**BLG435E, Artificial Intelligence, Fall 2017-2018**

**Assignment #3**

**Name: Gamze AKYOL**

**Number: 150140142**

**Q1)** I selected question **a)** to be answered.

I selected the Sims as my favourite video game. The Sims is a life simulation game. In the game, the player can control only one character at a time but there are other characters in the game which can move and act according to their personalities and needs. The personalities of each character are determined at the beginning of the game.

The AI techniques used in this game can be listed as following: **path finding (searching)**, **decision making** and **controlling non played characters (NPC).**

**P.S:** I cannot decide that adjusting **social interactions** is an AI technique or not, so I indicated this topic as extra.

**Path finding:** The Sims uses **Hierarchical Pathfinding A\* (HPA\*)** which is adaptedfrom A\* algorithm. HPA\* algorithm is working among groups of waypoints, instead of working with waypoint. HPA\* does searching hierarchically by dividing the waypoints into regions. In the Sims, the regions are rooms. HPA\* is run on a graph whose nodes’ are rooms.

**Decision making:** There exists basic needs (hunger, comfort, hygiene, bladder, fun etc.) of a Sim(In the Sims, a person is called as Sim.) and there are some activities which supply Sim’s needs and increase happiness. A Sim, which is not controlled by the player, makes decisions according to supply its needs and increase happiness. For making decisions, decision tree learning could be used.

* **Smart object paradigm:** In the Sims, objects have logic instead of a Sim. Objects offer options to a Sim that can serve.
* **Personalites:** Each Sim has a different personality and a Sim also can make decisions according to its personality.

Non-played characters are controlled from computer according to these aspects.

**Extra: Social interactions:** Sims have relationship levels and these levels allow Sims different interactions. These levels can be indicated by an automaton. The results of the interactions are coded in low-level rules. [1]

My suggestion to the Sims could be that babies and children can learn something with **reinforcement learning** and improve their characters from their experiences.