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Thesis

**Mass Disasters:
People's Perception on Communication tools and a Sensor-Based
Solution for first responders**

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Abstract

This thesis explores the role of digital communication in mass disaster management through a two-part investigation. The first part presents the results of a public perception study conducted in Cyprus, which surveyed 231 participants to assess levels of preparedness, trust in digital platforms, awareness of emergency protocols, and preferences for receiving crisis information. Findings reveal that while mobile phones and digital tools are widely used, significant gaps remain in emergency number awareness, shelter knowledge, and participation in preparedness campaigns. Public confidence in the timeliness and reliability of digital communication during disasters was moderate, with many respondents expressing uncertainty or limited trust.

The second part of the study introduces a sensor-based solution for enhancing situational awareness in emergency scenarios. A human presence detection system was configured and tested in real-world indoor environments to evaluate its feasibility for identifying room-level occupancy. The system successfully detected both motion and still presence, demonstrating potential use in multi floor buildings to support emergency response teams during evacuations. Integrating such sensors with digital alert systems could significantly improve the accuracy and efficiency of rescue operations.

Together, these findings underscore the importance of strengthening both human-centered communication strategies and technological infrastructure to improve public safety in times of crisis.