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PROCEEDINGS OF JOHOR INTERNATIONAL INNOVATION INVENTION COMPETITION AND SYMPOSIUM 2024 (JIIICaS 2024)



*"Flourish and Nurturing Sustainable
Innovation for a Prosperous Nation"*

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Preface

In the name of Allah, the Almighty who gives us the enlightenment, the truth, the knowledge and with regards to Prophet Muhammad (peace be upon him) for guiding us to the straight path. We thank to Allah for giving us guidance and strength to write this e-book.

This e-book compiles the extended abstracts that submitted to Johor International Innovation Invention Competition and Symposium 2024 (JIIICaS2024), where JIIICaS2024 is a virtual platform for all creative minds to share and present their invention and innovation. Each abstract gives a brief background on the innovation or project.

We hope that this e-book will help the readers to get to know the innovation done by the students and get some ideas to develop future innovation products.

Foreword Rector



Assalamualaikum warahmatullahi Wabarakatuh,
Salam Sejahtera, Salam Malaysia MADANI and
Salam UiTM Dihatiku.

In the name of Allah, the Most Gracious, the Most
Merciful.

It is a great honor to welcome you to the Johor
International Innovation, Invention, Competition, and
Symposium 2024 (JIIICaS 2024). This event

connects various disciplines, focusing on education and engaging educators,
students, researchers, and innovators from all walks of life.

Innovation is not just about ideas; it demands perseverance, creativity, and
determination to turn those ideas into reality. The remarkable projects
showcased today highlight the dedication and spirit of all participants.
Initiatives like this not only explore new technologies but also cultivate skills
and leadership among our youth. At Universiti Teknologi MARA (UiTM) Johor
Branch, we are fully committed to fostering a dynamic culture of innovation,
promoting the commercialization of new products, and encouraging
meaningful collaborations with industry and society.

As we celebrate this event, I would like to extend my heartfelt gratitude to all
sponsors, judges, the College of Computing, Informatics and Mathematics,
UiTM Pasir Gudang Campus as the event organizer, as well as to the
researchers and participants for their hard work in making this event a
success. Let us continue striving for innovation and excellence. May the
ideas presented today inspire us and lay the groundwork for future
achievements.

Thank you.

Associate Professor Dr. Saunah Zainon
Rector
Universiti Teknologi MARA (UiTM)
Johor Branch

(A-ST073) SMART MONITORING AND ANALYSIS FOR REAL-TIME ENVIRONMENTAL AND INDUSTRIAL PROTECTION (SMART-PRO)

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ABSTRACT

This study proposed a comprehensive product innovation, namely Smart Monitoring and Analysis for Real-Time Environmental and Industrial Protection (SMART-PRO). The anticipated product, SMART-PRO, addresses the pressing need for real-time environmental and industrial protection, especially in areas like Pasir Gudang, where pollution incidents have occurred. By leveraging wireless sensor networks and IoT technology, SMART-PRO aims to detect pollution early on and provide valuable data for analysis and action, with a focus on detecting pollutants such as methane gas.

Keyword: Blynk Apps, Camera, Sensor

INTRODUCTION

This study proposed a comprehensive product innovation, namely Smart Monitoring and Analysis for Real-Time Environmental and Industrial Protection (SMART-PRO). Smart Monitoring and Analysis for Real-Time Environmental and Industrial Protection (SMART-PRO) is one of the applications of wireless sensor network. The most serious environment pollution is air pollution because different air pollutant causes damage to human health and causes global warming. To avoid such effect on human health and climate change Environment monitoring systems are used. Most pollutants are invisible to the human eye. For example, methane gas. If methane leaks into the air before being used, it can warm the Earth's atmosphere. Methane is estimated to be the second largest contributor to global warming after carbon dioxide (CO₂). The main

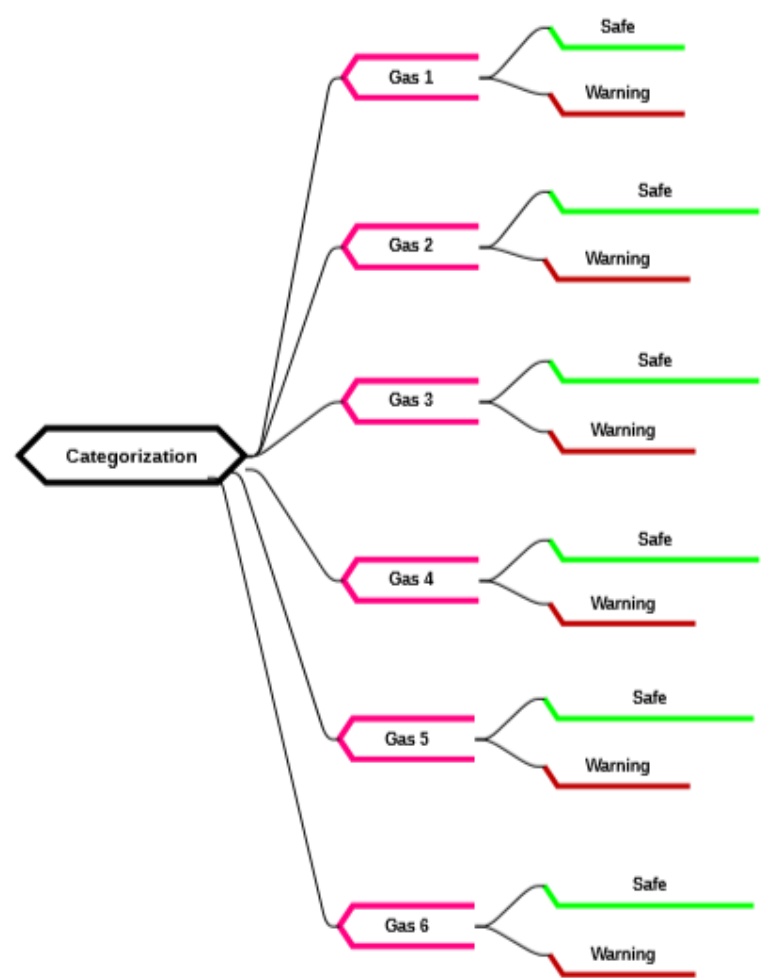
objective of this product is to know the status of pollution surrounding especially at Pasir Gudang area. According to the pollution that occurred twice in this year, so decided to create a product which is can detect pollution on early stages. This product can detect via using camera and some sensors which are temperature, humidity, intensity of light and air pressure. Next, for another main sensor that attached in this product are sensor to detect the air quality on surrounding by giving the reading value and also sensor to detect gas especially methane gas. This product are using Internet of Things (IoT) and installed by using Raspberry Pi 5.

METHODOLOGY

The first steps are collecting data and keep save in memory card. Next, transfer the data to laptop by using Internet of Things (IoT) and the results will be appeared. From the data shown at laptop, can know what the status condition environment. The different this product between another products is use the one of 9 pillar of Industrial Revolution (IR 4.0) which is Internet of Things (IoT). The comparison this product with other product is using Wireless Sensor Network (WSN). WSN can be defines as a network of small embedded devices, called sensors which communicate wirelessly following an ad hoc configuration whereas the Internet of Thins (IoT) is one step further which is more advanced compare to Wireless Sensor Network (WSN). This platform automates the ability to deploy, configure, troubleshoot, secure, manage and also monitor. The benefit of this project is able to detect any pollution that occurred and can act on early stages. Other than that, can monitor the data or statistics that collected to do an analysis to do steps and beware on what will going happen

FINDINGS

Table 1 Categorisation



CONCLUSION

Main category	Constructs	Code	Attributes	Code
Function	Process detection sensors	Process	Gas detection	Process1
			Control system	Process2
			Data collected	Process3
			Data transferred	Process4
			Data analyse	Process5
			Data displayed	Process6
			Storage	Process7
	Process to implement Detection	Process	Technical preparation of production	Process8
			Product utilization	Process9
			Programming	Process10
			User	Process11
			Functional product	Process12
	Activity detection	Activity	Fireburning	Activity1
			Gas leaked at industries	Activity2
			Gas leaked at house or residents	Activity3
			Industrial activities	Activity4
			Chemical substances activities	Activity5
			Manufacturing activities	Activity6
			Emerging technologies	Activity7
			Combustion	Activity8
			Vehicles	Activity9
			Mining	Activity10
			Transportation	Activity11
			Performance of processing and inspection activities	Activity12
	System level	System	Internet of Things (IoT)	System1
			Relay	System2
			Solar panel	System3
			Microcontroller	System4
			Wifi	System5
			Bluetooth	System6

Main category	Constructs	Code	Attributes	Code
Output	Result produced	Result	Detection	Result1
			Alarm	Result2
			Warning	Result3
			Display	Result4
			Measurement	Result5
			Calculation	Result6
			Provide status	Result7
			Implement	Result8
	Physical result generated	Physical	Diagram	Physical1
			Chart	Physical2
			Draft	Physical3
			List	Physical4
			Change in process	Physical5
			Numerical comparison	Physical6
			None	Physical7
	Impact on quality	Impact	Short-term	Impact1
			Medium-term	Impact2
			Long-term	Impact3

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