

**DEVELOPMENT OF AN INTERNET OF THINGS-BASED WASTE DETECTION
SYSTEM FOR DRAINAGE CANALS: CLASSIFICATION AND
MONITORING OF WASTE TYPES**

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**VIRGILIO JR. C. DIAZ
RODIE G. GELLA
SHARINA ACEL V. MACROHON**
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INTRODUCTION

Background of the Study

Technological advancements have paved way for the human to live in the modern world and connect with the environment ranging from cell phones to artificial intelligence and the like (Watts, 2023). And it will continue to strive for greater use and enhancing every aspect of life the human needs. The evolution of technology creates a space for a society to utilize and fulfill the people's needs and wants, and as of today both human and technology are inseparable as both needs each other to work (Kumar, 2024). The emergence of artificial intelligence proves that the evolution of technology is beyond and will continue to evolve throughout the years.

In a society that yearns for high tech style, the Internet of Things (IoT) provides small to big transformations to a society, providing basic necessity mixed with technology and internet. The existence of IoT creates better transportation, pollution control, better healthcare, home automation, and industrial automation which can be accessed through a smart watch or a smart phone and can access anytime and anywhere, which ultimately formed a smart city (Kumar, 2019). The Internet of Things opened many opportunities for the technology to grow even more from automation to data analytics and eventually, artificial intelligence.

Object detection according to Girshick *et. al* (2021) is a type of artificial intelligence focusing on providing vision from a computer to an object depending on the programmed part. Its goal is to detect object from different classes such as people, car, or faces in an image or a live camera, providing starting from basic details such as distance and gender to advanced details such as name, height, and direction of movement. Additionally, it uses neural network and machine learning to identify and