Customized Embedded System Design for Lower Limb Rehabilitation Patients

Chae-eun LEE*, Inn-chae YEO*, Inshil DOH**

*Department of Computer Science, Ewha Womans University, Korea

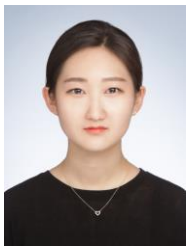
**Department of Cyber Security, Ewha Womans University, Korea

nuguziii@ewhain.net, ic0715@ewhain.net, isdoh1@ewha.ac.kr

***Abstract*— There are a number of researches about combining games with rehabilitation training to induce the interest of the patients. However, related studies mainly focus on upper body rehabilitation patients and have not dealt with accuracy of sensors. In this work, we aimed to improve the reliability of game results by implementing four step algorithm that minimizes the errors caused by sensors for lower body rehabilitation patients. Furthermore, we implemented a customized game system for the patient by collecting patient data and allowing the embedded smart car to move in proportion to the patient's movement.**

***Keyword*— lower limb rehabilitation, embedded system, user-customized, correction algorithm**

Chae-eun Lee Author
Born in Korea on March 14, 1996.
Department of Computer Science, Ewha Womans University, Korea (undergraduate)
Primary interests: Embedded System, Data Analysis



Innchae Yeo Author
Born in Korea on July 15, 1995.
Department of Computer Science, Ewha Womans University, Korea (undergraduate)
Primary interests: Embedded System, Artificial Intelligence

Inshil Doh Author
Inshil Doh received the B.S. and M.S. degrees in Computer Science at Ewha Womans University, Korea, in 1993 and 1995, respectively, and received the Ph.D. degree in Computer Science and Engineering from Ewha Womans University in 2007. In 2008 and 2009, she took the post-doc program at Seoul national university. From 1995-1998, she worked in Samsung SDS of Korea to develop a marketing system. She was a research professor of Ewha Womans University in 2009~2010 and of Sungkyunkwan University in 2011. She is currently an assistant professor of Software department at Ewha Womans University, Seoul. Her research interests include wireless network, wired/wireless network security, and IoT security.