

The subject of this thesis is automatic speech translation. The task is the translation of the European Parliamentary Plenary Sessions proceedings, between English and Spanish. Two statistical translation systems are used. The first one has been entirely developed during this thesis and relies on the IBM-4 model. The second system employs Moses, an open-source, state-of-the-art phrase-based translation decoder. A collaboration between the two decoders is envisaged. The neural-network language model proves extremely useful in both translation directions. The systems described in this thesis obtained top rankings at the last TC-STAR evaluation of February 2007. An algorithm inspired from the Perceptron is proposed to modify the phrase-table scores in a discriminative manner, based on errors observed on a development corpus. With respect to the interaction between speech recognition and translation, we measure the impact of the speech recognition word error rate on translation performances, and evaluate separately the respective impact of the source language model and the acoustic model. We also run experiments to take into account the ambiguity of the speech recognition output, i.e. the words between which the speech recognizer “hesitates”. We then present several speech-specific processings, occurring after the recognition and before the translation. Eventually, we modify the speech recognition system so as to improve the overall speech translation performance.