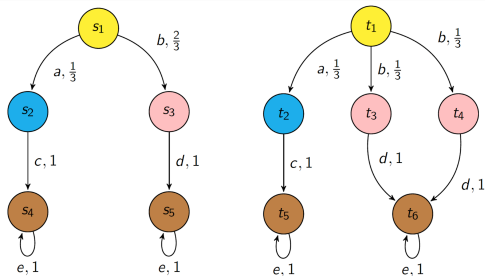


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Bisimulation classes (an example MDP)



$$s_4 \sim s_5 \sim t_5 \sim t_6$$

$$s_2 \sim t_2 \quad s_3 \sim t_3 \sim t_4 \quad s_1 \sim t_1$$

- **Bisimulation** is a measure of behaviour similarity in stochastic systems (such as MDPs)
- **Bisimulation metrics** are a quantitative analogue of **bisimulation relations**

Bisimulation metrics are attractive because they allow **quantifying approximation errors for any state space representation**. **However, metric computation is very expensive!**

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- We provide new theoretical characterizations for bisimulation relations and metrics
- We propose an iterative algorithm which generates partition refinements suited for *efficient bisimulation metric computation and state abstraction*

