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Use of wearable miniaturized medical devices with Artificial Intelligence (AI) in enhancing physical medicine

Abstract:

High-quality data needs to be acquired from patients at the right time not only to build effective intelligent diagnostic decision support systems (DDSSs) and medical decision-making (MDM) tools without tedious data preprocessing steps but also to trigger the most appropriate means of treatment at the proper time, ideally in an autonomous manner without physician intervention. Within this context, wearable miniaturized medical devices instilled with Artificial Intelligence (AI) techniques equipped with geo-distributed intelligence have been taking their indispensable places in the medical field with numerous sub-disciplines to take care of patients while they are performing their daily activities. The recent advances in miniaturized mechatronics systems, sensor technologies, and AI expedite the development of such devices. Miniaturized sensors are the essential components in developing miniaturized wearable devices to perceive continuous health conditions through uninterrupted tight coupling with the human body. This research analyses the non-invasive wearable miniaturized medical devices, essential sensor components to acquire high-quality health data, and AI used in these devices to build MDM and DDSSs for improving the daily routines of people with quality suggestions, alerts, and directions.

Biography

Kaya Kuru received a Ph.D. degree in computer science/medical Informatics from METU. He completed his postdoctoral studies with the School of Electronics and Computer Science, University of Southampton, U.K. He is a Software Engineer and currently an Associate Professor of computer-information systems engineering. He is keen to apply AI to medicine to treat diseases non-invasively and has recently been involved in developing intelligent wearable medical devices. His research interests include the development of geo-distributed autonomous intelligent systems using FL, ML, DL, and DRL with CPSs.