

Title: Estimation in continuous time Markov chains

Author: Bohuš Nemčovič

Department: Department of Probability and Mathematical Statistics

Supervisor: RNDr. Michaela Prokešová, Ph.D., Department of Probability and Mathematical Statistics

Abstract: In this work we deal with estimating the intensity matrices of continuous Markov chains in the case of complete observation and observation at selected discrete time points. To obtain an estimate we use the maximum likelihood method. In the second chapter we first introduce the general EM algorithm and then adjust it for finding the intensity matrix estimate based on observations at discrete time points. In the last chapter we will illustrate the impact of the discrete step size on the quality of intensity matrix estimate.

Keywords: Markov chains, intensity matrix, maximum likelihood estimation, EM algorithm