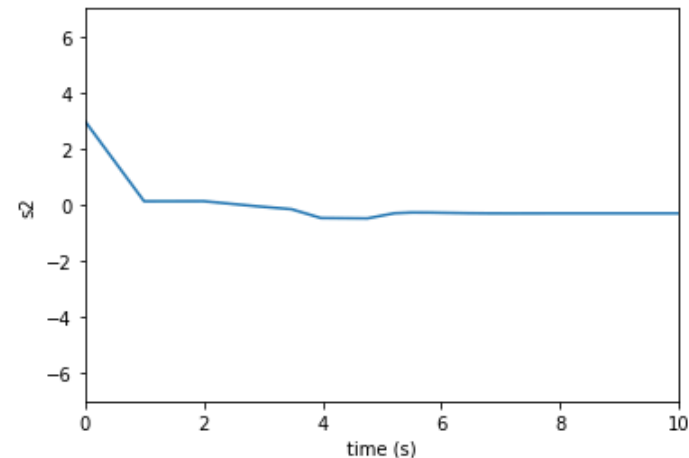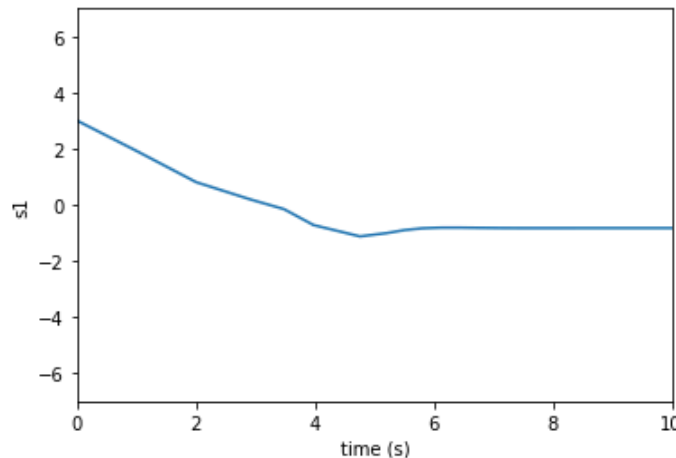# Weekly Report

M2 Ibuki Takeuchi

- Apply RL to self-triggered control for linear system
  - Same setting as inverted pendulum
  - System

$$\dot{s} = As + Bu = \begin{bmatrix} -1 & 4 \\ 2 & -3 \end{bmatrix} s + \begin{bmatrix} 2 \\ 4 \end{bmatrix} u$$

$$\mathrm{eig}(A) = 1, -5$$
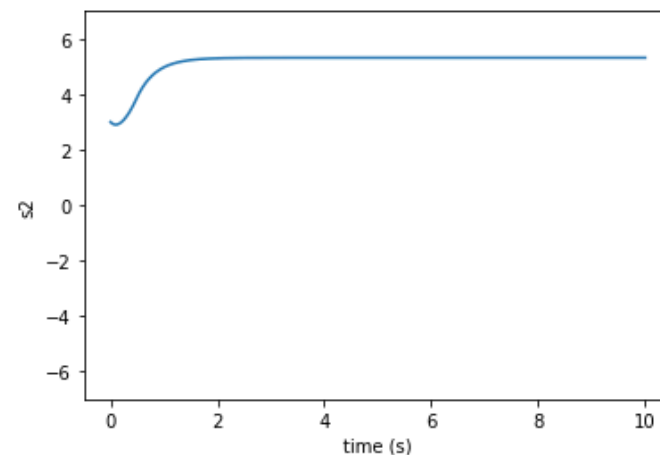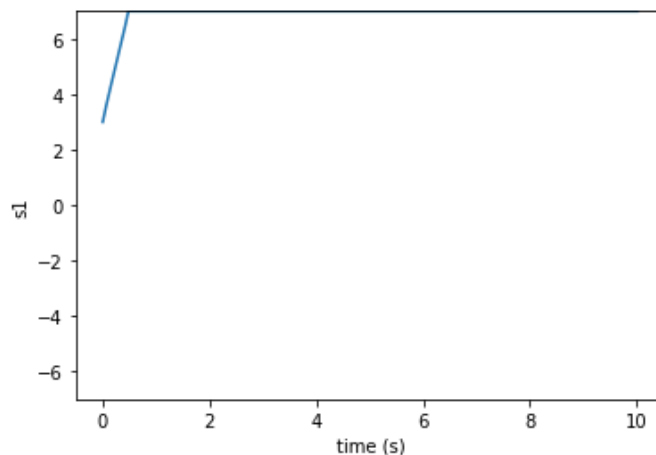
  - Stabilize system

Weekly Report

M2 Ibuki Takeuchi

- Comparison with naïve control law:

$$(u, \tau) = \underset{(u,\tau)}{\text{argmin}} \, \{ \int_0^\tau s(t)^T s(t) dt + u^2 - \lambda \tau + V_{lqr}(s'(s, u, \tau)) | s(0) = s \}$$

$V_{lqr}(s)$: control cost with LQR

λ: positive parameter

- Cannot stabilize the system

Control System Theory Group

Weekly Report

M2 Ibuki Takeuchi

- This week
    - Write master thesis v-0 (until Friday, priority)
        - Framework

    - More appropriate comparisons for naive control and RL
        - Check the program for bugs