



BME Fall 2023 Seminar Series

Embedded System-Based Smart Digital Healthcare

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Thursday Sept 7, 2023 11am–12pm in UTEB 150

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Abstract: This talk discusses the development and clinical testing of embedded system-based smart digital healthcare for eye disease, burns, and COVID-19. For example, Keratoconus (KC) accounts for 200,000 cases of irreversible blindness and low vision in the U.S. according to the National Institute of Health-National Eye Institute (NIH-NEI). KC is a corneal disorder that causes blurry and distorted vision by thinning and steepening the cornea. The causes of KC are Down syndrome, atopy, eczema, excessive eye rubbing, and genetic disorders. Moreover, environmental factors, such as long-lasting ultraviolet light exposure and hot climate increase KC. Eye diseases including the KC exerts a significant negative impact on the quality of life of a growing number of Americans through its association with an increased risk for low vision and blindness. Effective treatments for eye diseases reduce the risk of complications coming from each eye disease. However, some eye diseases are asymptomatic in the early stage and irreversible. Conventional solutions for eye disease detection include ophthalmologic equipment, such as optical coherence tomography (OCT), corneal topography, and fundus cameras used by ophthalmologists/optometrists. Hence, “portable,” “easy-to-access,” “easy-to-use,” and “multi-functional” solutions to detecting eye diseases of cataracts, diabetic retinopathy, and keratoconus with high accuracy are highly demanded in patient-driven health care. Our proposed embedded system-based approach to smart digital healthcare will allow the population and healthcare providers to detect diseases and monitor health conditions under a wide variety of conditions outside of the physician’s office.

Biography: Jo Woon Chong is an Associate Professor in the Department of Electrical and Computer Engineering and Bioengineering at Texas Tech University, Lubbock, TX, USA. He worked as Postdoctoral Fellow (2010-2012) in the Laboratory for Information and Decision Systems (LIDS) at Massachusetts Institute of Technology (MIT), Research Assistant Professor (2012-2016) in the Biomedical Engineering Department at Worcester Polytechnic Institute (WPI), and Visiting Researcher (2014-2016) in the Department of Biomedical Engineering at University of Connecticut (UConn). He holds a Ph.D. degree (2009) in Electrical Engineering from the Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea. Dr. Chong has researched various areas, including biomedical sensors, biomedical signal processing, non-invasive health monitoring, and health informatics. He is a co-author of 42 journal papers, 59 conference publications, and one book chapter. He has 34 patents and software registrations..

For additional information, please visit www.bme.uconn.edu or contact Prof. Fayekah Assanah at fayekah.assanah@uconn.edu or Sarah Dunnack at sarah.dunnack@uconn.edu