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# Searching of Gender from Biological Motion Using MATLAB

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## ABSTRACT

Biological motion is those which contain information about the identity of an agent as well as about his or her actions, intentions, and emotions etc. It also contains many form of information. Observers are usually able to tell 'what' action is being performed (e.g.: walking versus running),'how' it is being performed (e.g.: quickly vs slowly) and by 'whom' (e.g.: a young versus an old actor).The human visual system is highly sensitive to biological motion and is capable to extract socially relevant information from it. Here we investigate the question of 'How such information is encoding in biological motion patterns and how such information can be easily retrieved. A framework is developed that transforms biological motion into a visual representation allowing for analysis using linear methods from statistical patterns .By Considering Classification of gender as an instance, we can say simple classifiers are constructed and compared to psycho-physical data from human observers. Here, we use the visual search to explore perception of gender-from-motion. Observers were asked to point a figure showing walking of a male or female gate among distractors having the same form but opposite motion. The point-light walkers moved along random path in a 3-D visual environment. The set size is varied between 1 and 4, and targets were presents on 50% of the trials. The proposed framework can be used not only for biological motion analysis but also to arrange new motion patterns.

**Keywords** : Biological motion, Observer, Classification

## I. INTRODUCTION

The definition of MATLAB is Matrix Laboratory. MATLAB is a highly performance language which is mainly used for technical computing. It add computation, visualization & programming environment. It is a modern programming language environment with sophisticated data structures. It contains built-in editing and debugging tools, and supports object oriented programming. As we know, the human visual system is in extreme sensitive to animate motion patterns. We quickly and effectively detect another living being in a visualized way, and we can recognize many aspects of biological, psychological, and social significance. Human motion, for example, contains a huge amount of information about the action, intention, emotion, and features showing personality of a person. What our visual system seems to solve so effortlessly is still a puzzle in perception research and an unsolved problem in computer observation. Little is known about exactly how biologically and psychologically important information is encoded in visualized patterns in motion. This study aims to provide a general framework that can be used to address this question. The approach is based on transforming biological motion data into a representation that mainly allows for analysis i.e. surveying using linear statistics and pattern recognizing. To demonstrate the potential of this structure, we construct a classification of sex i.e. male and female and compare its performance with the presentation of human observers that classify the same incentive.

Around 30 years ago, Gunnar Johansson during (1973-1976) introduced to experimental psychology, where a visualized incentive were designed to distinguish biological motion info from different sources of information that are generally combined with motion information. Here he attached small point in the form of lights to the main joints of a person's body and captured the visual so that only the lights were visible in front of an observer otherwise the background will be

homogenously dark. Using these displays, he describes the imperative power of emotional organization from biological motion through few light points and gender classification was used as an instance to test how suitable the proposed motion data is used for classification purposes. Other attributes of a walker such as age, weight, emotional state, or personality traits could be treated as similar. However, the database that we used here has to be extended to get better representation of such attributes. At this point, the sample of walkers is still quite same and does not span a statistically representation range of age, weight, and other methods. Here the extended database is straight forward and absolutely equivalent to the gender classification problems to make the diagnostic features conveying information about other attributes from moving patterns.

## II. METHODS AND MATERIAL

**Working**

Here, a framework is created that convert biological motion into a representation allowing for analysis using linear alternatives from statistics representation and pattern determination. Using Gender determination as an Instant, simple classifiers are constructed and compared to psycho-physical data from human observers. We use the visual search to explore perception of gender-from-motion.

Observers were asked to show a figure movement of a male or female gate among distractors having the same form but opposite motion. The point-light walkers moved along random path in a 3-D visual environment. The set size is varied between 1 and 4, and targets were presents on 50% of the trials. The proposed framework can be used to synthesize new motion patterns using visualization concept through Matlab coding. The figure illustrates the 15 marker positions used in the computations. The markers are located at the major joints of the body (shoulders, elbows, wrists, hips, knees, and ankles), the sternum, the center of the pelvis, and the center of head.

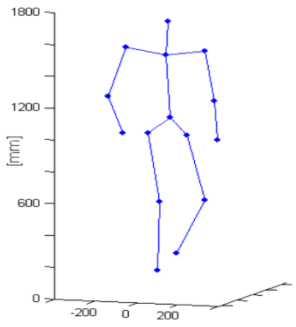


**Figure 1**

**Determination of Gender:**

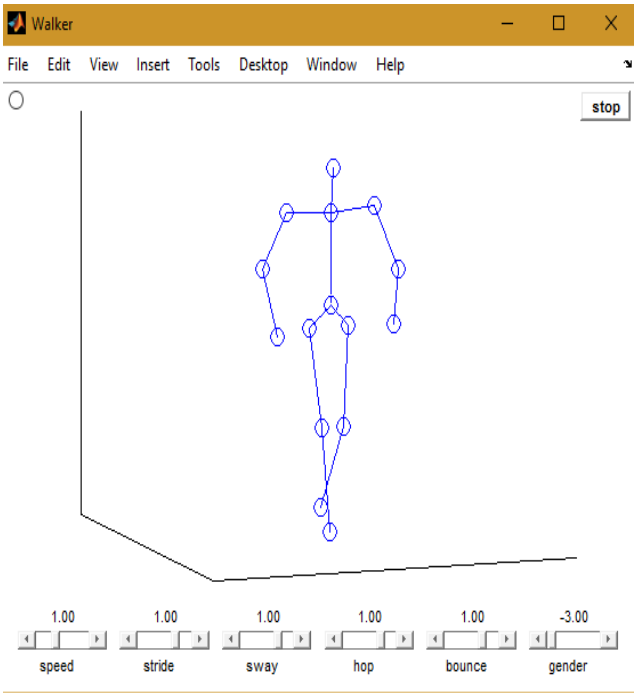


**Figure 2.** The visual representation of this figure shown male gender

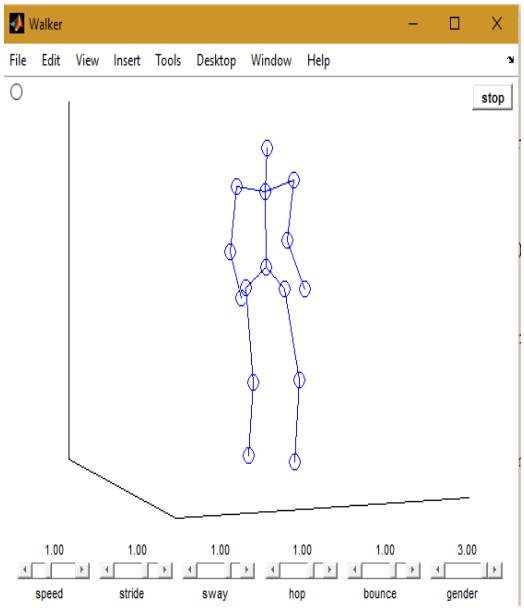


**Figure 3.** The visual representation of this figure shown female gender

## III. RESULTS AND DISCUSSION

### Observation

Based on the outlined statics of biological movement info, we are mainly prefer to justify and determine stylistic view within an event. The event which we are performing here is human walking. The stylistic deviation which we are investigating here is the differences based on r walker's gender. The aim of this event is dual here. First, we want to quantitatively determine the differences in movement style of men and women. Here, we test the success of our approach in terms of a linear classifier operation mainly based on the suggested linear (continuous) representation of a set of human walking data i.e in the form of co-ordinates. Second, we compare the achievement of the linear classifier of gender to the achievement of human observers in a gender classification process. By comparing both linear classifier as well as our human observers from the information contained in the walking patterns, we are trying to find which aspects of the stimulus are easily diagnosable and which are relevant for finding the solution of the gender classification process.

## IV. CONCLUSION

Through this Project, We have gone to the conclusion that, by designing classifiers that discriminate between Male and Female walking patterns with a performance that is even better than the performance achieved by human observers from which we can easily determine the gender through visualizing process through matlab coding.

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