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- Friday, January 25, 2008

The efficiency of biological motion perception

Human observers can easily extract information (e.g., gender and identity) from point-light biological motion sequences. A common assumption in the biological motion literature is that point-light displays are highly informationally impoverished relative to full-figure silhouette versions of biological motion displays. Our ability to easily perceive point-light sequences is then taken to suggest highly efficient use of available information. In this talk, I will describe experiments that I have conducted using ideal observer analysis to directly test these assumptions by a) quantifying the relative information contained in full-figure and point-light biological walker displays and b) determining how efficiently human observers use the available information contained in each of these kinds of displays. Surprisingly, I have found that ideal observer performance is indistinguishable for full and point-light walker stimuli in a standard left-right walking discrimination task, indicating that each kind of stimulus carries the same amount of discriminative information. However, human performance in this same task is nearly an order of magnitude worse for point-light than full figure walkers, indicating that human observers use information far less efficiently in these kinds of point-light displays. I will discuss a series of ongoing follow-up experiments designed to pinpoint the sources of the relative inefficiency human observers exhibit in discriminating amongst point-light displays

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