# MAP speaker adaptation of state duration distributions for speech recognition

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This paper presents a framework for maximum a posteriori (MAP) speaker adaptation of state duration distributions in hidden Markov models (HMM). Four key issues of MAP estimation, namely analysis and modeling of state duration distributions, the choice of prior distribution, the specification of the parameters of the prior density and the evaluation of the MAP estimates, are tackled. Moreover, a comparison with an adaptation procedure based on maximum likelihood (ML) estimation is presented, and the problem of truncation of the state duration distribution is addressed from the statistical point of view. The results shown in this paper suggest that the speaker adaptation of temporal restrictions substantially improves the accuracy of speaker-independent (SI) HMM with clean and noisy speech. The method requires a low computational load and a small number of adapting utterances, and can be useful to follow the dynamics of the speaking rate in speech recognition.