

MITIGATION - SCIENCE AND TECHNOLOGY ADVANCES FOR CHEMICAL AND BIOLOGICAL HAZARD MITIGATION

Development Of Unmanned Operation Indoor Decontamination System

eunmee goh Agency for defense development **Kyeong Min Cho** Agency for defense development **Heesoo Jung** Agency for defense development **Hae Wan Lee** Agency for defense development

This study is on the unmanned operation indoor decontamination system to effectively neutralize chemical and biological agents dispersed indoors. Recent global conflicts such as the Ukraine-Russia war and the Israel-Hamas conflict are escalating, leading to increased global tension. South Korea is also facing the need to prepare for the risks of terrorism and war and there is a growing necessity to secure ways to protect the safety of its citizens from chemical and biological weapons which can cause inhumane and significant loss of life. In this study, the purpose is to develop ground robots and drones to effectively and safely decontaminate the interior of buildings with chemical and biological agents. By utilizing recent advances in door autonomous driving and flight technology, it is possible to perform hazardous chemical and biological warfare agents decontamination instead of humans. Sensors are equipped to autonomously locate contaminated areas, establish a reconnaissance system with drone and robot to map contamination, develop unmanned autonomous decontamination systems with spraying modules and aim to remotely control the integrated decontamination system. To enable multiple robots to perform decontamination missions together, communication technology between robots and remote control devices for assigning task is used. Furthermore, to enable drones and robots to collaborate by being physically connected, bidirectional communication and mesh communication technology will be used between drones and robots.