MACHINE LEARNING FOR SPOKEN LANGUAGE TECHNOLOGY

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Abstract. *Spoken language technology is one of the domains in which, in our days, machine learning algorithms and especially neural networks are used. Some applications will pe presented in this paper: detecting overlapped speech on short time frames (till 25ms), emotion recognition from speech (including speech stress detection and deceptive speech detection) and the performances of the last large vocabulary continuous speech recognition systems for Romanian developed in the SpeeD Laboratory, from Research Institute "CAMPUS", University POLITEHNICA of Bucharest*

1. Detecting overlapped speech on short timeframes using deep learning

In several presentations in the Information Science and Technology Section of the Academy of Romanian Scientists I pointed out some of the main research directions for the Speech and Dialogue ("SpeeD") team. Now I am able to give more details about some achievements in several arias of interest: detecting overlapped speech on short timeframes, emotions recognition from speech, new approaches to Romanian speech and speaker recognition. What do these seemingly very different areas have in common?

I am trying to demonstrate that the methods offered by machine learning could provide viable solutions for the most diverse applications. But it is also an opportunity to share some of the achievements of the team I am working with.

Long speech frames, i.e. more than 500 ms, have a higher probability of containing partially overlapped speech (e.g. one speaker produces an utterance 200 ms after another one has started). This leads to risk of decreasing accuracy for: blind speech source separation (BSS), speaker identification, crowd-sensing. Detecting overlapped speech on short timeframes can contribute to key BSS applications.

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