

Main theme of the thesis lies in optical motion capture algorithms and their usage with cheap webcams. Multiple cameras connected to a single computer are taken into account, while using Video4Linux on the Linux operating system for reading image data. Two camera calibration algorithms are inspected in detail: Direct Linear Transformation and Tsai calibration. Practical part of the work deals with design and implementation of an optical motion capture system, using Reg Willson's implementation [5] of Tsai calibration. Documentation for the system contains description of calibration scene, semiautomatic procedure of retrieving calibration data, synchronization and storing data from multiple devices available on a local network. Final reconstruction of marker's 3D coordinates uses standard translational format TRC.