

CAPTURING EVERYDAY HUMAN MANIPULATION

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Currently, humans are the most successful humanoids for generic manipulation tasks. We have developed a wearable system that allows us to easily capture and analyze everyday human manipulation in unconstrained environments from a first person perspective. This system can serve as a useful platform for research into manipulation by humanoid robots, since it couples first person video, as would be available to a humanoid robot, with motion capture data of the dominant arm. Using this system, robotics researchers can better characterize human manipulation, better test perceptual algorithms, and better understand the relationship between visual perception and manipulation. The system, shown in the figures, captures the absolute orientations of body parts and video from the first person perspective of the wearer. Given this data, our software automatically estimates a kinematic model of the wearer, kinematically detects and segments likely manipulation events, finds the relationship between the kinematic model and the camera., and visually segments important parts of the image including the arm, the hand, and the objects being manipulated.

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