

On several time inconsistent stochastic control problems

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In the talk three long run stochastic control problems that are time inconsistent i.e., problems for which Bellman optimality principle does not work, are solved. The problems are: generally discounted average per unit time reward of controlled discrete time Markov processes or impulse control of continuous time Markov processes and log run behaviour of a regular utility function of an additive cost. It is shown that these problems can be unexpectedly reduced to time consistent problems in the sense that optimal controls for suitably defined time consistent problems are also optimal for above mentioned time inconsistent ones. The talk is based on the papers [1], [2] and [3].

References

- [1] L. Stettner, *Long run stochastic control problems with general discounting*, Applied Mathematics & Optimization (2024) 89:52,
- [2] D. Jelito, L. Stettner, *Impulse control with generalized discounting*, SIAM J. Control Optim. 62 no. 2 (2024), 853–876,
- [3] L. Stettner, *Certainty equivalent control of discrete time Markov processes with the average reward functional*, Systems & Control Letters 181 (2023), 105627.

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