

The main topic of this bachelor thesis is Markov reward chains with finite state set. We consider a markov decision chain with a finite action space and we are concerned on finding an optimal control with respect to exponential utility function. An iterative algorithm is given. Then we prove that after finite number of steps we end up with optimal control. Afterwards we show that optimality of this control is fulfilled, even if we consider an adaptive chain control strategy. In the last part of the work, there is a selection of propositions from Perron-Frobenius theory, which are essential in proofs of theorems.