In this BTP-II, I would like to explore the possibility of creating quantum-enhanced reinforcement learning algorithms to improvise the efficiency of known classical approaches for robot navigation or atari games.

### Quantum Inspired Reinforcement learning:

This class deals with classical computers and utilizes the quantum mechanical principles to improvise the classical model.
Robust Quantum-Inspired Reinforcement Learning for Robot Navigation

### Quantum enhanced reinforcement learning:

This class deals with hybrid quantum-classical algorithms
Quantum-Enhanced Reinforcement Learning for Finite-Episode Games with Discrete State Spaces
A Novel Quantum Swarm Evolutionary Algorithm for Solving 0-1 Knapsack Problem

### Quantum Reinforcement learning:

This class deals with quantum learning agents able to understand quantum data environment.

The following paper compares between QRL and RL using the same update rule.
Comparison of RL vs QRL on grid world problem updated by TD(0)

No-cloning theorem states that creating identical copies of a quantum state is not possible. Below papers discuss about the ways to create almost identical copies with 98-99% fidelity using quantum reinforcement learning.
Measurement-based adaptation protocol with quantum reinforcement learning in a Rigetti quantum computer
Enhancing the efficiency of quantum annealing via reinforcement: A path-integral Monte Carlo simulation of the quantum reinforcement algorithm

**References:**


1. Advances in Natural Computation
2. A Universal Training Algorithm for Quantum Deep Learning
3. Advances in Quantum Reinforcement Learning
4. Quantum-Enhanced Machine Learning
5. Quantum Machine Learning over Infinite Dimensions
6. Quantum machine learning: a classical perspective
7. Quantum algorithms for topological and geometric analysis of data
8. Quantum Generative Adversarial Learning
9. Reinforcement Learning in Different Phases of Quantum Control
10. Quantum-inspired algorithms in practice