# LD Assignment 3

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## 1  Introduction

In this report we will demonstrate the efficiency of the independant learners algorithm in the context of a simple environment in which robots must navigate to a goal while avoiding to share a doorway space with another.

## 2  Enviroments

### 2.1  grid1.txt

```
robot1: (0, 0)
goal1: (4, 4)

robot2: (4, 0)
goal2: (0, 4)
```

```
* _ W _ *

_ _ W _ _

_ _ D _ _

_ _ W _ _

* _ W _ *
```

## 2.2 grid2.txt

```
robot1: (1, 0)
goal1: (5, 6)

robot2: (5, 0)
goal2: (1, 6)


W * _ W _ * W

_ _ _ W _ _ _

_ _ _ D _ _ _

W W D W D W W

_ _ _ D _ _ _

_ _ _ W _ _ _

W * _ W _ * W
```

## 2.3   grid3.txt

```
robot1: (1, 0)
goal1: (5, 6)

robot2: (5, 0)
goal2: (1, 6)

robot3: (5, 6)
goal3: (1, 0)

robot4: (1, 6)
goal4: (5, 0)


W * _ W _ * W

_ _ _ W _ _ _

_ _ _ D _ _ _

W W D W D W W

_ _ _ D _ _ _

_ _ _ W _ _ _

W * _ W _ * W
```

# 3  experiment

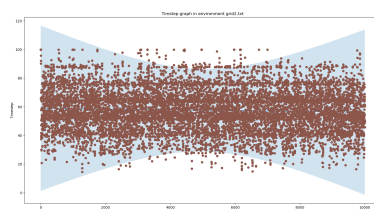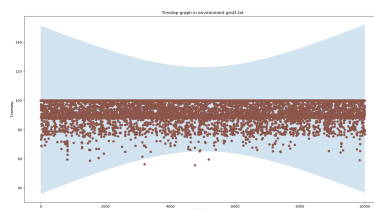## 3.1  Independant Learners

### 3.1.1  time
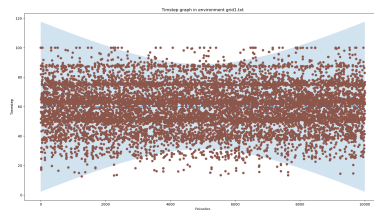


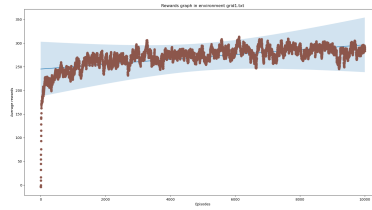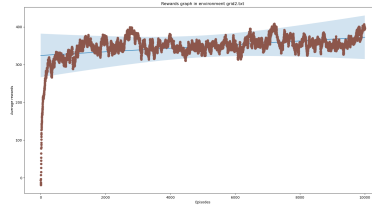Figure 1:



Figure 2:



Figure 3:
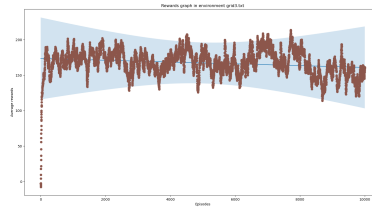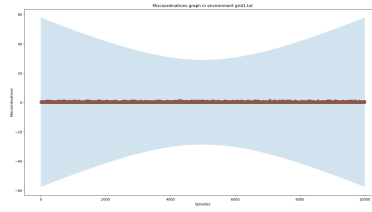
### 3.1.2 rewards



Figure 4:
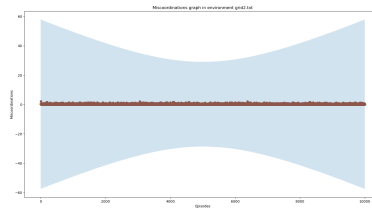


Figure 5:
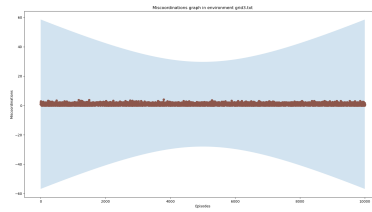


Figure 6:

### 3.1.3 miscoordinations



Figure 7:



Figure 8:



Figure 9: