



ITEX23 An Elephant Intrusion Detector and Deterrent based on Artificial Intelligence (GajahSafe)



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KEMENTERIAN SAINS, TEKNOLOGI DAN INOVASI

PROJECT BACKGROUND

- 1. Malaysia is a major world of agricultural production. Rubber and palm oil are the main products.
- 2. Elephant intrusion on rubber and palm oil plantations has caused significant damage to the rubber and palm oil plantations in Kelantan, Sabah, and Sarawak.
- 3. The project system involves human operators and experts to detect and respond to elephant intrusion and prevent further damage to the plantations.

STATE OF THE ART/METHOD



ADVANTAGES

- 1. Integration of advanced sensor technology to detect elephant intrusion.
- 2. Use of machine learning and deep learning to detect and classify elephant intrusion and prevent further damage to the plantations.
- 3. Utilization of edge computing to process data locally and reduce latency.

LEVEL OF INNOVATION

The GajahSafe system has been developed and tested in a real-world environment with strong support and guidance from the Ministry of Science, Technology and Innovation. The solution is ready for a pilot trial in the rubber and palm oil plantations.

ACHIEVEMENTS

- 1. GajahSafe awarded by Cradle, National Culture Awards, and other awards.
- 2. GajahSafe awarded by Cradle, National Culture Awards, and other awards.
- 3. GajahSafe awarded by Cradle, National Culture Awards, and other awards.

THE INVENTION

MEME

MARKETABILITY

- 1. The system and solution owners looking to protect their rubber and palm oil plantations from elephant damage.
- 2. The system and solution owners looking to protect their rubber and palm oil plantations from elephant damage.
- 3. The system and solution owners looking to protect their rubber and palm oil plantations from elephant damage.



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.

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**Translation by: Dr. Rozaimi Abu Samah, Faculty of Chemical and Process Engineering
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