

POSTER

Late Breaker

S.J. PARK, S. HONG, D. KIM, Y. SEO, I. HUSSAIN. *Intelligent in-car health monitoring system for elderly drivers*. *Gerontechnology* 2018;17(Suppl):186s; <https://doi.org/10.4017/gt.2018.17.s.181.00> **Purpose** The world's population is aging and the health of older adults has become a major concern. People spend a significant amount of time each day in the driver seat and some health problems occur while driving (e.g., heart attack, stroke). A driver's abnormal health may also influence the safety of other vehicles. As a result, automotive manufacturers and users are interested in including real-time health monitoring systems in vehicles. Intelligent in-car health monitoring is considered an innovative technology which is able to measure real-time physiological parameters of drivers, feed this data to the cloud, and analyze it using machine learning, artificial intelligence, and big data. Stroke is one of the deadliest diseases and affected persons often lose conscience and the ability to contact emergency services or hospital. Emergency medical assistance is necessary in order to minimize disability due to stroke. Real-time monitoring is desired to detect stroke onset during regular activities like driving. Abnormal physiological signals and facial patterns generated during stroke onset can be tracked by real-time monitoring using sensors. **Methods** A health monitoring system is developed for elderly drivers using an air cushion car seat and embedded IoT (Internet of Things) devices in order to detect stroke onset during driving. Here, we have suggested a framework of stroke onset detection using sensors and developed a system suitable for elderly drivers (Figure 1). This system can measure and analyze data of ECG, EEG, heart rate, seat pressure balance data, face/eye tracking etc. using IoT sensors. Physiological data will be feed to the cloud and analyzed using machine learning and big data, and compared with reference normal health condition data. **Results & Discussion** ECG mean and RRI values of ECG of the stroke patient is different compared to normal older adults. If any health abnormality such as stroke is found during real-time monitoring, the system will predict the type and severity of stroke and suggest possible steps. Systems may switch the car's control to autonomous driving mode if available and move the car to a safe place. Systems may also generate an alarm and send messages with available information such as position to relatives and emergency services to provide emergency assistance so that affected driver can be transferred to hospital/clinic.

Keywords: Internet of things, elderly healthcare, brain stroke, real-time monitoring

Address: 267 Korea Research Institute of Standards and Science, Gajeong-Ro, Yuseong-Gu, Daejeon 34113, Republic of Korea;

E: sjpark@kriss.re.kr

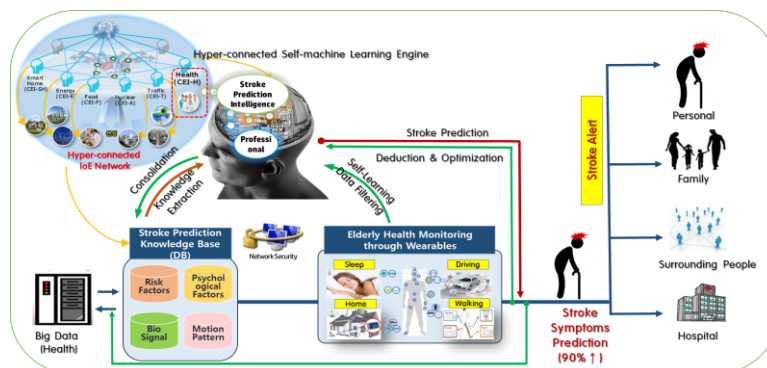


Figure 1. Framework of elderly adult health monitoring System