



SMARTPHONE-BASED ENVIRONMENTAL SENSING USING DEVICE LOCATION AS METADATA

Kaori Fujinami

Graduate School of Engineering

Department of Computer and Information Sciences

Tokyo University of Agriculture and Technology

2-24-16 Naka-cho, Koganei, Tokyo, Japan

Emails: fujinami@cc.tuat.ac.jp

Submitted: July 5, 2016

Accepted: Nov. 3, 2016

Published: Dec. 1, 2016

Abstract- The people-centric sensing community is paying substantial attention to the smartphone as an ad hoc, low-cost, and dense sensing method because it permits people to participate easily in sensing activities, i.e., just by carrying it as usual. People carry their smartphones in various manners, rendering measurement results unreliable. For example, humidity is typically higher in a trouser pocket than around the neck as a result of sweat. In this article, we propose a platform for people-centric sensing that considers the on-body position of a smartphone as metadata. A general architecture is presented, and a universal serial bus-based external sensing module for an Android-based terminal is developed. A heatstroke alert map that visualizes the heatstroke risk is presented as an application based on both the collected raw data and metadata using the platform.

Index terms: environmental sensing, people-centric sensing, heatstroke, smartphone, on-body device localization.