ME5406 Deep Learning for Robotics Project 1: The Froze Lake Problem and Variations

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Table of Contents

Project Description

This project implements three reinforcement learning algorithms (First-visit Monte Carlo Control, SARSA, and Q-learning) to solve the Frozen Lake problem. The environment consists of a grid where a robot navigates from a start position to a goal while avoiding holes. Tasks include:

- **Task 1**: Solving a 4x4 grid.
- **Task 2**: Extending to a 10x10 grid with randomized holes.
- **Task 3**: Analysis and report comparing algorithm performance.

Dependencies

- Python 3.6+
- Required Packages (install via `pip install -r requirements.txt`):

```
gym==0.21.0
numpy==1.19.5
matplotlib==3.3.4
tqdm==4.62.0
```