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Enhancing autonomy and efficiency in goal-conditioned reinforcement learning

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Propositions
accompanying the thesis

Enhancing Autonomy and Efficiency in Goal-Conditioned Reinforcement Learning

1. In reset-free settings, model-based reinforcement learning is always preferable over model-free. [Chapter 3]
2. In deterministic tasks where we require a quick solution, stitching previously encountered high-reward trajectories ('episodic memory') is preferable over reinforcement learning. [Chapter 4 & 5]
3. Adaptive switching between episodic memory and reinforcement learning gives both fast and optimal solutions. [Chapter 5]
4. When the agent reaches frontier goals, additional exploration near those goals expands the agent's knowledge boundary, leading to improved performance. [Chapter 6]
5. Reinforcement learning agents should context-dependently decide when, how and for how long to explore.
6. When downstream tasks are unknown, learning a world model should be the primary objective of an reinforcement learning agent.
7. We should strive for autonomous reinforcement learning agents that require as few human interventions as possible.
8. Getting reinforcement learning to work requires reading, thinking, engineering, experimenting, and organizing, and each aspect is indispensable.
9. If you do not yet have a clear goal in life, try to learn as much as possible about the world, since it will enable you to quickly adapt to future goals.

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