Abstract

The head tracking system in a helmet mounted display (HMD) play a vital role in obtaining its full functionality. It tracks and calculates the current location and coordinates of the pilot's head movements and updates the head movement's location in real time. They provide accurate information to the flight computer about the orientation of the head of the pilot with high degree accuracy and extremely low impact on Helmet mounted display (HMD) weight, size and packaging. The magnetic head tracking are used widely for head tracking. It determines the pilot's head position, relaying this position to the sensor, the sensor's movement to the correct line-of-sight, the sensor's acquisition of the scene, and transmitting and presenting the final imagery on the helmet mounted display. All this takes some finite time. In this paper, discussions have been made about the angular error associated with the magnetic head tracking technique which is mostly used today due to its several advantages. The magnet head tracking has been evaluated and the angular error and the factors associated with this technique have been studied in detail. Since magnetic sensors are very sensitive to environment, their operational limitation was evident in the experimental results when the magnetic receiver located on the helmet was moved away from the magnetic
transmitter in the linear as well as the angular distance. Hence, they are not easy to operate. The angular error in magnetic head tracking has been characterized and subsequently the correction algorithm has been implemented using LabVIEW in real time.

References

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Index Terms

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