

In this work, we first explain the potential need and importance of 6D motion gestures, and then present a motion gesture database of comprehensive motion data, including the position, orientation, accelerations, and angular speeds, which is named “6DMG”. The database itself is easy to manage and fully portable. 6DMG contains 20 motion gestures and 5600 gesture samples recorded by 28 participants.

With this motion gesture database, we plan to investigate motion gesture recognition using a hierarchical approach. It is no longer a symbolic classification problem, and we want to have a deeper understanding of motion gestures. As in speech recognition, we are interested in robust user-independent gesture recognition based on our 6D motion gesture database, which can improve the accuracy and the design space for motion gestures. Theoretically, both the displacement in position and orientation can be inferred from the accelerations and angular speeds. Our database provides both the explicit (position and orientation) and implicit (acceleration and angular speed) 6D motion data. The data can be useful to investigate motion gesture recognition with various dimensions of tracking signals. It is also an interesting signal processing problem to make direct use of raw data with the drifting issue.

We hope this motion gesture database can be a handy platform for researchers and developers to build their recognition algorithms and a common test bench for performance comparison. Moreover, a subset of information in our database, e.g., only the accelerations, can be used. The most recent release of the 6D motion gesture database and the accompanying example programs, including the viewer, loader, and exporter, are available at: <http://www.ece.gatech.edu/6DMG>

7. REFERENCES

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