Lecture Inotate2

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Mars_rover

```
def mars_rover(t):
    u = np.random.uniform()
    this_state = 's'+str(t)
    # state s1
    if this_state == 's1':
        if u <= 0.6 :
            next_state = 's1'
        else :
            next_state = 's'+str(t+1)
    # state s7
    elif this_state == 's7':
        if u <= 0.6 :
            next_state = 's7'
        else :
            next_state = 's'+str(t-1)
    # state s2 ~ s7
    else :
        if u <= 0.4 :
            next_state = 's'+str(t+1)
        elif u <=0.6 :
            next_state = this_state
        else :
            next_state = 's'+str(t-1)

    return next_state
```

```
def cost_eval(path):
    cost_path = path.count('s1')*1+path.count('s7')*10
    return cost_path
```

MC_simulation

```
def MC_simulation(initial,num_episode,time):
    # MC_N = num_episode, episode_i = count
    episode_i = 0
    cum_sum_G_i = 0
    while episode_i < num_episode :
        path = ['s'+str(initial)]
        this_state = initial
        for i in range(time-1):
            next_state = mars_rover(this_state)
            this_state = int(next_state[-1])
            path.append(next_state)
        cum_sum_G_i += cost_eval(path)
        episode_i += 1
    state_value = cum_sum_G_i/num_episode
    return state_value
```

```
MC_simulation(1,100,10)
```

```
## 5.13
```

```
MC_simulation(1,1000,10)
```

```
## 5.037
```

```
MC_simulation(1,10000,10)
```

```
## 5.1314
```

Inotate2.Rmd

```
"Hello"
```

```
## [1] "Hello"
```