

Abstract: Signal Fusion Based Context Inference Reflecting the Lapse of Time

Shinsook Yoon, Donghyok Suh^{1*}, Kwangsun Ryu, Kwang Deuk Kim², Keun Ho Ryu^{*}

¹*Department of Multimedia Communication, Far East University,
Eumseong, Chungbuk, 369-700, Korea*

*Department of Computer Science, Chungbuk National University,
Cheongju, Chungbuk, 361-763, Korea*

²*Dept of Renewable Energy Research, Korea Institute Energy Research
{yss28@daum.net}, {hanhwaco@kdu.ac.kr}, {niceplay1313@naver.com}
**{kdkim@kier.re.kr}, {khryu@chungbuk.ac.kr}*

Abstract

Many studies on context inference in the wireless sensor network system have been actively conducted. In fact, the context of real world, which the wireless sensor network system recognizes through a sensor, is frequently variable. Therefore, the context change in accordance with the lapse of time should be taken into consideration in terms of context awareness. The existing representative study reflecting the lapse of time applies Kalman Filter. The idea of a method using Kalman Filter is to calculate an actual measurement value and a computed value, and compare them to find an error, and then to do recursive computation to estimate a position in accordance with the lapse of time. Although the method is excellent in estimating a position according to the lapse of time, but has the limit of inferring context information of an object. Therefore, we proposed a method of context inference in consideration of the lapse of time. On the basis of Dempster-Shafer's Evidence Theory, multi-sensor data fusion was executed in each time zone, and after that, each focal element's belief and uncertainty were fused into one at an interval of a given time to reflect the context change after the lapse of time. As a result, the proposed method in this paper made possible context inference reflecting the context change in accordance with the lapse of time.

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