CTMC Performance Indices

To have this assignment evaluated for the in-class exam, please upload on WeBeep a ZIP file including:

- the source code used to solve this assignment
- this file, with the table below properly filled

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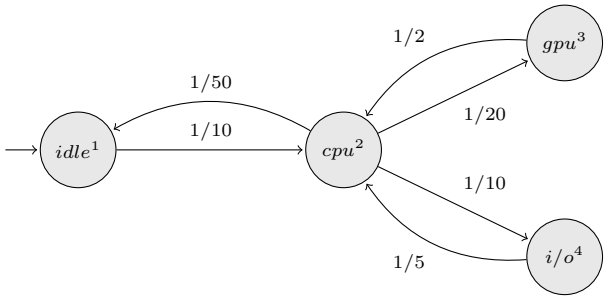
CTMC drawing:



Infinitesimal generator matrix:

	S_{idle}	S_{cpu}	S_{gpu}	$S_{i/o}$
S_{idle}	-0.1000	0.1000	0.0000	0.0000
S_{cpu}	0.0200	-0.1700	0.0500	0.1000
S_{gpu}	0.0000	0.5000	-0.5000	0.0000
$S_{i/o}$	0.0000	0.2000	0.0000	-0.2000

State reward vectors, and transition reward matrices:

$$\alpha_P = [0{,}1 \quad 2 \quad 10 \quad 0{,}5] \qquad \alpha_U = [0 \quad 1 \quad 1 \quad 1]$$

$$\xi_X = \begin{bmatrix} 0 & 0 & 0 & 0 \\ 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \end{bmatrix} \qquad \xi_{X_{GPU}} = \begin{bmatrix} 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 \end{bmatrix} \qquad \xi_{f_{I/O}} = \begin{bmatrix} 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \end{bmatrix}$$

Figure with the evolution of the state probabilities as function of time.

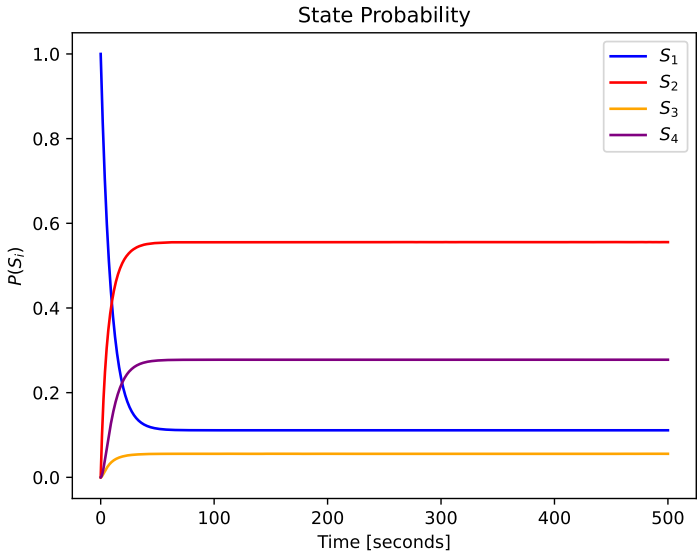
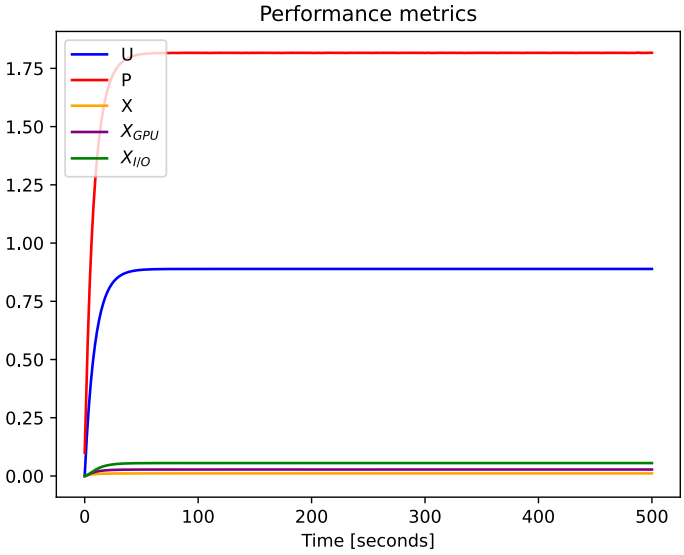


Figure with the evolution of the rewards as function of time



	Steady state probabilities, and limit rewards. $P(S_1) = 0{,}1111$ $P(S_2) = 0{,}5556$ $P(S_3) = 0{,}0556$ $P(S_4) = 0{,}2778$ $U = 0{,}8889$ $P = 1{,}8167\ Watt$ $X = 0{,}0111\ jobs/second$ $X_{GPU} = 0{,}0278\ jobs/second$ $f_{I/O} = 0{,}0556\ jobs/second$