



ITEX23

An Elephant Intrusion Detector and Deterrent based on Artificial Intelligence (GajahSafe)



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PROJECT BACKGROUND



- 1. According to a report issued in 2021, the number of human-elephant conflicts (HECs) in Malaysia has increased significantly in recent years.
- 2. The proposed system involves the use of Artificial Intelligence (AI) to detect and deter elephants from entering human settlements.
- 3. The system is designed to be a non-lethal and non-invasive method of elephant management.

STATE OF THE ART/METHOD



ADVANTAGES



- 1. Integration of advanced sensor technology to detect elephant movement.
- 2. Use of non-lethal deterrents such as flashing lights, loud sirens, and water cannons to deter elephants from entering human settlements.
- 3. Utilization of AI-based algorithms to analyze elephant movement patterns and predict potential HECs.

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SCOPE OF INNOVATION

The GajahSafe system has been developed and tested in a controlled environment at the Universiti Teknologi Malaysia (UTM) campus. The system is currently being tested in a field trial in the GajahSafe area.

ACHIEVEMENTS

- 1. Awarded by Cradle, National University of Malaysia, Malaysia 2022.
- 2. Won the 1st Prize in the 2023 International Technology Innovation Competition (ITIC) 2023.

MARKETABILITY

- 1. The system is suitable for use in various areas, including national parks, wildlife sanctuaries, and agricultural fields.
- 2. The system is designed to be a non-lethal and non-invasive method of elephant management.
- 3. The system is currently being tested in a field trial in the GajahSafe area.

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UMPSA lecturer develops elephant deterrence system using artificial intelligence

26 September 2023

PEKAN, 15 August 2023 - Lecturer of the Faculty of Computing (FK), Universiti Malaysia Pahang Al-Sultan Abdullah (UMPSA), Ts. Dr. Syafiq Fauzi Kamarulzaman, 37 developed an elephant deterrence system using artificial intelligence to help detect and prevent elephants from intruding livestock farm areas.

By analysing real-time data and using machine learning algorithms, it will be able to monitor the presence of elephants on farm premises, triggering harmless deterrence and recording potential damage.

Indirectly it can reduce the risk of elephant interaction and help to plan an immediate response to the damage that occurs.

According to Ts. Dr. Syafiq, who has expertise in the application of artificial intelligence in control systems, said that this system has the concept of edge computing, where artificial intelligence technology is used to detect wild elephants in hotspots.

“When an elephant is detected, a notification will be given through the messaging system on the smartphone regarding the location including the picture of the elephant detected.

“The detected data will be recorded in the GajahSafe web application and the user can report the damage.

“Elephant activities can be predicted through the results of the data and initial preparations can be carried out according to the recorded frequency,” he said.

He added that the idea to produce this project was a continuation of the invasion and killing of pygmy elephants in Borneo in 2021.

“After discussing with Satok Bridge Digital Sdn. Bhd, we produced a prototype and it was presented at MyHackathon 2022.

“In this programme, we managed to obtain a grant worth RM250,000.00 from Cradle for the project,” he said.



Ts. Dr. Syafiq, who has an academic background in Systems and Information Engineering from the University of Tsukuba, Japan, hoped that the research outcome could help people to live more safely with wild elephants by helping to understand the interactions of wild elephants with humans.

He also hoped to reduce conflicts between wild elephants and humans so that each could live safely together and indirectly become more respected by the world community.

Through the results of the collaboration networking, they also succeeded in producing the first app prototype at CITREX 2023 and won a gold medal at the exhibition.

In addition, the second prototype exhibited at ITEX 2023 won a gold medal.

They also collaborate with the Management and Ecology of Malaysian Elephant (MEME), a body that monitors and supervises human interactions with wild elephants in Malaysia.

Currently, they are preparing a prototype for the application process at the Kluang Modern Agricultural Centre, Johor in an effort to help manage the intrusion of wild elephants in the area.

This researcher also won a gold medal through the Centred Campus Emergency Intercom System

study in the 2022 Pecipta Exhibition and CITREX 2023.

He also won a silver medal for the Artificial Intelligence-based Serverless Food Counter System.

By: Mimi Rabita Haji Abd Wahit, Centre for Corporate Communications

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