The Six Pac-men:

Exploring the Strength of Advice Provision and the Impact of an Adversarial Advisor in Reinforcement Learning

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Packing a punch!

A new game titled 'Pac-Man Lite' has been implemented to study advice provision between one student and multiple teacher reinforcement learning agents; one of which is an adversarial teacher agent.

The significant impact that adversarial advice can have on the performance of an agent serves as the major motivation behind this project.

What's in the package?

Two experiments have been conducted: Firstly, the ability of the student agent to aggregate advice from multiple teachers with partial visibility of the environment is studied.

Subsequently, an attacker in the form of an adversarial teacher advisor with a full view of the environment is introduced into the setting, whose goal is slightly different from that of the existing agents.
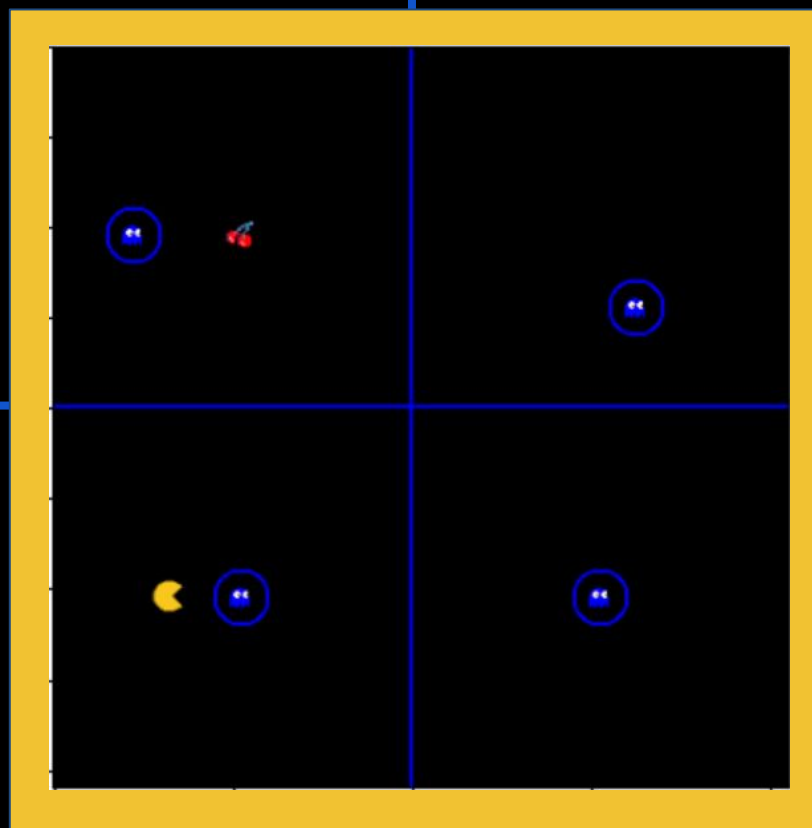
Pacman and his men in action!

In every game, Pac-man navigates towards the cherry fruit while avoiding the moving ghosts. He uses the advice he receives from his advisors stationed at each quadrant of the game.

To get a feel of the game in play, the QR code can be scanned to access a video.

Setting the pace...

The results indicate that the student agent is able to aggregate advice and extract value from relevant advisors in the presence of multiple sources. The results also indicate the success of the adversarial agent in negatively impacting the performance of the student agent by participating in advice provision. In addition to adding to existing research, this work has also set the ground for future research on adversarial advice provision.