COPTER BOT BASED ON DEEP Q-LEARNING

Midpoint Spotlight

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Tasks done so far..

- Read multiple papers regarding Deep Q-learning to procure an idea about the implementation.
- Incorporated the basic Copter environment from PLE into our model.
- Implemented modules to obtain the screen frames from the environment as a pixelarray and then pre-processed them (grayscale and resize).
- Constructed a convolutional neural network that acts the Q-function for the model.

$$Q(s,a) = r + \gamma * max_{a'} Q(s^{'}, a^{'})$$

The CNN architecture

- The input that is given to the network consists of 4 stacked consecutive frames.
- Our CNN currently consists of three convolutional layers with increasing kernel sizes with decreasing filter dimension and strides.
- All layers apply ReLU activation function.
- The final hidden layer is a fully connected one with rectifier units.
- The output layer is a fully-connected linear layer with a single output for each valid action.
- The actions(2) : tap (or) not tap
- The model depends on parameters like, epsilon or exploration quotient (which is reduced gradually while training), number of previous transitions to store in Replay Memory, learning rate, discount factor.

Advice we need

- Idea to narrow down on a optimal CNN architecture.
- Currently training takes a lot of time(2 hours to run 50k iterations). Need ideas to train the model faster.
- Understanding how the learning works and how to choose the optimal values for parameters.

Thank you..!