

DPRL Assignment week 1



Consider the following airline RM problem:

- $f = (500, 300, 200)$, $C = 100$, $T = 600$
- $\lambda_t(i) = \mu_i e^{\nu_i t}$ with $\mu = (0.001, 0.015, 0.05)$ and $\nu = (0.01, 0.005, 0.0025)$

- Determine the total expected revenue and the optimal policy by implementing dynamic programming yourself in python
- Makes a plot of the policy (with time and capacity on the axes)
- Simulate the demand over time, and for this realization determine which tickets are sold, what the remaining capacity is and what the prices are at each moment
- Repeat a & c but now for the model where the price cannot go down. What is the difference in expected revenue?

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How and what to submit:

- Report (.pdf) of max 2 A4 pages plus appendix with relevant figures/tables/screenshots
- Separate Python code file (.py)
- Implement the algorithm in an efficient way, it should run very fast
- Report should include the solution method. Mathematically describe the method that you coded, including implementation choices and initialization
- Comment on your findings, are they as expected?