INVESTIGATING THE PHENOMENON OF PERCEPTION OF BIOLOGICAL MOTION

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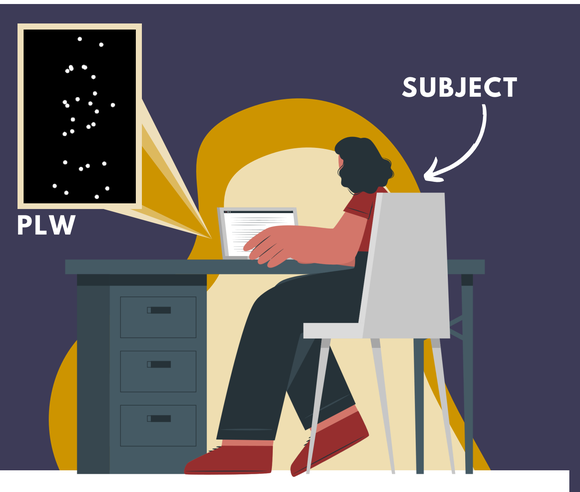
INTRODUCTION

The perception of biological motion is a visual competency developed in children at a very young age. It is the vision's resourcefulness which enables an infant to quickly discern an animate object (and its relative direction) from an inanimate environment. We set out to investigate not only a human's acute ability to assess direction of motion in foveal vision, but one's ability to do so in the periphery, too. Furthermore, we sought to investigate this through a viewpoint dependency paradigm in order to provide a 4CFA experimental strcuture. This was achieved in three steps:

1	2	3
CAPTURE HUMAN GAIT PATTERNS	PRESENT PATTERNS TO SUBJECTS	ANALYSE HUMAN RESPONSE

• HYPOTHESIS •

SUBJECTS WILL PERFORM BETTER IN BOTH LOWER LEVELS OF DOT REMOVAL AND IN FOVEAL VISION

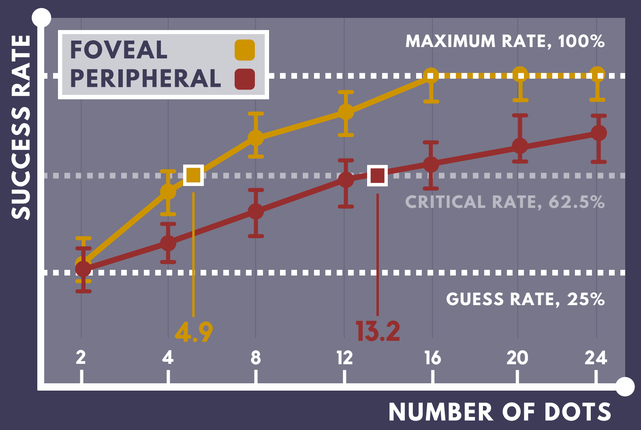


METHODS

To capture the relevant human gait data we enlisted a male subject and captured his 360 degree ambulation data. We then processed and rendered this data as a point-light walker. To display this data to the subject, maintained a constant distance between our subject and the visual stimuli using a chin and head brace. We displayed the data in the form of randomly blocked trials - varying viewpoint angle, visual degredation (number and lifetime of dots) along with peripheral eccentricity.

RESULTS

To plot the data below, we averaged the performance of all subject performances across the number of trials. It is worth noting that we testing 12 subjects over a total of 84 trials. Observing the overall shape of the subject performance, it is intuitively sensible that they take this sigmoidal shape. Note worst performance at lower number of dots and vice versa. Moreover, the subject performance in the foveal vision is superior to that in peripheral. Each of these confirms our initial hypothesis.



CONCLUSIONS

After boot-strapping in tandem with statistically testing a critical number of dots, we can say that, on average, humans are better at perceiving biological motion in their foveal vision than in the periphery. Moreover, fewer dots leads to a lower resolution, which leads to a worse perception. We could also draw some other conclusions from our data:

1. HUMANS FIND TYPICAL VIEWPOINTS (MOSTLY) EASY
2. HUMANS FIND ATYPICAL VIEWPOINTS DIFFICULT

The data produced by our experiments has a variety of applications. The perception of biological motion is a skill we utilise in enumerable tasks throughout our everyday life. Something as simple as recognizing the direction of motion of a construction worker is informed by this phenomenal skill.