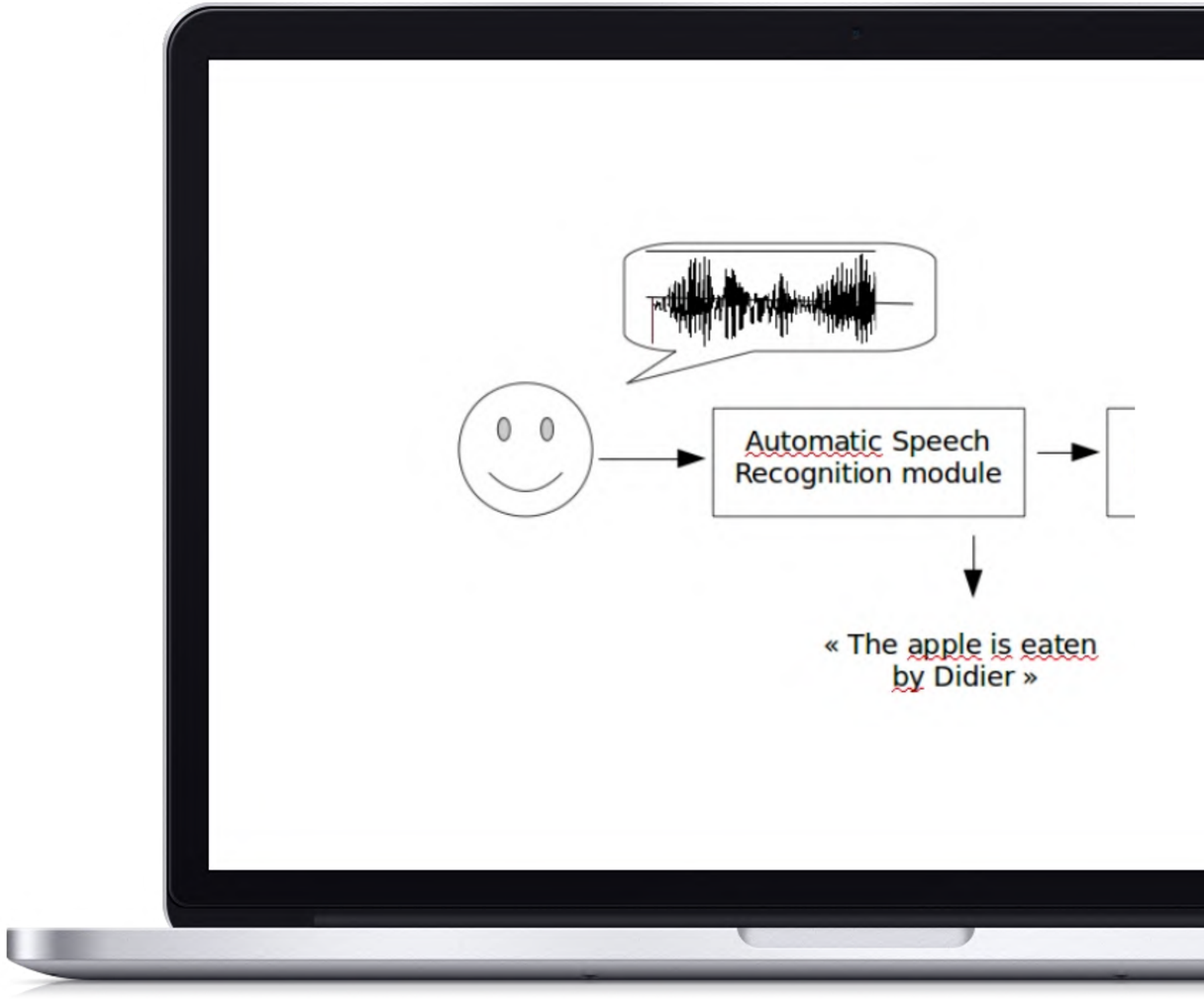
Speech to Pictogram



OpenAI Whisper



https://openai.com/blog/whisper/



Natural Language Toolkit (NLTK)

Part of Speech tagging (POS):

VBP: verb, present tense not 3rd person singular(wrap)

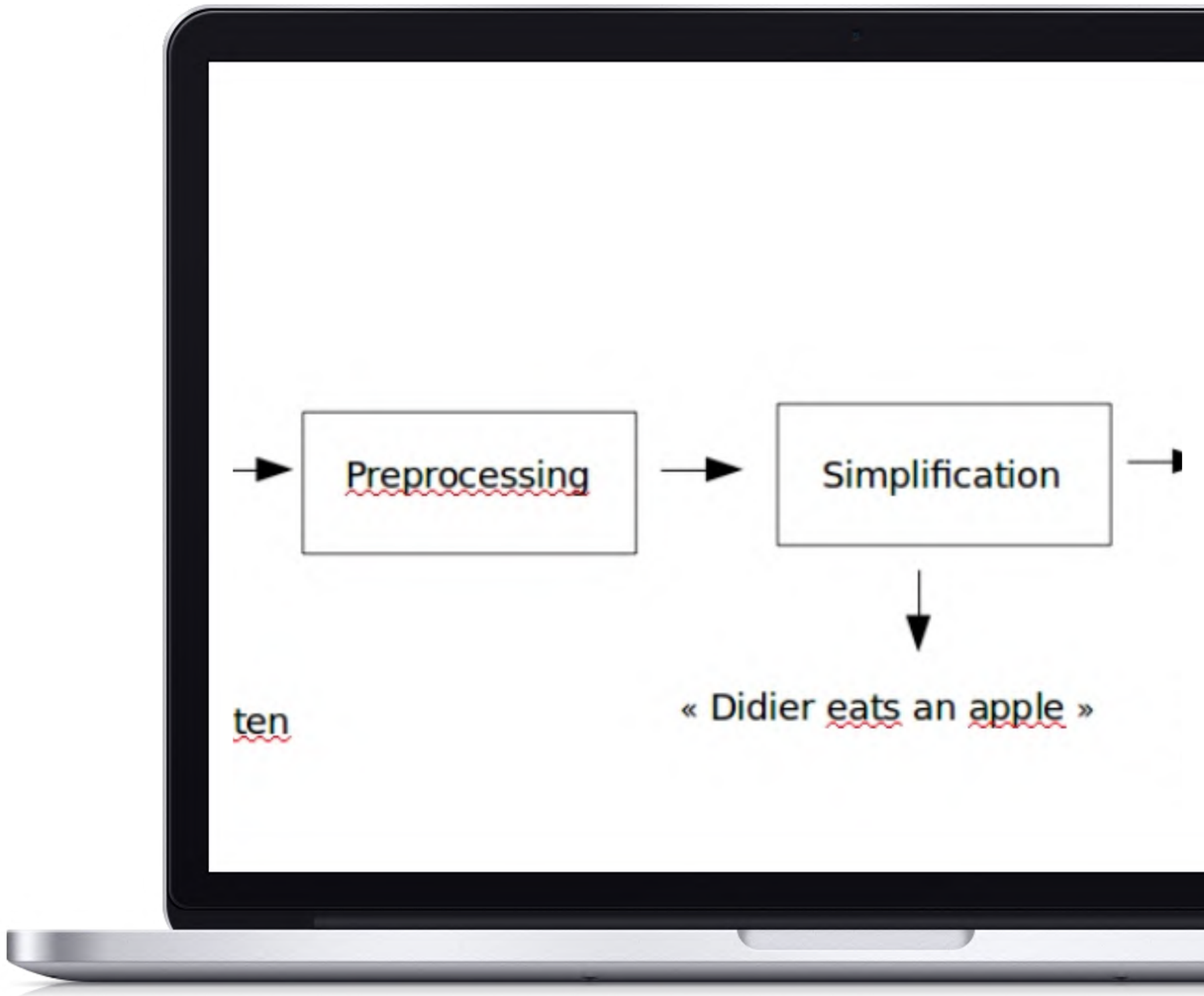
DT: determiner

VBG: verb gerund (judging)

IN: preposition/subordinating conjunction

TO: infinite marker (to)

nltk.org



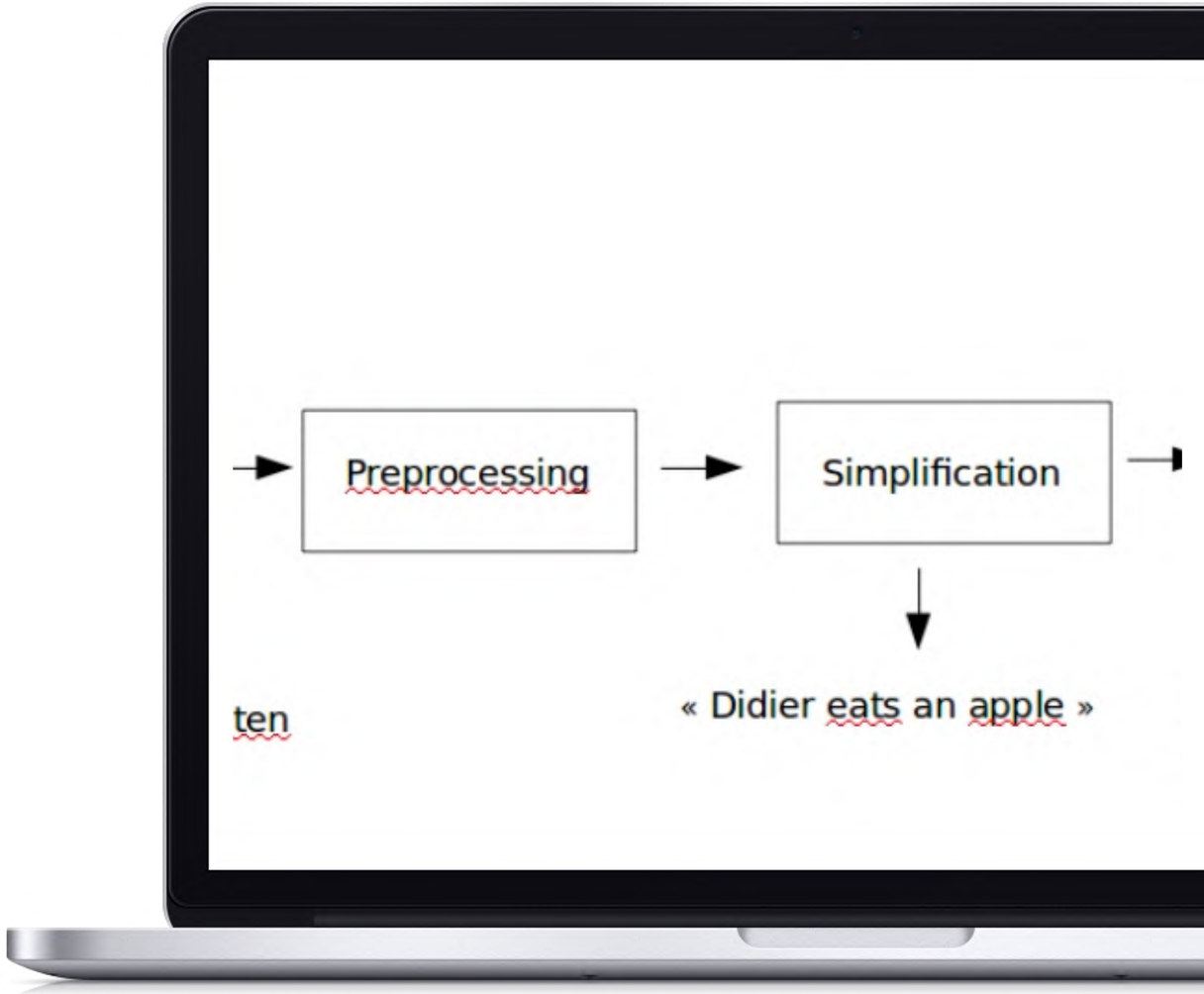
Pattern

Pattern is a web mining module for Python. It has tools for:

- Data Mining
- Natural Language Processing
- Machine Learning
- Network Analysis

pattern.en is used for verb conjugation:

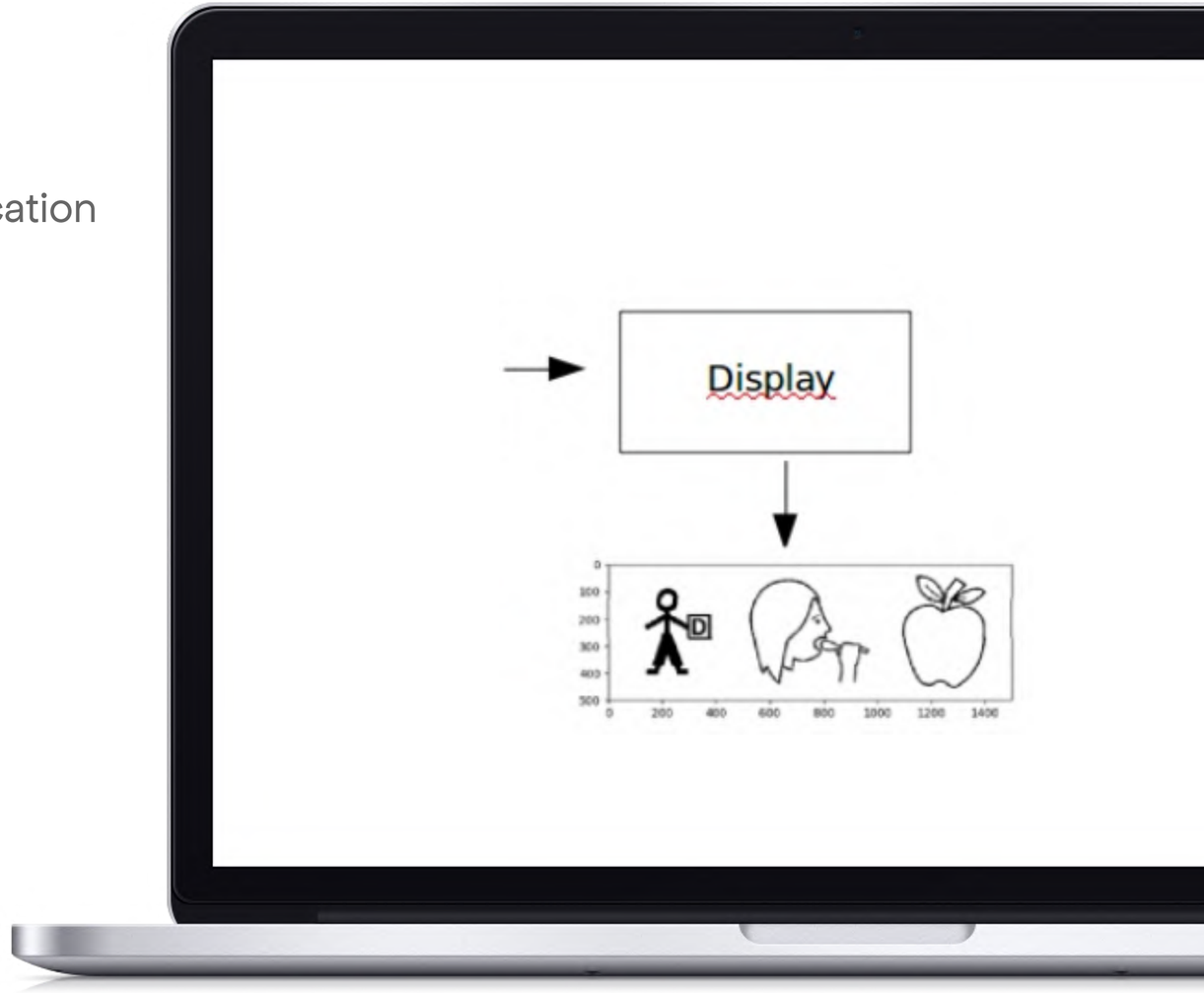
eating —> eat



ARASAAC

Aragonese Center of Augmentative and Alternative Communication

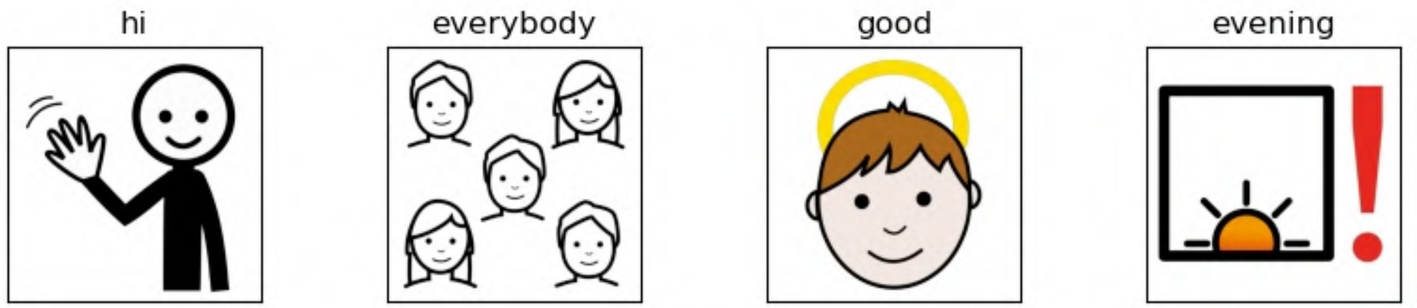
Symbol set and resources for Augmentative and Alternative Communication (AAC)



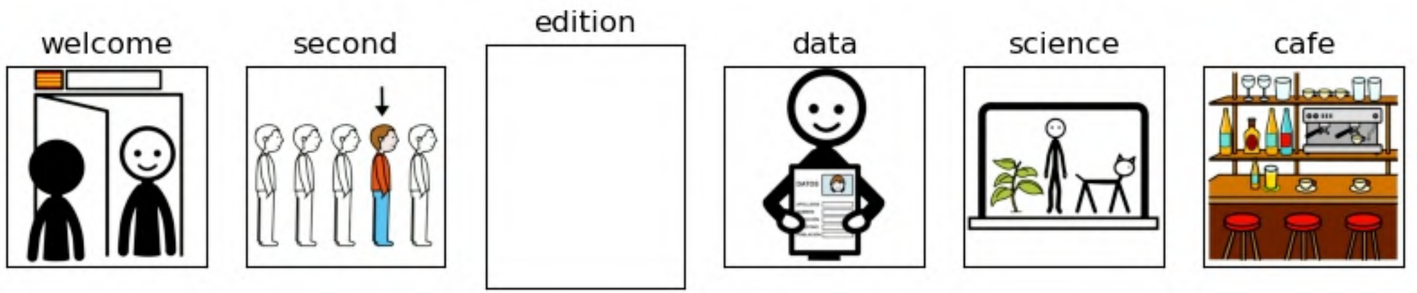
03–case study

What results did you achieve?

“Hi everybody, good evening”

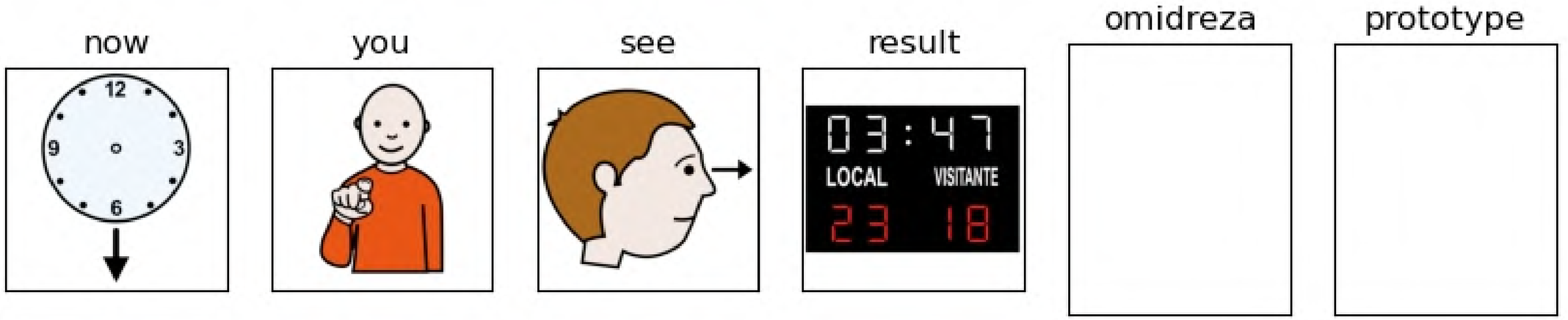


“Welcome to the second edition of the Data Science Cafe”



What results did you achieve?

“Now you are seeing the result of Omidreza prototype”



04–next steps

Ready to get started?

Hugging face stable diffusion

OpenAI DALLE 2

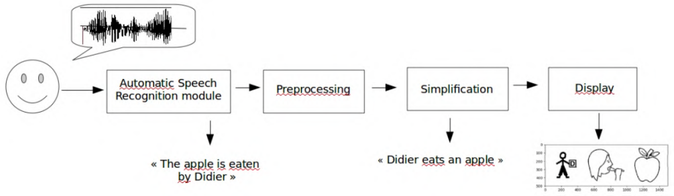
Web application

Omidreza Amrollahinasb

omidreza.ir@gmail.com

Speech to Pictogram Prototype

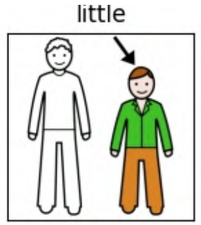
Autistic people tend to be visual learners.



Try out the prototype:

Technology stack used for the project:

- OpenAI Whisper + DALLE-2
- Natural Language Toolkit (NLTK)
- Pattern
- ARASAAC
- Hugging Face + gradio



Omidreza Amrollahinasb

Connect with me here: