# Assignment 2: Policy Gradient

**Andrew ID:** `Write your Andrew ID here.`
**Collaborators:** `Write the Andrew IDs of your collaborators here (if any).`
**NOTE:** Please do **NOT** change the sizes of the answer blocks or plots.

## 5 Small-Scale Experiments

### 5.1 Experiment 1 (Cartpole) – [25 points total]

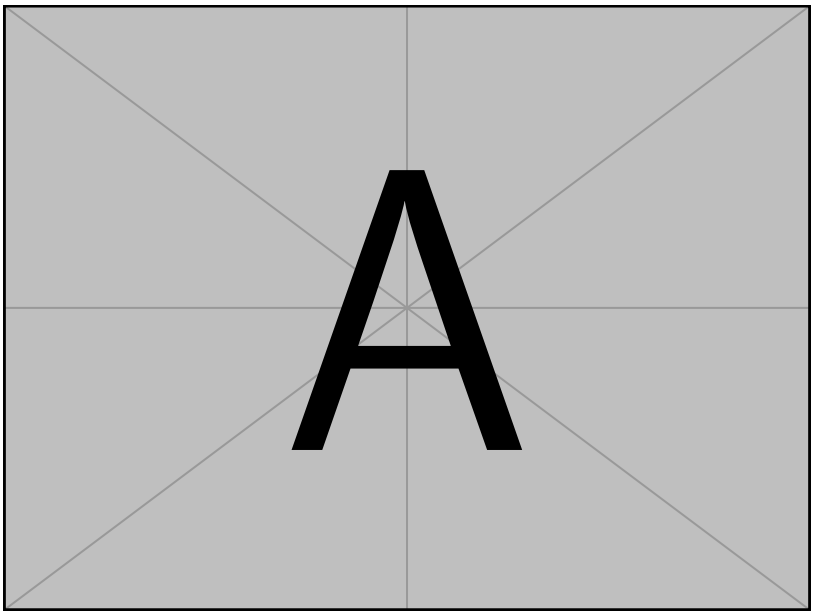
#### 5.1.1 Configurations

Q5.1.1

#### 5.1.2 Plots

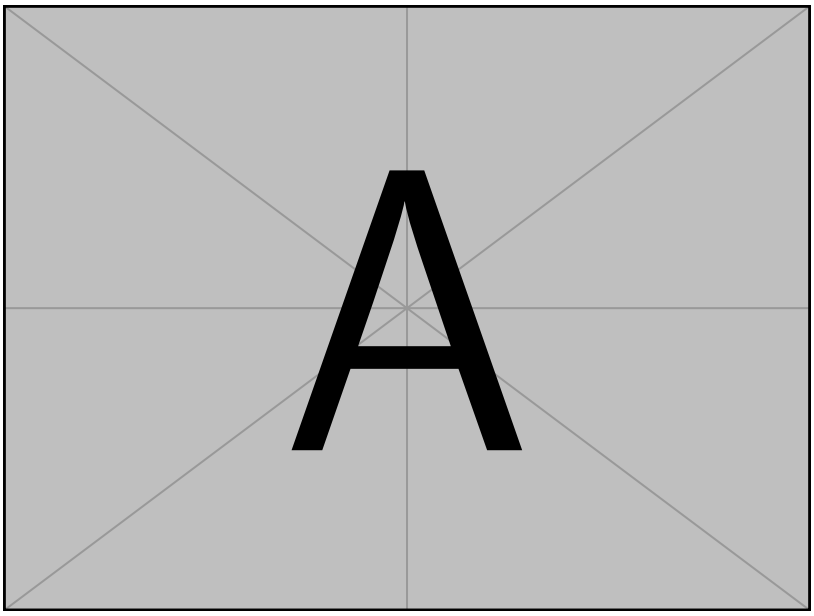
##### 5.1.2.1 Small batch – [5 points]

Q5.1.2.1



#### 5.1.2.2 Large batch – [5 points]

Q5.1.2.2




### 5.1.3 Analysis

#### 5.1.3.1 Value estimator – [5 points]

Q5.1.3.1

#### 5.1.3.2 Advantage standardization – [5 points]

Q5.1.3.2

#### 5.1.3.3 Batch size – [5 points]

Q5.1.3.1

## 5.2 Experiment 2 (InvertedPendulum) – [15 points total]

### 5.2.1 Configurations – [5 points]

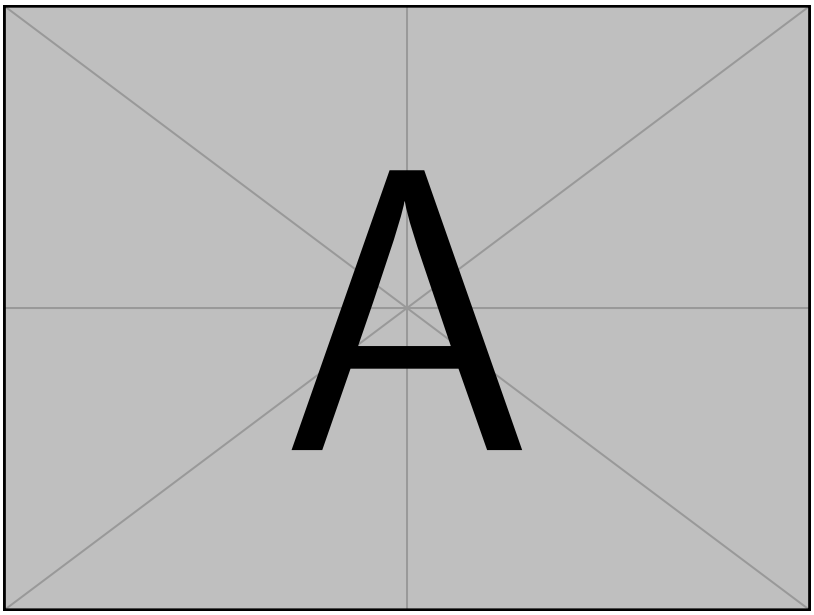
Q5.2.1

### 5.2.2 smallest b* and largest r* (same run) – [5 points]

Q5.2.2

#### 5.2.3 Plot – [5 points]

Q5.2.3




# 7 More Complex Experiments

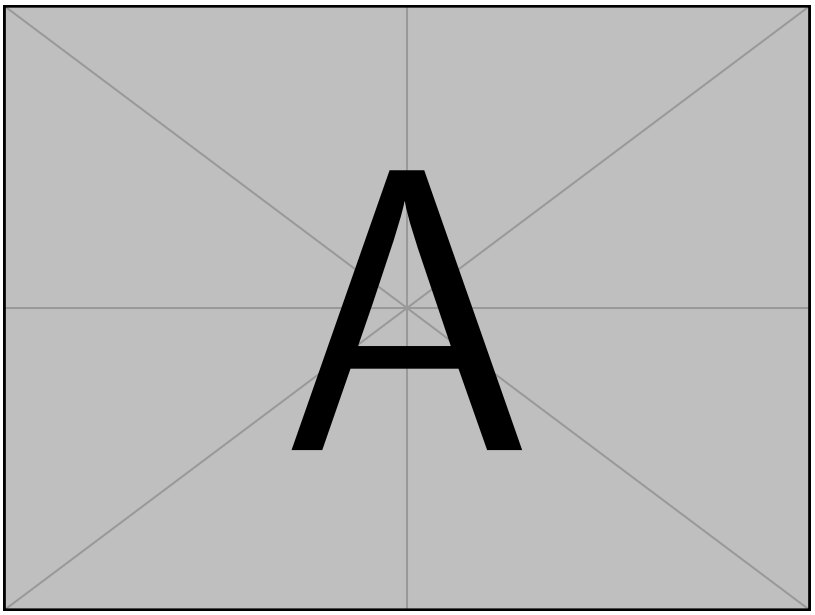
## 7.1 Experiment 3 (LunarLander) – [10 points total]

### 7.1.1 Configurations

Q7.1.1

#### 7.1.2 Plot – [10 points]

Q7.1.2



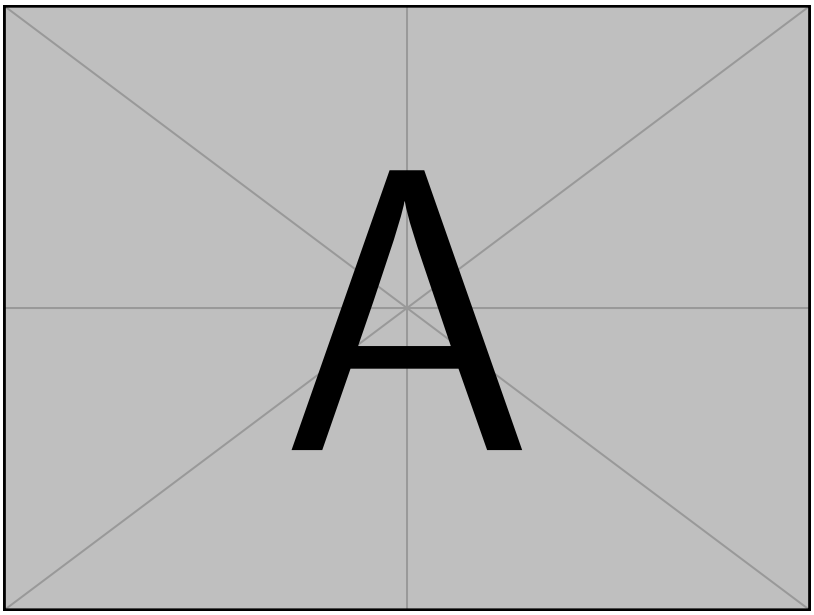

### 7.2 Experiment 4 (HalfCheetah) – [30 points]

#### 7.2.1 Configurations

Q7.2.1

#### 7.2.2 Plot – [10 points]

Q7.2.2




#### 7.2.3 Optimal b* and r* – [3 points]

Q7.2.3

#### 7.2.4 Describe how b* and r* affect task performance – [7 points]

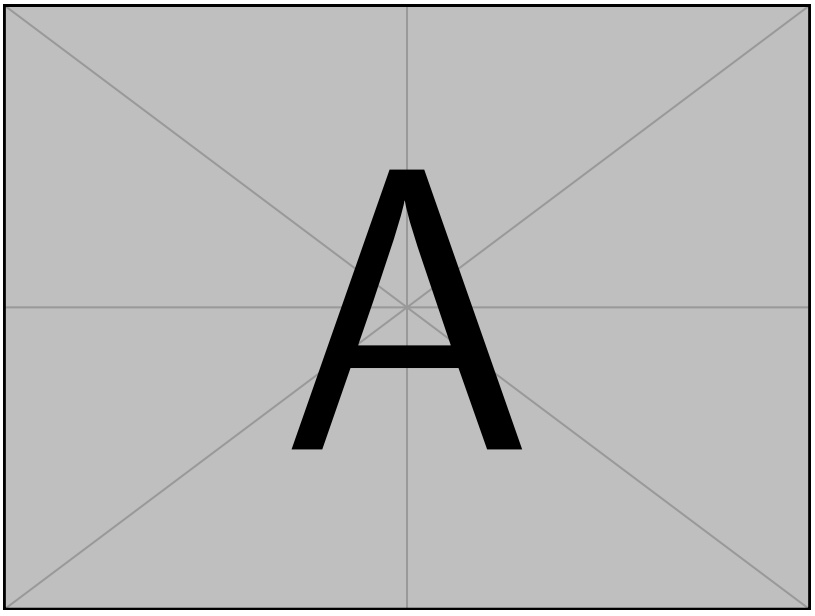
Q7.2.4

#### 7.2.5 Configurations with optimal b* and r* – [3 points]

Q7.2.5

#### 7.2.6 Plot for four runs with optimal b* and r* – [7 points]

Q7.2.6




## 8 Implementing Generalized Advantage Estimation

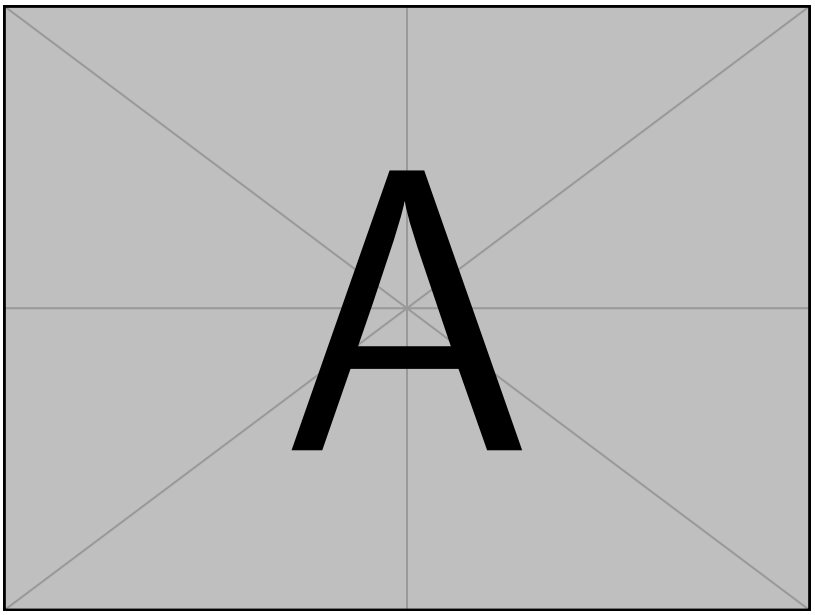
## 8.1 Experiment 5 (Hopper) – [20 points]

### 8.1.1 Configurations

Q8.1.1

### 8.1.2 Plot – [13 points]

Q8.1.2




### 8.1.3 Describe how $\lambda$ affects task performance – [7 points]

Q8.1.3

# 9 Bonus! (optional)

## 9.1 Parallelization – [15 points]

Q9.1

Difference in training time:

## 9.2 Multiple gradient steps – [5 points]

Q9.1