Retrieving information from biological motion

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Biological motion contains information about the identity of an agent, about his or her actions, intentions, emotions and expressions. The human visual system is well capable to effortlessly extract this information. Here, I outline a framework to artificially retrieve characteristics of the agent from human motion patterns and subsequently use this information to synthesize motion with particular, well-defined biological and psychological attributes. The proposed model is based on the statistics of a database of motion capture data. Based on linearization of the motion data, a motion space is defined which is spanned by the first few principal components of the data base. Using biological and psychological traits attributed to the input walkers, linear discriminant functions are computed which define vectors in the motion space that generalize the respective trait. These vectors are in turn used to generate walking patterns with the respective properties. I will introduce a web-based implementation of the proposed algorithm. Users are prompted to rate a series of point-light walkers according to whatever attribute they are interested in. Based on the ratings, the system will then compute a discriminant function and will visualize it in terms of point-light animations that caricature the chosen attribute.

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