Contributions to Automatic Lipreading for Spanish

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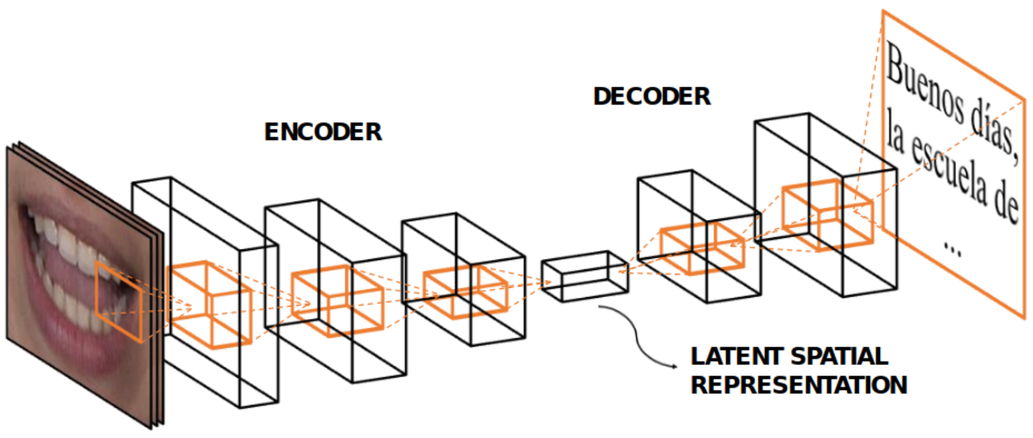
Introduction

The importance of **visual information and its relationship with the sounds produced** has been demonstrated [5].



The task is considered as an **open research problem** where different challenges are posed:

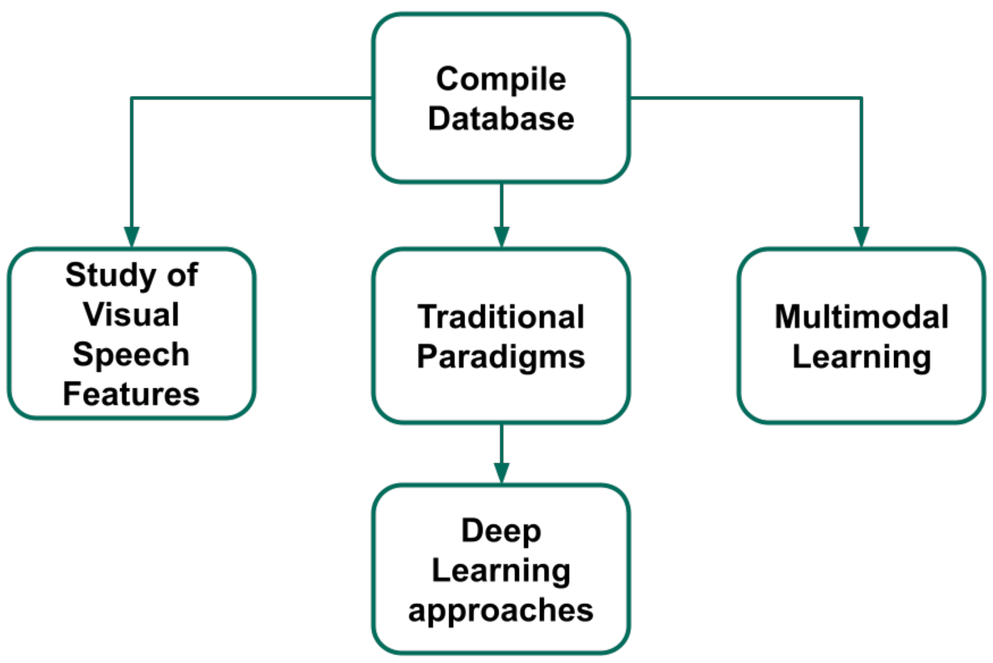
- Difficult Silence Modelling
- Visual Ambiguities
- Co-articulation caused by context influence

Objectives

The main purposes in our thesis are:

- Build an automatic **Visual Speech Recognition System** for the Spanish Language
- Compile an **Audiovisual Database** for Continuous Spanish

Research Development



State of the Art

- **Similar evolution** to that observed in the Acoustic Speech Recognition field [3]:
- **Two main databases** dedicated to English that offer more than 600 hours of data [1]
- Around **70% word recognition accuracy** has been reached [4] using an end-to-end architecture mainly based on Attention Mechanisms

The LIP-RTVE Database

Video Resolution	25 fps	480×270 pixels
Duration	∼13 hours	10,352 overlapped samples
Speakers	**Total:** 323	**Males:** 163 **Females:** 160
Vocabulary	9308 unique words	**Running Words:** 140,123 words

Results

Different preliminary results are reported both for a traditional paradigm and for more recent approaches:

	GMM-HMM	Attention E2E
Speaker-Independent	95.9±0.2	59.3±1.2
Speaker-Dependent	81.4±1.2	32.1±1.2

Applications

- Improve the lives of **people with speech disabilities** who suffer from communication difficulties [2, 6]
- Enhance ASR **performance in adverse scenarios**
- Silent dictation, dubbing and transcribing silent films

However, this field involves certain privacy concerns. Thus, different **ethical aspects must be considered**.

References

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