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**Tesis:** "DEEP Q-LEARNING IN ROBOTICS: A PATH PLANNING ALTERNATIVE"

## Resumen:

Literature shows that mobile robot research is an active field of study. An example is [1], which presents research on Human-Robot collaboration in the field of agriculture, and illustrates how this interaction can improve efficiency in agricultural activities. In addition, recent advances in the field of artificial intelligence (AI), have made it possible to find more efficient solutions in the field of robotics and computer vision. However, robotics is particularly challenging domain for any learning algorithm. A robot learning algorithm should be able converge quickly since it is difficult to carry out a million trials on such systems. It also should allow the robot to incrementally improve its performance while it is learning. In this work a development of such learning algorithms is presented. Using Deep Q-Learning, this work goes from simple robotic systems that learn how to balance a pendulum to more complex ones like performing path planning tasks that allow mobile robots to learn new behaviors in an initially unknown environment. Experiments on simulated environments have been presented and results have proved to be suitable for real world tests.