MAX-E2 Humanoid Robot

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Abstract

We consider the whole-body humanoid gait control model via reinforcement learning, where an initial predefined parametric gait policy is optimized by employing the augmented random search algorithm realizing most of the experiments in simulation and verifying the results onto the real robot. In our proposal, we take into account the reality gap problem, also known as Sim to real problem, for the development of the experiments and the policy guaranteeing functional results in the real robot employing a simplified custom simulator. We show that our proposed learning algorithm allows the humanoid robot MAX-E2 to walk efficiently in virtual and real environments.

Keywords: Reinforcement learning ▪ humanoid robotics ▪ Sim2Real ▪ iterative learning