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Title: Novel Reinforcement Learning Research Platform for Role-Playing Games

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Abstract: The latest achievements in the field of reinforcement learning have encouraged the development of vision-based learning methods that compete with human-provided results obtained on various games and training environments. Convolutional neural networks together with Q-learning-based approaches have managed to solve and outperform human players in environments such as Atari 2600, Doom or StarCraft II, but the niche of 3D realistic games with a high degree of freedom of movement and rich graphics remains unexplored, despite having the highest resemblance to real-world situations. In this paper, we propose a novel testbed to push the limits of deep learning methods, namely an OpenAI Gym-like environment based on Dark Souls III, a notoriously difficult role-playing game, where even human players have reportedly struggled. We explore two types of architectures, Deep Q-Network and Deep Recurrent Q-Network, providing the results of a first incursion into this new problem class. The source code for the training environment and baselines is made available.

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