Haonan Hu

3/4/2021

2863545

## **In-Class Problem**

Using the grasping-an-object model from the lecture and the training samples to the right:

- 1. Calculate the State Transition matrix.
- 2. Calculate the Emissions matrix.

Sample	State	Emission	
1	No Action	000	
2	No Action	000	
3	No Action	000	
4	No Action	000	
5	No Action	000	
6	No Action	000	
7	No Action	000	
8	No Action	000	
9	No Action	100	
10	Reaching	000	
11	Reaching	011	
12	Reaching	100	
13	Grasping	011	
14	Grasping	011	
15	Grasped	000	

**HMM Classifiers** 

David O. Johnson EECS 690 (Spring 2021)

3

## 1. Calculate the State transition matrix

	No Action	Reaching	Grasping	Grasped	
No Action	0.57	0.07	0.00	0.00	
Reaching	0.00	0.14	0.07	0.00	
Grasping	0.00	0.00	0.07	0.07	
Grasped	0.00	0.00	0.00	0.00	

## 2. Calculate the emissions matrix

	000	001	010	011	100	101	110	111
No Action	0.89	0.00	0.00	0.00	0.11	0.00	0.00	0.00
Reaching	0.33	0.00	0.00	0.33	0.33	0.00	0.00	0.00
Grasping	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
Grasped	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00