# **GAZE SIMULATION PERCEPTION STUDY**

**Question 1.1** - Please rate the realism of the gaze behavior in simulation video from 1 to 5. Original video should be considered as 5.

**Question 2.1** - Please rate the realism of the gaze behavior in simulation video from 1 to 5. Original video should be considered as 5.

**Question 2.2** – The simulation on the left-hand side is the same video we showed in Scenario 2.1. However, to get simulation which is played on the right-hand side we have increased the **impact of one parameter** **in the simulation** and this caused the male agents to look at the female agent **a few seconds later**. Which of followings can it be?

1. Height
2. Periphery
3. Attractiveness
4. Speed
5. None of the above

**Question 3.1** - Please rate the realism of the gaze behavior in simulation video from 1 to 5. Original video should be considered as 5.

**Question 3.2** – The simulation on the left-hand side is the same video from Scenario 3.1. We have changed **impact of one parameter in the simulation**, and we achieved the right-hand video. The difference is, **one of the male agents**, who walk in a group, at one point in the simulation chose to look at the male agent in the suit instead of the female agent. **Other two agents** in the same group continue to look at the female agent. Which parameter can be the reason of this change?

1. Speed
2. Height
3. Proximity
4. Attractiveness
5. None of the above

**Question 3.3** – In Scenario 3.3, which of the followings can be the main reason that all of the agents look at the walking man in the suit?

1. Proximity
2. Speed of the man in the suit
3. Shyness of agents
4. Height of the man in the suit
5. Gaze copy feature

**Question 4.1** - Please rate the realism of the gaze behavior in simulation video from 1 to 5. Original video should be considered as 5.

**Question 4.2** – In Scenario 4.2, what can be the reason for the agents with green arrow to look at the agent with red arrow?

1. Proximity
2. Shyness of looking agents
3. Speed of the agent with red arrow
4. Attractiveness of the agent with red arrow
5. Height of the agent with red arrow

**Question 5.1** - Please rate the realism of the gaze behavior in simulation video from 1 to 5. Original video should be considered as 5.

**Question 5.2** – In Scenario 5.2, what can be the reason for the gaze behavior of the agent with yellow t-shirt?

1. His attractiveness value
2. Gaze copy
3. Speed of other agents
4. Height of other agents
5. His low shyness value

**Question 6.1** - Please rate the realism of the gaze behavior in simulation video from 1 to 5. Original video should be considered as 5.

**Question 6.2** – In Scenario 6.2, considering the female agent has high shyness value (meaning it’s quite hard for her to look at any other agent), what may be the reason for her to look at the walking male agent?

1. Gaze copy
2. Speed of the walking male agent
3. Proximity
4. Grouping factor
5. Orientation

**Question 7.1** - Please rate the realism of the gaze behavior in simulation video from 1 to 5. Original video should be considered as 5.

**Question 7.2** – In Scenario 7.2, why does the agent look at the bicycle, but not the trees or the cabins?

1. His shyness
2. His walking speed
3. Proximity
4. Attractiveness
5. Distinctiveness of the object

**Question 8** – In Scenario 8, in both of the videos all parameters of the male agent are unchanged. Why does the male agent look at the attractive female agent only in the left-hand side video, but not in the right-hand side video? Which feature can cause this?

1. Gaze copy
2. Speed
3. Proximity
4. Shyness
5. Grouping factor

**Question 9** – Scenario 9 - In both of the videos all agents are running, but **one agent** is **walking**. In the video on the left, all agents look at the running agents. However, in the video on the right running agents look at the walking agent.  What can be the reason of this?

1. Shyness values of agents are higher in the right-side video
2. Speed of agents has changed
3. Crowd norm speed is higher in the right-side video
4. Gaze copy
5. Grouping factor affects gaze behavior of agents

**Question 10** - Please rate the realism of the gaze behavior in simulation video from 1 to 5. Original video should be considered as 5.

## **EXPLANATION OF THE PARAMETERS**

**Proximity**: The score based on the distance between agents. As the distance gets smaller, proximity score gets bigger.

**Periphery**: As the target agent is at the edge of the peripheral angle of the viewer agent (generally entering or leaving), the periphery score is at maximum. But when in the center of peripheral angle, the score is at minimum.

**Orientation**: The score that shows how much the target agent is facing the viewer agent. When both of the agents are facing each other with 180 degrees between their movement directions, the orientation score is at maximum. (Like “Is the target in viewer’s view angle?”)

**Speed**: The speed score is determined by the difference between the speed of the target agent and the average speed of the crowd norm.

**Height**: The height score is determined by the difference between the height of the target agent and the average height of the crowd norm.

**Attractiveness**: The attractiveness score is determined by the difference between the attractiveness of the target agent and the average attractiveness of the crowd norm.

**Distinctiveness**: The score that show how distinct is the target object from the surrounding objects.

**Shyness**: As the shyness value of an agent increases, her chance to look at another agent will decrease.

**Curiosity**: As the curiosity value of an agent increases, her chance to look at an object will decrease.

**Grouping** **factor**: Like the cheerleader effect, or the reverse. When agents are in a group, the viewer consider them as a whole and uses their average scores to compute the total saliency score.

**Gaze copy**: One agent wonders where the other agent in her group looks at, then copies the gaze behavior of that group member.

**Crowd norm**: The average values of the *population* that the *crowd belongs to*. Agents are considered different with respect to the crowd norms. In a crowd with 1.60m average height, an agent with 2.10m height grabs attention. 1.60m is not the average values of the agents in the scene, it is given as the desired average value of the population living in the area in which the scene takes place. (for example, crowd norm values of the university campus on a specific day).

**Weights**: The total saliency score that determines whether an agent should look at the target or not is computed with a weighted sum function.

Each parameter has a weight in the function. e.g., as the weight of attractiveness increases, attractive agents will have a higher chance to grab attention.