

Modeling the impact of co-variables upon the transition from one hidden state to another may improve both estimation and prediction in hidden Markov and semi-Markov models. However, the problem of the interpretability of the parametrization and feasibility of the computation becomes crippling as the number of interest covariates increases.

I propose, in a Bayesian perspective, an architecture I hope to be as complex as needed to accommodate complex configurations of the data, but as simple as possible for the sake of usability. A few simulated examples are given to illustrate the flexibility of the model. A Bayesian strategy to fit the model is discussed.