

# Artificial Intelligence Assignment 1

<b>Events</b>	<b>Deterministic</b>	<b>Stochastic</b>
Playing Soccer		X
Brushing your teeth	X	
Playing Tennis Match		X
Practising tennis against a wall	X	
Deciding what to take for lunch	X	

<b>Events</b>	<b>Episodic</b>	<b>Sequential</b>
Playing Soccer		X
Brushing your teeth		X
Playing Tennis Match		X
Practising tennis against a wall	X	
Deciding what to take for lunch	X	

<b>Events</b>	<b>Static</b>	<b>Dynamic</b>
Playing Soccer		X
Brushing your teeth	X	
Playing Tennis Match		X
Practising tennis against a wall	X	
Deciding what to take for lunch	X	

<b>Events</b>	<b>Discrete</b>	<b>Continuous</b>
Playing Soccer		X
Brushing your teeth		X
Playing Tennis Match		X
Practising tennis against a wall		X
Deciding what to take for lunch	X	

<b>Events</b>	<b>Fully observable</b>	<b>Partially observable</b>
Playing Soccer		X
Brushing your teeth	X	
Playing Tennis Match		X
Practising tennis against a wall	X	
Deciding what to take for lunch	X	

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Events	Single agent	Multi-agent
Playing Soccer		X
Brushing your teeth	X	
Playing Tennis Match		X
Practising tennis against a wall	X	
Deciding what to take for lunch	X	

## Reasons:-

### → PLAYING SOCCER MATCH

Any player in the match does not know what the other player might do. They make informed guesses about other player's action (uses probability) and act accordingly. The result depends not on the current actions but collective of all the actions taken by all players in the match, and is beyond the control of any specific agent. So this is a **stochastic** event.

Any event in a soccer match has potential to affect future decisions. For e.g.:- a successful corner kick might result in a goal, and so the goalie has to try to save while striker has to try to head the ball into the nets, in case of a failure of the kick the events might be different. The episode of one agent affects the episode of other agent, so it is a **sequential** event.

Environment in a soccer game constantly changes as 19 other players, and the ball keep moving (with respect to an agent ; not considering goal keepers). So a player has to constantly consult the environment and then take any action. Hence, this is a **dynamic** environment.

A player in a soccer match has to constantly take decisions like, where to move, how to move, which path to take, where to pass, how to pass, speed of pass etc. So it is a **continuous** event.

In a match, a player does not know what other player might do. He does not know where he might move or where he might kick. A player has to make informed guesses from his body posture etc. and does not know what other players are thinking. This inability to sense whole environment makes soccer match a **partially observable** event.

More than one player participates in a soccer match and affects its outcome. Thus, it is a **multi-agent** event.