

Balance Maintenance of Human-like models with whole body motion

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Recently, the generation of dynamically consistent motion of human-like models has received a great deal of attention in various areas including robotics and computer graphics. Balance control is one of the most fundamental areas in this research. Humans have great skill in balance maintenance, and they maintain their balance with whole body motion, such as rotating their arms, bending down, squatting, stepping, and so on. However, these skills have seldom been utilized for developing methods of balance maintenance of human-like models. We developed the method of balance maintenance for human-like models, in which models maintain their balance by whole body motion, such as rotating their arms, bending down, and taking a step, just as humans do. Optimization calculation for joint acceleration is performed, and motion of balance maintenance is generated as the optimal motion to control trajectories of the center of mass of the body (CM) and the zero moment point (ZMP) effectively.

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