

## **Risk-sensitive Markov Decision Processes**

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### **Abstract:**

Markov Decision Processes are controlled Markov processes in discrete time. They appear in various fields of applications like e.g. economics, operations research, engineering, computer science and biology. The aim in the classical theory is to maximize the expected (discounted) reward of the process over a given time horizon. In this talk however, we investigate the problem of maximizing a certainty equivalent of the total or discounted reward which is generated by a Markov Decision Process. The certainty equivalent is defined by  $U^{-1}(EU(X))$  where  $U$  is an increasing function. In contrast to a risk-neutral decision maker this optimization criterion takes the variability of the reward into account. It contains as a special case the classical risk-sensitive optimization criterion with an exponential utility. We illustrate our results with a risk-sensitive dividend payout problem.