Master Thesis

Topic:

Unsupervised learning in decision making

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Symbol	Meaning
a_t	Action at time t
$Q(a)_t$	Value function at time t
ϵ	Probability of exploration in epsilon greedy
α	Learning rate
τ	Softmax parameter

VI List of abbreviations

Abbreviations	Description

1 Introduction and conceptual approach

2 Simmulation

2.1 Data generation

Challange: Categorical data with time series attributes. Apply transformation choice probabilities () Define similarity meassures on categories

2.2 Reinforcement Learning backround

$Q_t(a) = \frac{R_1 + R_2 + \cdots + R_{K_\alpha}}{K_\alpha}$

$Q_{k+1} = Q_k + \alpha \left[R_k - Q_k \right]$

Let $Q_t(a)$ be the value function of action a. *"Epsilon Greedy"*

Choose next action a as $a_{t+1} = \arg\max Q_t(a)$. Let p_e be the probability of exploration. $p = \epsilon$

Soft Max Selection

$P(a_t|X) = \frac{e^{\frac{Q_t(a)}{\tau}}}{\sum_i^K e^{\frac{Q_t(i)}{\tau}}}$

2.3 Unsupervised Learning

2.4 Simmulation results

3 List of Literature

Appendix