





# 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 2020, human-elephant conflict has been on the rise in Malaysia, particularly in the state of Sabah.
- 2. Elephant intrusion leads to significant economic losses for farmers and communities living in the area.
- 3. The present system utilizes a novel approach to detect and deter elephants from entering the area.

### STATE OF THE ART/METHOD



### ADVANTAGES

- 1. Utilizes a novel approach to detect and deter elephants from entering the area.
- 2. Reduces the risk of human-elephant conflict.
- 3. Provides a cost-effective solution for farmers and communities.

### ACHIEVEMENTS

- 1. Implementation of the system has led to a significant reduction in human-elephant conflict.
- 2. The system has been successfully tested in a real-world environment.
- 3. The system has been recognized as a novel and innovative solution.

### SCOPE OF INNOVATION

The GajahSafe system has been developed and tested in a real-world environment. The system is designed to detect and deter elephants from entering the area.

### THE INVENTION

The GajahSafe system is a novel and innovative solution that utilizes a novel approach to detect and deter elephants from entering the area.

### ACHIEVEMENTS

- 1. The system has been successfully tested in a real-world environment.
- 2. The system has been recognized as a novel and innovative solution.
- 3. The system has been implemented in a real-world environment.

### MARKETABILITY

- 1. The system is a novel and innovative solution that utilizes a novel approach to detect and deter elephants from entering the area.
- 2. The system has been successfully tested in a real-world environment.
- 3. The system has been recognized as a novel and innovative solution.



## **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

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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**

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

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