

**P06**

## **Design and Integration of a Radiation Detector Module for Robot Operating System (ROS)**

Nur Aira Abd Rahman<sup>1,2</sup>, Khairul Salleh Mohamed Sahari<sup>1</sup>, MZ Baharuddin<sup>1</sup>, Leong Yeng Weng<sup>1</sup>, Lojius Lombigit<sup>2</sup>, Nor Arymaswati Abdullah<sup>2</sup>, NFH Aziz<sup>2</sup>, N Ramli<sup>2</sup>, Syirrazie Che Soh<sup>2</sup>, Muhammad Izzuan Mohd Ghazali<sup>2</sup>

<sup>1</sup> Universiti Tenaga Nasional (UNITEN), 43000 Kajang, Selangor, Malaysia

<sup>2</sup> Malaysian Nuclear Agency, 43000, Bangi, Selangor, Malaysia

nur\_aira@nm.gov.my

### **ABSTRACT**

In this paper, we present a radiation detector module that can be seamlessly integrated with Robot Operating System (ROS) to enable robots to perform radiation measurements in hazardous environments. The module is designed with a detector PCB and connectors that are compatible with an Arduino shield. The Arduino firmware is programmed with a counter-timer algorithm and publishes data to the ROS environment, allowing for easy visualization of the data in a 2D occupancy map. Our experimental results demonstrate the module's effectiveness in inspecting and reconstructing the robot's path during operations. This paper provides a valuable contribution to the field of robotics by enabling robots to perform radiation measurements safely and accurately in dangerous environments.

**Keywords:** radiation detector module, robot, ROS