

DEVELOPMENT AND APPLICATION OF COMPUTER VISION-BASED TOUCHLESS HMI SYSTEM FOR ATM SYSTEMS IN COVID-19 PANDEMIC

M.G.D. Supunsara^{1*}, O.R.D. Indunil¹, A.M.B. Rathnayake², A.C. Vidanapathirana³ and T. Thevathayarajh¹

¹*Department of Science and Technology, Faculty of Applied Sciences, Uva Wellassa University, Badulla, Sri Lanka*

²*Department of Computer Science and Informatics, Faculty of Applied Sciences, Uva Wellassa University, Badulla, Sri Lanka*

³*Department of Electrical and Electronic Engineering, Faculty of Engineering, University of Peradeniya, Peradeniya, Sri Lanka*

**dinojsupunsara96@gmail.com*

COVID-19 is a pandemic that is spreading rapidly worldwide. Direct contact with an infected individual is one form of transmission. This spread has a more prominent possibility in public areas such as ATMs (Automatic Teller Machines) that people use by touching. The spread would be much more significant if an infected person used such products. This research aims to analyze and convert a traditional touch-based ATM system into a touchless computer vision-based system. A new HMI (Human Machine Interface) application was developed for the system to be a more gesture-friendly interface to interact. The new system was able to replace the touch base operations of the old system with hand gestures. A separate health-checking unit was also developed with the touchless computer vision-based system. When an individual entered to use these systems, the health conditions of the person were checked by the health check unit. The unit mainly checks each individual's body temperature, saturated O₂ level, and pulse rate. Next, if the users' health data is normal, the individual can proceed to use the HMI ATM application. The data gathered by the health check unit was sent to a cloud server so these data could be stored and used to analyze the health conditions of the people using these systems for a certain period. A mobile application was also developed to gather user data on who uses the device and integrate health check data for each individual. This prototype displayed an ecosystem for integrating the health check unit and the touchless ATM application.

Keywords: ATM application, Cloud Server, Hand gesture control, Health check unit, HMI