Situation Dependent Spatial Abstraction in Reinforcement Learning Based on Structural Knowledge

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Spatial Abstraction in RL

Abstraction of the state space
- Goal: generate a manageable observation space
- For example: selection of features

Crucial question of abstraction
- Which information to retain?
- Which to drop?
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Relevance of information
- Different levels of abstraction may be appropriate
- Not every piece of information is relevant in any situation

Non-decision Structures
- Action selection may be narrowed by structure of the environment
- Non-decision states: states with only one reasonable choice
- Defined by non-decision structures
Structure Induced Task Space Aspectualization

Appropriate Representation:
- Model structural features explicitly
- Structure space aspectualizable state space

SITSA:
- Identify non-decision structures in previous task
- Abstract from non-structural information in new task