

# 정보 중심 네트워킹 기반 이헬스 정보 검색

하산 캄룰, 정성호

한국외국어대학교 정보통신공학과

## ICN-based eHealth Information Retrieval

Kamrul Hasan and Seong-Ho Jeong, Dept. of ICE, HUFs  
kamrul@hufs.ac.kr, shjeong@hufs.ac.kr

### Abstract

The patient information for eHealth is very important and sensitive, and thus it needs to be securely and immediately transferred. Individual wearable devices and a variety of different medical tools are now commonly used for better treatment. As a result, a faster and secure communication mechanism is required between a wearable device and a device management system. Information-Centric Networking (ICN) is a new paradigm for the future Internet architecture that is beneficial for faster content retrieval as well as more secure communications. In this paper, we propose an ICN-based information retrieval mechanism for eHealth services in a fast and secure way. This mechanism is very beneficial for persons with disabilities and old people in need of emergency care.

### I. Introduction

The current infrastructure of eHealth is supported in various ways, e.g., online eHealth supporting systems, and IoT-based mechanisms based on wearable devices [1]. Typically, a technology-oriented eHealth system requires the secure and faster interchange of patients' eHealth information with others, such as physicians and pharmacists. In this paper, we present an information retrieval mechanism based on ICN that allows patients to continuously check their health status and to manage their health securely and fastly, even in case of an emergency.

### II. A eHealth Information Retrieval Mechanism

Figure 1 shows the procedure for patient management that continuously monitors the patients' health condition using their wearable devices to notify the subscribed hospitals in case of emergency and generates the general output message (GOM) and emergency output message (EOM). The GOM contains the regular health information and the EOM contains the emergency health information for patients according to the information measured by their wearable devices. Both messages are stored in the mobile edge cloud (MEC) and analyzed for treatment or medication. If a patient's condition is critical, then the hospital server is notified for emergency care of the patient by sending an EOM.

EOM message extraction to construct an emergency message (EM) by a relevant doctor who may use the ICN to access the patient information database (PIB) to obtain the patient's past symptoms and prescription from the hospital server. As a result, the patient with any condition can be treated properly and timely by the ICN-based information retrieval mechanism.

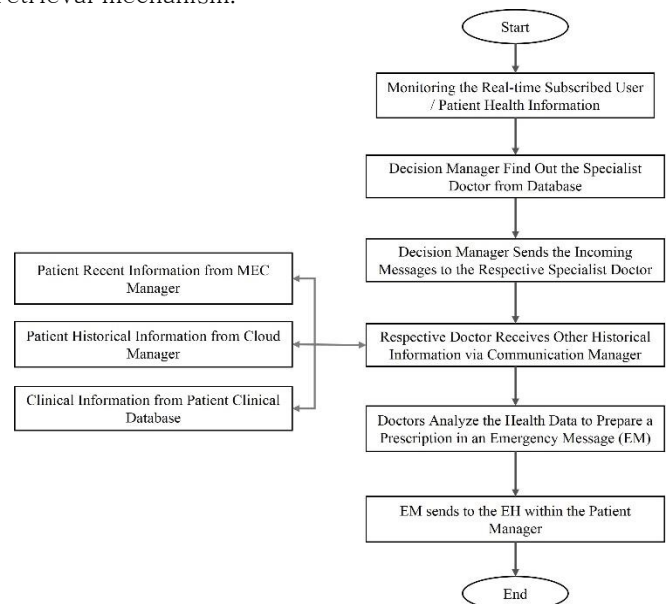


Figure 2. Hospital Service Management Procedure

### III. Concluding Remarks

This paper proposed an eHealth information retrieval mechanism where the patients' health condition is continuously monitored by the patient manager and every emergency situation of the patients is handled by the hospital server within a very short time, which is critical for the patients who are in need of immediate help.

### Acknowledgment

This research is financially supported by the Ministry of Trade, Industry, and Energy (MOTIE) and Korea Institute for Advancement of Technology (KIAT) through the International Cooperative R&D program.

### References

- [1] Kadhim, Kadhim Takleef, Ali M. Alsahlany, Salim Muhsin Wadi, and Hussein T. Kadhum. "An Overview of Patient's Health Status Monitoring System Based on Internet of Things (IoT)." *Wireless Personal Communications* (2020): 1-28.

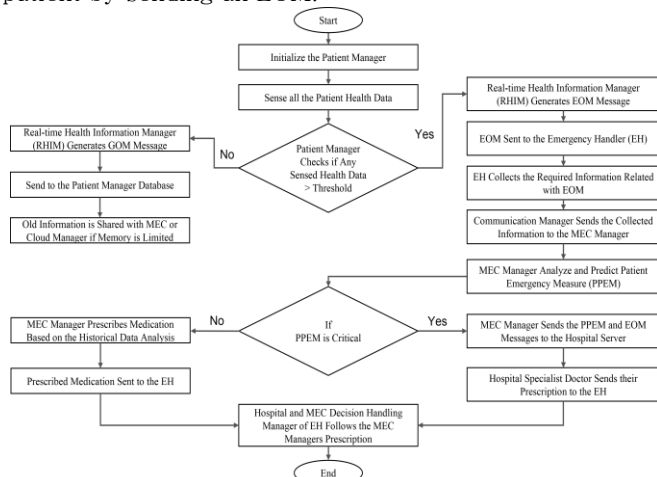


Figure 1. Patient eHealth Information Management Procedure

The procedure for hospital service management is shown in Figure 2 where the real-time patient monitoring manager receives the EOM from the subscribed patients. Figure 2 shows the complete procedure, which includes