

Abstract: An Approach in Real time Activity Recognition Applications based on Energy Consumption in Smart Phone Sensors

Viet Vo¹, Changmoo Lee¹, Deokjai Choi¹

¹*ECE, Chonnam National University, Gwangju, South Korea*

E-mail: vietquangvo@gmail.com, dlckdan1004@nate.com, dchoi@jnu.ac.kr

Corresponding Author: Deokjai Choi

Abstract

Nowadays, recognizing human activities is an important subject; it is exploited widely and applied to many fields in real-life, especially health care or context aware applications. With the fast-paced development of computing and processor technologies, mobile devices have almost sufficient computation and communication capabilities to support mobile activity recognition applications based on sensor data fusion approaches. However, most existing mobile devices are powered by battery with limited energy resource and memory storage. With the tendency using machine learning on battery-powered mobile devices in recent years, how to efficiently utilize the limited power source has become one of the major challenges. Furthermore, most of the research within the machine learning community has ignored issues like memory usage and power consumption of processors running these algorithms. In this paper we investigate how machine learning models can be developed in resource constrained portable devices by using artificial neural network (ANN). We implemented the real-time activity recognition application with potential Google android platform. Data were collected from five volunteers during three everyday activities including walking, running and bicycling. The trained model from power machine is implemented on an independent smart phone for testing. Experimental results showed the feasibility in accuracy and energy consumption of proposed method.

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