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## Computer Vision and Image Understanding

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Special Article

### A Survey of Computer Vision-Based Human Motion Capture

Thomas B. Moeslund ... Erik Granum

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### Abstract

A comprehensive survey of computer vision-based human motion capture literature from the past two decades is presented. The focus is on a general overview based on a taxonomy of system functionalities, broken down into four processes: initialization, tracking, pose estimation, and recognition. Each process is discussed and divided into subprocesses and/or categories of methods to provide a reference to describe and compare the more than 130 publications covered by the survey. References are included throughout the paper to exemplify important issues and their relations to the various methods. A number of general assumptions used in this research field are identified and the character of these assumptions indicates that the research field is still in an early stage of development. To evaluate the state of the art, the major application areas are identified and performances are analyzed in light of the methods presented in the survey. Finally, suggestions for future research directions are offered.



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