



DL4CV PROJECT

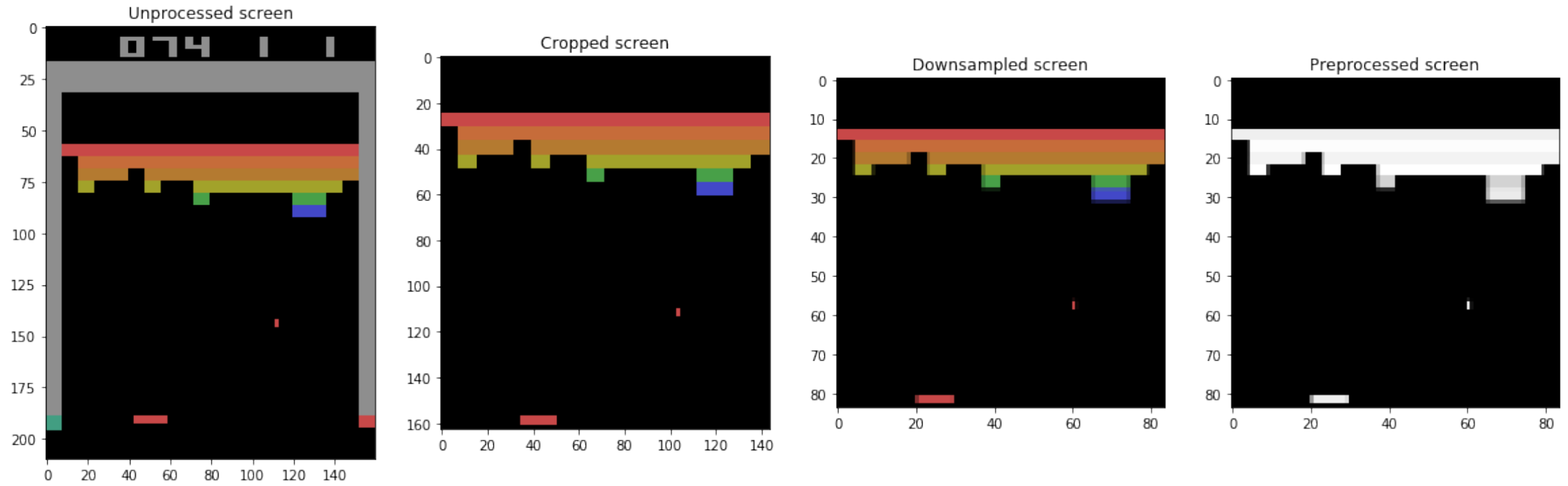
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Preprocessing & Environment

The environment for the learning agents was OpenAI gym. This toolkit for developing and comparing reinforcement learning agents was used as an interface to Atari 2600 games like Breakout or SpaceInvaders, that the agents tried to learn. The interface provides informations about the state of the games as well as the current screen. Due to an internal flickering of the games (e.g. shoots are only on odd frames visible), the current screen is obtained by a maximum operation on two successive frames. Before the screen was feed into the neural network with the screen, it was preprocessed as depicted in the graphic below.



In OpenAI gym there exists a frame skipping technique, that was also modified. Instead of skipping randomly between two and five frames, the frame skipping rate was set to a constant value. During the training the rewards were clamped to -1 and 1 to gain comparability between different games. Additional the lost of one live was punished with an reward of -1, whatever the real reward was.

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