An Innovative Wearable Electronic Tourist Guide Device and Automatic Guide Service

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Abstract

This paper presents the design and implementation issues of an earphone style wearable device that may provide an automatic guidance service for tourists, and a synthesis management system that provides main guide device management functions, such as device recharging, guide contents installing, and tourists usage history collection. To provide tourists an automatic guidance service, it is necessary to identify the location and orientation of the tourist in real time. To identify the location based on signal from a NFC beacon tag, an approach that can eliminate the influences from adjacent tag and give correct location identification. To identify the orientation, a MEMS sensor that provides acceleration and terrestrial magnetism information is used, and an algorithm for orientation identification is proposed. If a tourist wants to know explanation about an exhibit, what he has to do is only move to the exhibit object and stands for a moment. Then the device will automatically recognize the status of the tourist, and start an explanation about the exhibit. Based the design, the prototype of the device has been developed on an ARM SoC and RTOS platform environment. The paper presents the total route of system design such as the main
identification algorithms, and highlights the implementation approach.

References

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Index Terms

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Keywords

Wearable Device, MEMS Sensor, Tourist application, Electronic tourist guide, Communication Protocol