



LANGUAGE AND TECHNOLOGY SOLUTIONS FOR GLOBAL BUSINESS

THE SOUND OF INTELLIGENCE

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AI AND LANGUAGE DUBBING: A ROCKY RELATIONSHIP

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STATUS IN DUBBING INDUSTRY



Language Dubbing is still a manual process

We don't dub to a language, we dub to a culture: the art of adaptation

1. A Chinese, Brazilian or French dubbing will always be different from the English original content due to all the differences (intonation, accentuation, construction, cadence...) between languages.
2. Incorporation of local slang, cultural or political facts; adaptation to local taste.

Recording:

- One by one in a recording studio.
- Dubbing cities in dubbing countries.
- Mixing to the taste of the country.

TM (translation memory) and
NMT (neural machine translation)
.. with human post edit.

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“Automatic voice casting for expressive speech”

- Voice similarity search for the voice casting of professional acted voices (France).

System created for live action media.

- Concept: source voice to a target voice distance is measured.

Based on the representation of the voice by classes:


- Gender, age, timbre, articulation, register, range, speech rate, attitude, emotion, situation, archetype.

Classification:

- Done on 20,000 speech recordings covering 54 speakers interpreting 500 roles with a maximum of 10 speech recording for each role of a video game (higher number of lines than in a movie).

Results depend on the actors database.

STATUS IN DUBBING INDUSTRY


 A new AI based system is trying to change the facial expressions of actors to accurately match dubbed voices (Israel).

For dubbing/legal: issue with altering the original picture.

For distribution: issue for streaming platforms or DVD with a large number of different pictures.

 Text to speech:

- Variety of voices is better but not used in Dubbing or even Voice Over due to absence of inflexions, expression, accentuation, etc...

 Text to speech as the rehearsal partner:

- Can help actors rehearse / review scripts / create a mock up version.
- In case of voice over, it can help timing the lines to be recorded.

 Speech to text:

- Very useful in the Entertainment industry to create transcripts.
- Depends on the quality of the source content.

AI IN DUBBING, ALMOST THERE BUT STILL A LONG WAY TO GO!



Cloud Technology



Browser based remote recording systems: a game changer in the dubbing world

1. Recording several actors at the same time instead of one after each other.
2. Removes the concept of recording studios and dubbing cities.
3. Enables automatic data collection:
 - Number of lines recorded in one hour
 - Number of takes / sentence
 - Clipping due to too much projection or high input level
 - Input level variations during overall recording
 - Lips or breathing noises



Streamline transfer and increase security
(vs spoiling picture, masks, invisible watermark, etc...)

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Voice placement modeling for Animation

- Voice characterization (the art of creating non-human voices).



Consistency: different approaches when re-creating iconic animation characters

- Result is an inconsistency in characterization and character re-creation.



Original concept

- Methodology to help actors to create / re-create classic animated voices in their language.

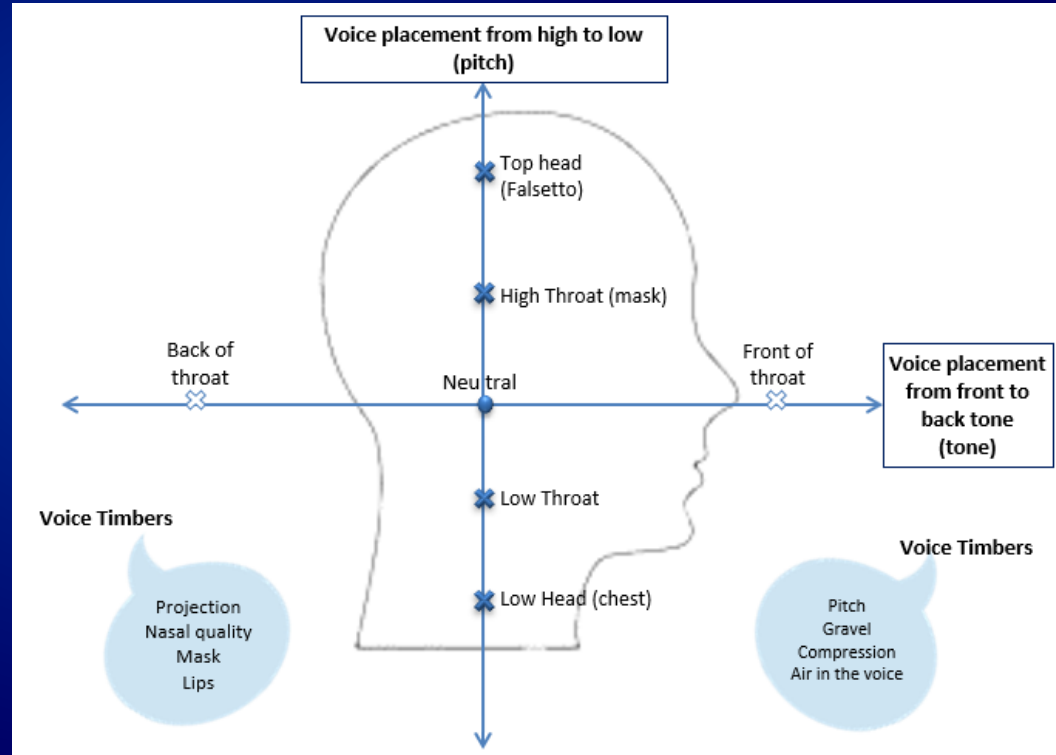


Creation of a common vocabulary

- Voice placements after analysis of the original voice to establish a guidance and a voice consistency across languages.

AI IN DUBBING, ALMOST THERE BUT STILL A LONG WAY TO GO!

Voice placement for Characterization



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Characterization: From a manual process → AI compatible

Where can AI help the dubbing community?

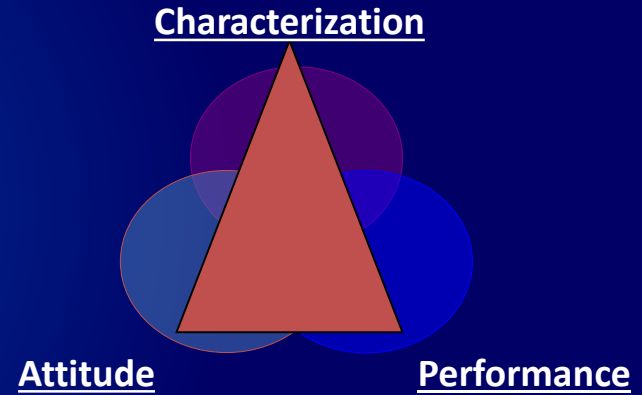
- **Characterization: original voice analysis +**
Using voice placements as well as parameters such as: pitch, pitch range, harmonic content (spectral analysis), attack transients (projection), grain (gravel), to find (and name/define) automatically a specific voice.
- **Humanizing: expression data**
What kind of data does AI need to understand the concept of language and cultural adaptation? These parameters will need to define concepts such as: attitude (all traits of personality of a character), intention, punctuation, accentuation, projection, pace...

AI IN DUBBING, ALMOST THERE BUT STILL A LONG WAY TO GO!



AI guidance: the best teacher?

- Actors can re-create original voices based on AI analysis by following voice placement + expression data (not depending on human interpretation)
- AI can compare original and new voices based on these parameters and guide actors by creating comments and examples



Globalization challenge: accents get mixed and change over time due to immigration flows

AI cannot be seen as a threat for the dubbing community, in fact, it could be its savior!