

ABSTRACT

A reliable and responsive communication system is a crucial factor in supporting the success of bomb disposal operations, especially in minimizing risks for field personnel. Direct observation and communication are considered inefficient due to the potential for errors caused by stressful situations and distance limitations. Therefore, this study proposes the design of a two-way communication and real-time video streaming system based on Raspberry Pi 4 Model B as a safer and more effective alternative. The system utilizes a camera module and microphone to capture real-time field conditions, which are then transmitted via the UDP protocol using software such as GStreamer and Netcat. Audio and video data are simultaneously delivered to the receiving device to support two-way observation and communication. This system is intended for use in bomb disposal scenarios, where remote visualization and instruction delivery are critical. The proposed system is expected to improve personnel safety, communication efficiency, and decision-making effectiveness in high-risk situations

Keywords: two-way communication, video streaming, Raspberry Pi, bomb disposal, real-time system