UNIVERSITI TEKNOLOGI MALAYSIA

FACULTY OF ENGINEERING

SCHOOL OF COMPUTING

SESSION 2020/2021 SEMESTER 1

SCSJ 3553: ARTIFICIAL INTELLIGENCE

SECTION 07

ASSIGNMENT 2

COVID-Multi Scanner(CMS)

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1.0 STATE SPACE SEARCH

1.1 Details of State and Action

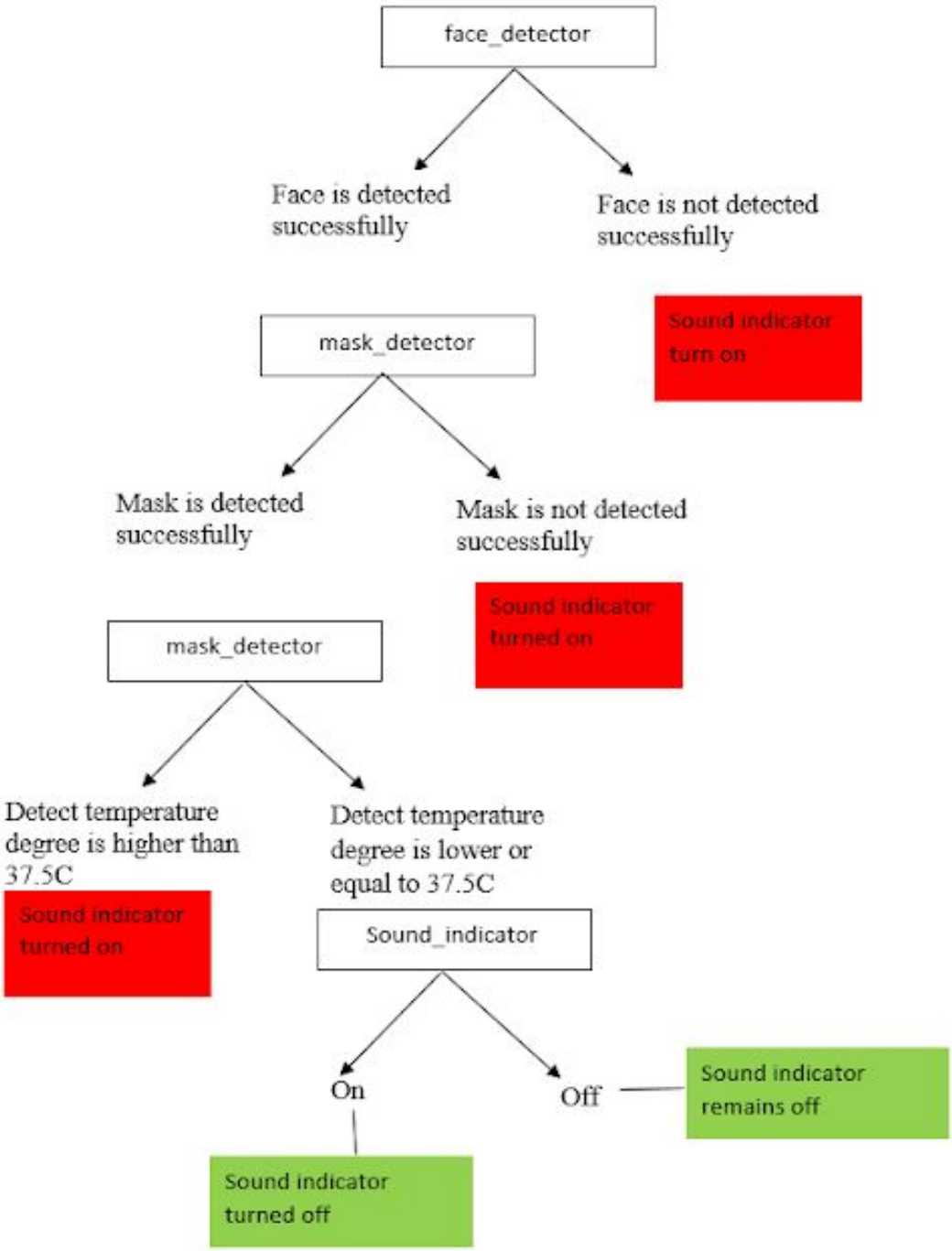
1st State : The face detector will detect whether there is information on the face or not. If the information found, the sound indicator remains off.

2nd State :After checking the face information, the mask detector will detect whether there is a mask wearing on the face or not. If the mask is detected, the sound indicator remains off.

3rd State : After checking if the mask is wearing, the temperature detector will detect whether the temperature of people is lower or equal to 37.5C or not. If lower or equal to 37.5C, the sound indicator remains off.

4th State : After checking if the temperature of people is higher than 37.5C, the sound indicator will change. If the indicator is off, then it will turn to on. If the indicator is on, it will remain on.

Overview Action Graph



1.2 Hypergraph

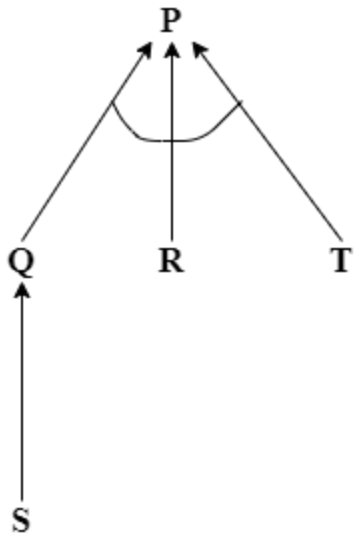
P = CMS sound indicator turn off.

Q = Mask detector detects the mask.

R = Face detector detects the face.

T = Temperature detector detects temperature with temperature <= 37.5℃.

S = **Current CMS sound indicator turn off.**



P = CMS sound indicator turn off.

Q = Mask detector detects the mask.

R = Face detector detects the face.

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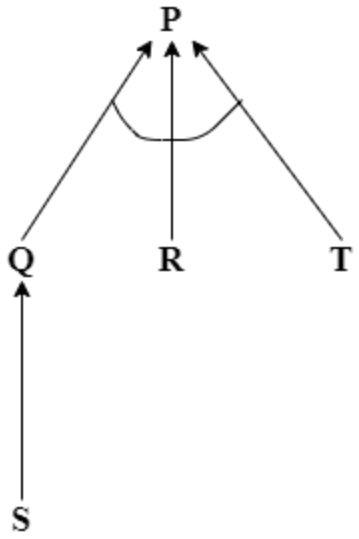


1.3 Problem Formulation

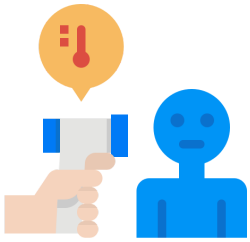
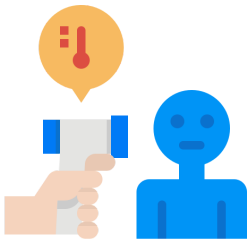
Initial State : The system needs to scan the face to get all the detailed information and see whether it is wearing a face mask or not. After that, scan the temperature below 37.5 °C to make sure the sound detection goes off.

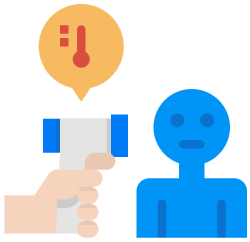
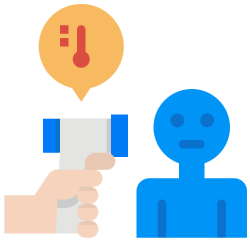
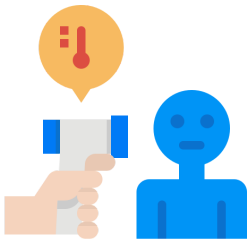
Action : To detect face, mask, scan temperature.

Goal : Sound detector off.

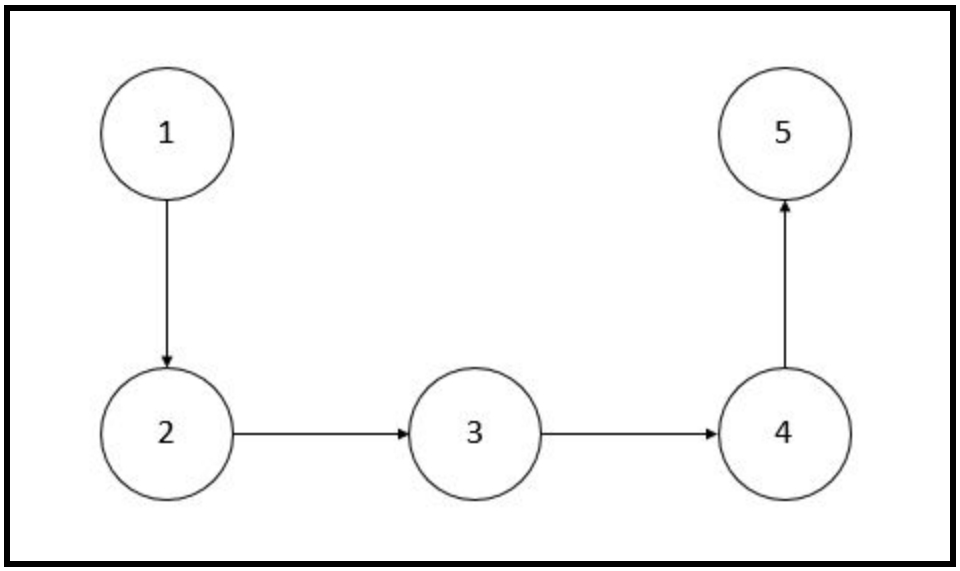
Path Costs : One unit per action

1.3.1 Table of Problem Formulation

	Face Detector	Mask Detector	Scan Temperature	Sound
1.	 Undetected	 Undetected	 Above 37.5	
2.	 Undetected	 detected	 Below 37.5	

3.	 Detected	 Undetected	 Below 37.5	
4.	 Detected	 Detected	 Above 37.5	
5.	 Detected	 Detected	 Below 37.5	

1.4 Sequence of Action Leading From Initial State to Goal State



1.5 Explanation of Formulate Problem To Support The Proposed KR

1. Show that if the face detector and mask detector were not detected and the temperature above 37.5 the sound indicator produced a sound. As shown in KR8 where the sound indicator produced a sound. The sound indicator will remain on if the temperature below or equal to 37.5 when the face and mask is not detected as shown on KR4.
2. The face detector was not detected, the mask detector was detected and the temperature above below 37.5 . The sound indicator produced a sound as shown in KR3. Same as KR7 when the face was not detected, the condition of the mask detector and temperature detector is not important.
3. When the face indicator was detected but the mask indicator was not detected and the temperature below 37.5 the sound indicator produced a sound as shown in KR2. This shows the mask must be detected before the temperature detector starts to detect the temperature as shown in KR6.
4. If the face indicator and mask indicator were detected but the temperature above 37.5 , the sound indicator also produced a sound as shown in KR5.
5. The face detector and the mask detector were detected and the temperature below 37.5 . The sound indicator did not produce any sound as shown in KR1.