

# Early fire warning with RFID-IoT and AI integration

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Traditional fire alert methods often prove inefficient, leading to delayed responses and severe consequences. -AFP/JEAN-PHILIPPE KSIAZEK

FIRE disasters in Malaysia have become a pressing concern, necessitating innovative solutions for early detection and alert systems.

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A data source by Ruth Wilson Das stated that Malaysia loses RM5.2 billion every year as a result of fires, the majority of which cause property damage.

According to World Health Organisation data published in 2020, fire fatalities in Malaysia were 336, accounting for 0.20 per cent of all deaths.

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The Selangor Fire and Rescue Department recorded a total of 7,350 fire incidents in the state in 2023. Malaysia has an age-adjusted mortality rate of 1.15 per 100,000 people, ranking it 104th in the world.

This financial toll does not include the extra costs sustained, such as loss of life, decreased productivity and significant annoyance. What is noteworthy is that a substantial portion of these fires is preventable.

According to another source of data, 90 per cent of households in the country do not have a fire extinguisher. Conversely, certain establishments, such as schools, shops and higher learning institutions, may possess fire extinguishers that have surpassed their expiration dates.

The three-storey Wisma Jakel building in Section 7, Shah Alam, was ravaged by a fire in early 2023. Fortunately, there were no casualties, but the incident resulted in significant losses of textile and other materials.

The deficiency in fire safety awareness contributes to increased negligence and resultant harm. Therefore, awareness about fire safety needs to be improved. The need for advanced, efficient, and proactive alert systems has never been more crucial.

The introduction of RFID-IoT and AI integration promises a paradigm shift in fire disaster solutions, providing the capability to alert authorities and communities before it is too late.

Traditional fire alarm systems have several inefficiencies, ranging from out-of-date detection methods to delayed alert transmission. As a result, fires may have disastrous effects on people and property. Thus, it is critical to investigate alternatives that have the potential to transform present fire prevention and response practices.

Integrating RFID-IoT technology provides a strong combination for improving fire detection capabilities. RFID can track assets and monitor environmental conditions, while IoT allows for real-time data gathering and transmission.

Integrating these technologies provides a dynamic and responsive system for early fire detection. There is a need to consider AI Integration to enhance fire predictions. Machine learning algorithms can predict potential fire outbreaks with high accuracy, allowing authorities to take proactive measures.

The synergy between RFID-IoT and AI creates a comprehensive solution that not only detects fires early but also predicts their likelihood. Across the globe, regions adopting RFID-IoT and AI integration in fire disaster solutions have witnessed positive outcomes. Reduced response times, minimised damage and efficient resource allocation showcase the potential impact of these technologies.

These should guide our approach to implementing advanced fire alert systems. The successful integration of RFID-IoT and AI requires addressing concerns related to technology implementation.

Collaboration between the government and private sector, coupled with transparency and education, can pave the way for overcoming initial challenges and fostering widespread adoption.

There is also a need to provide community awareness and training. Ensuring the success of advanced fire alert systems involves educating communities about fire safety and implementing training programmes.

Empowering individuals to respond effectively to alerts is as crucial as developing the technology itself. Public participation is key to creating a resilient and responsive fire prevention network.

The government's role in fostering and facilitating RFID-IoT and AI integration cannot be emphasised. Funding, regulatory backing and incentives are critical components of building a climate that encourages the broad use of sophisticated fire catastrophe solutions.

The technological landscape is always changing, RFID-IoT and AI technologies are expected to develop with time. Potential advancements that could further enhance Malaysia's fire disaster prevention capabilities are to consider their environmental impact.

While technology plays a significant role, collaboration with emergency response teams remains crucial. Improving the efficiency of rescue operations by combining technology and human skills is critical for a successful fire catastrophe response.

The combination of RFID-IoT and AI has enormous potential for transforming the approach to fire catastrophe avoidance. The combination of real-time data, predictive analytics, and community interaction results in a powerful system capable of notifying authorities and communities before it is too late.

Let's embrace technology breakthroughs and create a more secure future.