# MS-Pacman\_v0 OpenAI GYM DQN-Learning

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## Abstract

## Introduction

The problem which this article tries to solve is an Atari game called Pacman, in which, the agent must learn how to maximize its reward in the environment provided by GYM python library where agent must learn how to collect the maximum number of dots, while avoiding the moving ghosts in the closed maze.

convolutional neural network is occupied to train the agent which maps the input state to actions. The motivation of applying the DQN algorithm on this problem is to see how good this algorithm can perform in this specific task and to check it can reach a near-human level performance and beat human record in the game. Also, to find out how much benefit the model gets by utilizing the neural networks alongside the Q-Learning compare to more basic solutions like vanilla-Q-Learning.

Deep-Q-Learning is a model-free reinforcement learning algorithm which utilizes deep neural networks to obtain action-Qvalue from the input states, unlike the classical Q-Learning algorithms also known as vanilla-Q-Learning. In this article, DQN algorithm is used to train an agent for MsPacman-V0 game.

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## Acknowledgements

The idea and parts of the formating for this template came from the Association for Learning Technology (UK) ALT-C 2004 Research Paper Format Template.

## References

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