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Short Story Assignment

**Sim-to-Real Transfer in Deep Reinforcement Learning for Robotics: A Survey**

Deep Reinforcement Learning is an effective way to train robots to adapt to real world as it overcomes the problem of data source sample inefficiency and the cost of collection. It provides potentially infinite source of data as the agent explores the environment and exploits the knowledge learned from its exploration. However, there is a remarkable degradation in performance observed in transitioning from simulated environment to real world. This warrants a deeper look into the efficient policy transfer methods which closes the gap between the simulation and real world.

This survey article summarizes sim-to-real transfer fundamentals and gives an overview of main methods applied in this area: domain randomization, domain adaptation, imitation learning, meta-learning and knowledge distillation. It also highlights some of the most recent works and their application scenarios. At the end, we look at the challenges and areas of future research in the domain.