Planning Annotated RL Task

Planning Annotated RL Task (PaRL) \((\mathcal{M}, \mathcal{T}, L)\)
- \(\mathcal{M} : MDP\)
- \(\mathcal{T} : \text{Planning Task}\)
- \(L : \text{State mapping function}\)

\[ I_{op} = \{ s \in S | \text{precondition}(O) \subseteq L(s) \} \]
\[ \beta_{op} = \begin{cases} T & \text{if prevail (O) } \cup \text{effect (O) } \subseteq L(s) \, \text{F} & \text{o.w.} \end{cases} \]

Related Works

Hierarchical RL [Kulkarni, et. al 2016]
Define master/slave architecture and master policy generates subgoals for each slave

Option Critic [Bacon and Precup 2017]
End-to-End approach for training intra option and option level policy functions

PEORL/SDRL [Yang, et. al 2018][Lyu, et. al 2019]
Derive a Planning task from BC action language

Taskable RL [Illanes, et. al 2020]
Derive a planning task from subtasks in RL problem