SPACE

INVADERS

TAP TO PLAY

CAN AI BEAT A COMPUTER?

ATARI

$ 500 → (+5) $ 28.000.000 → (+10) $ 2.000.000.000

Have fun, make money!

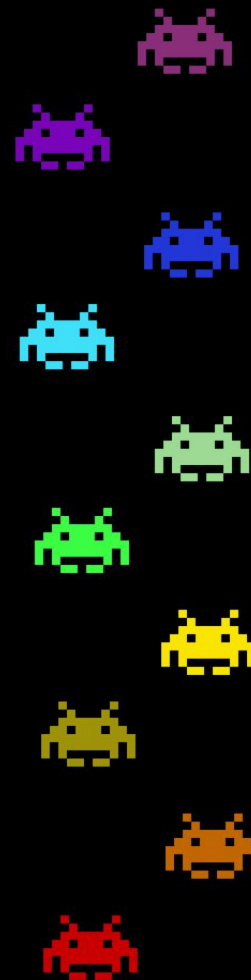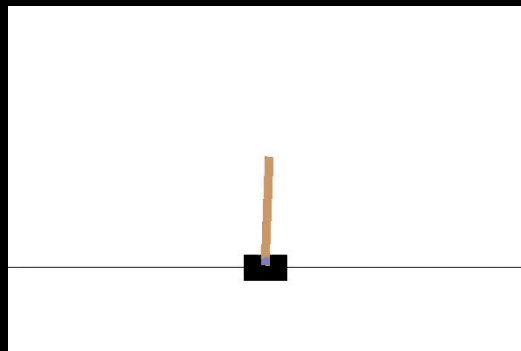Atari culture set the tone for Silicon Valley

Cartpole Game

Youtube, google, medium…

Open AI Gym
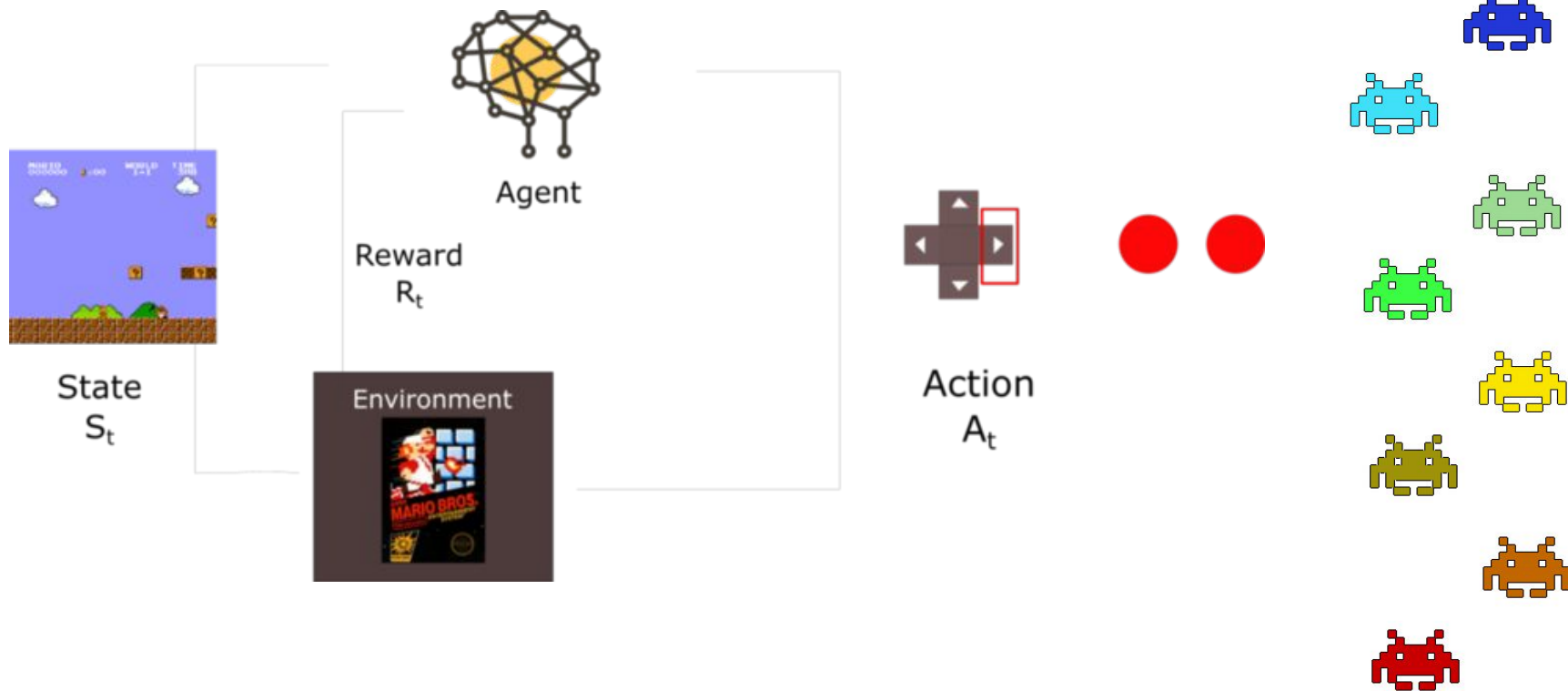
Agent / Action with rewards:

Reinforcement Learning

Agent

Reward
R_t

State
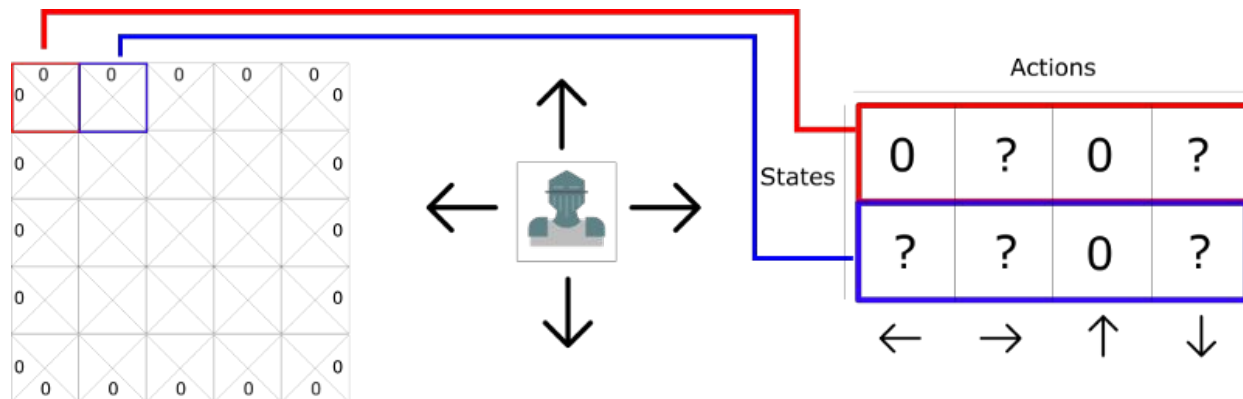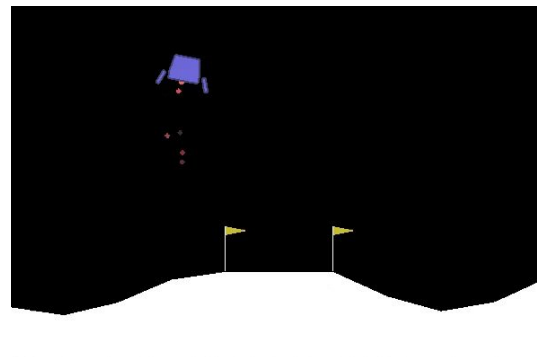S_t

Environment

Action
A_t

Reinforcement Learning with Q-Learning

Learning to work make a class (Model), (Replaybuffer) and (Agent)

The Bellman Equation:

$Q(s,a) = r(s,a) + y \max(s', a)$

Actions

0	?	0	?
?	?	0	?

States

$\leftarrow \quad \rightarrow \quad \uparrow \quad \downarrow$
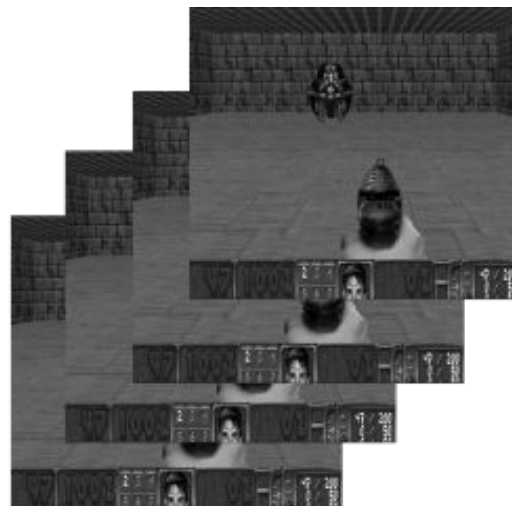
Deep Q-networks - Image preparation

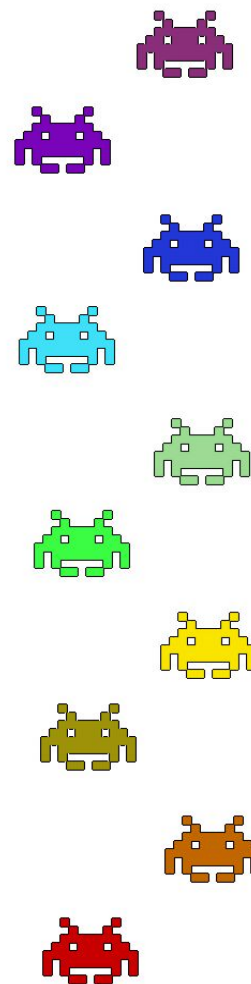Grayscale + scaling down
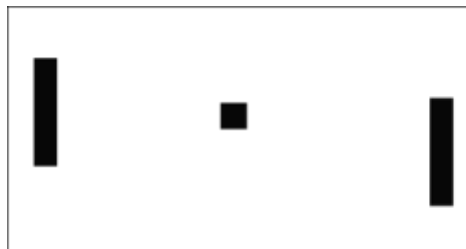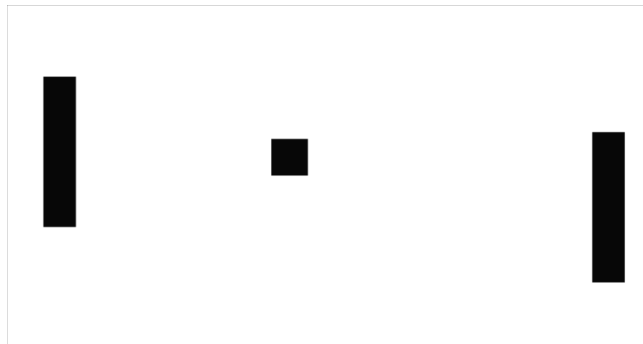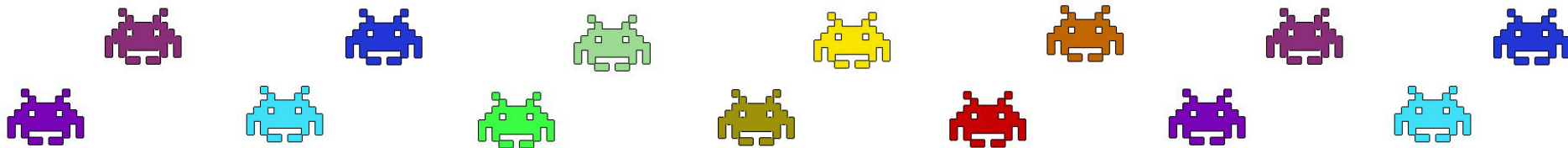
State frame

Preprocessed frame

+

Preprocessed stack of frames
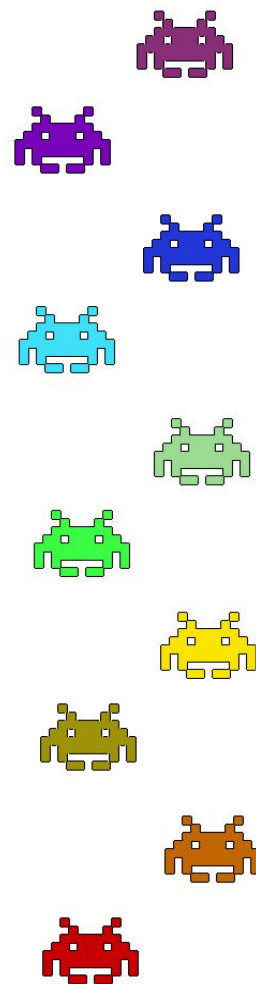
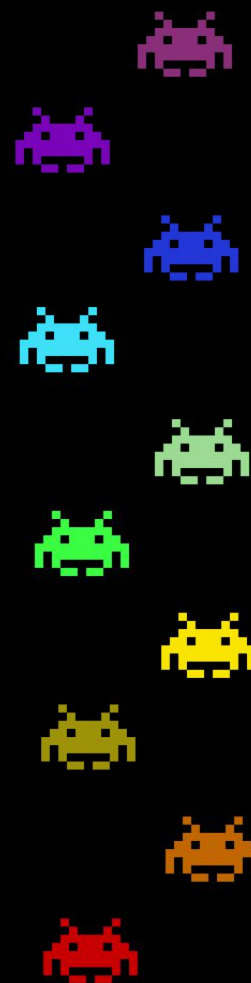# Deep Q-networks - Problem Temporal limitation

Deep Q-networks - Convolution
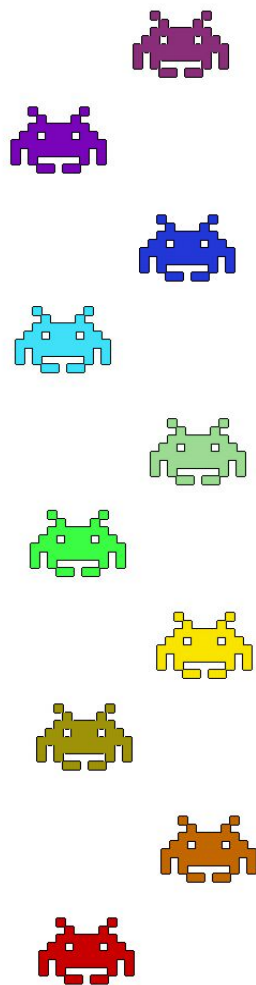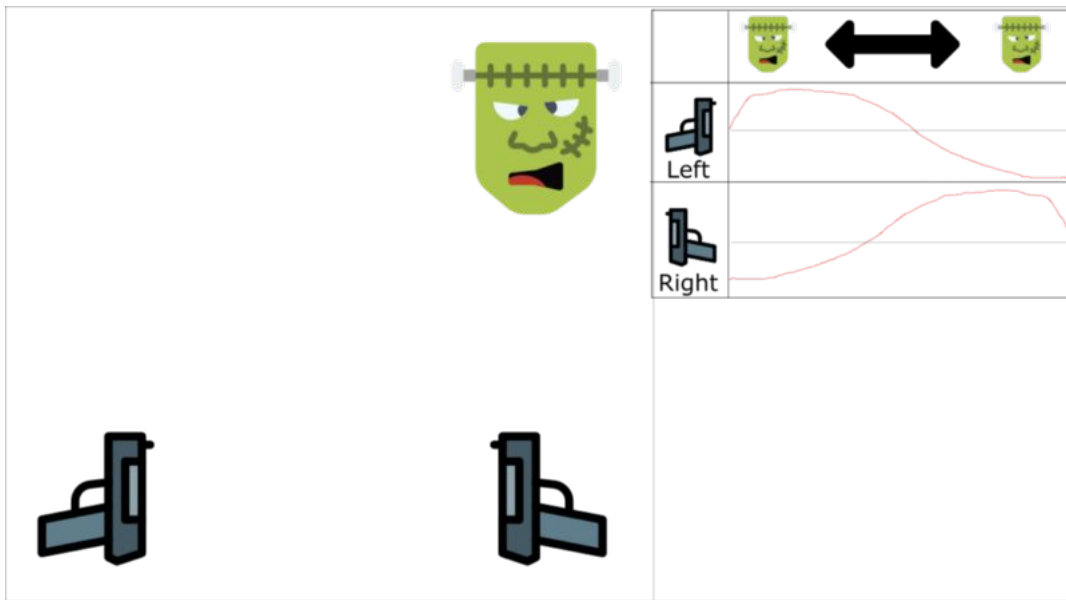
Experience replay

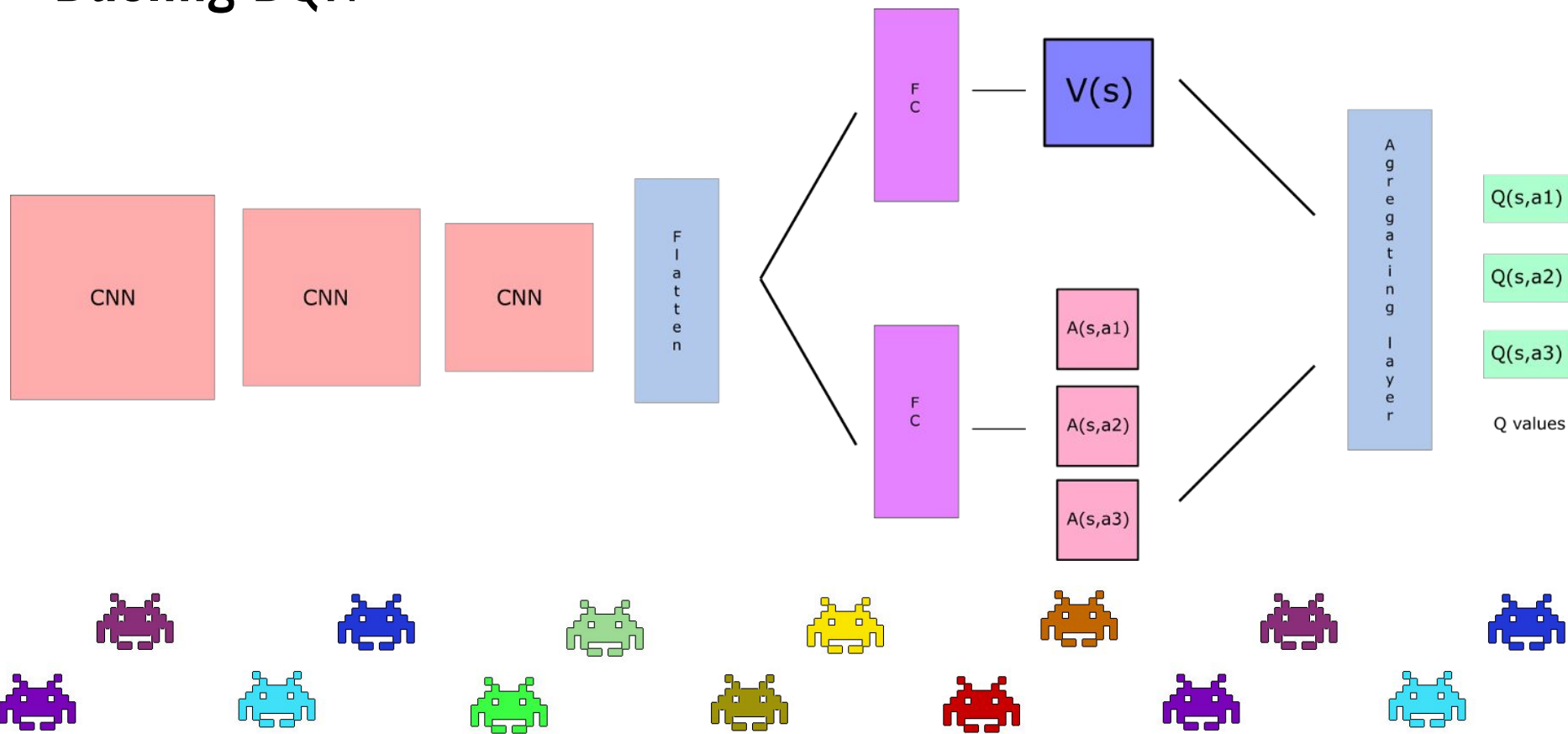Avoid forgetting previous experiences

Experience replay

Reduce correlations between experiences

Dueling DQN

Why teach AI to play games?
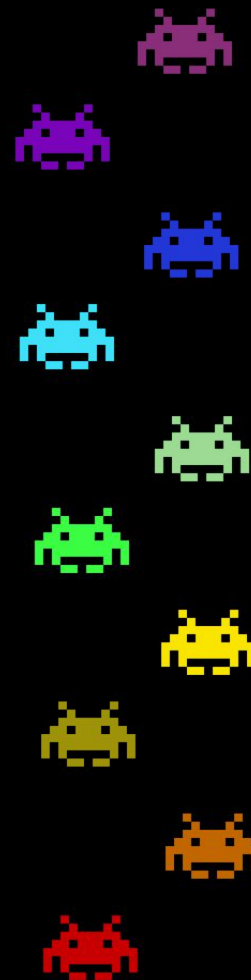
First the games, then the world!

System of rewards

Fail & Error

Use technology for nextgen robots

SPACE INVADERS
Collection

PLAY   SELECT

 SPACE INVADERS

SPACE INVADERS PART II

OPTIONS

GAME OVER