ABSTRACT

DESIGN OF MONITORING SYSTEM BASED *INTERNET OF THINGS* FOR PETENGORAN MANGROVE CONSERVATION AREA

By

FAJRI ADITIYA PUTRA

Mangrove ecosystems are biologically important ecosystems in the world in terms of providing important needs for coastal and marine ecosystems, as well as for local communities. The existence of mangrove forests as green belt conservation areas can provide two sides of benefits. As a fully protected area (FPA) in the context of preserving marine ecosystems, reducing CO2 *level*s, and important factors in climate regulation. Sustainable used (SU) mangrove forests have economic potential for local communities. However, the facts show that the presence of microclimate stations (MCS) in mangrove forest areas is almost non-existent so important data related to the development of FPA and SU is not available. This research has objectives, namely: in the short term, researchers will develop and build micro monitoring stations in the mangrove embedded system forest area and the *Internet of Things* (IoT). For the long term, a series of data acquisitions will be carried out that will be processed, using artificial intelligence (AI) methods to predict these conditions in the future. This study will analyze the following climatic elements: air temperature and humidity, solar radiation, precipitation, *Wind Direction* and speed.

Keywords: Microclimate, Artificial Intelligence, and Internet of Things.

ABSTRAK

RANCANG BANGUN SISTEM MONITORING KLIMATOLOGI MIKRO WILAYAH KONSERVASI MANGROVE PETENGORAN BERBASIS *INTERNET OF THINGS*

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Dalam hal penyediaan kebutuhan penting bagi ekosistem pesisir dan laut, serta bagi masyarakat setempat, keberadaan hutan mangrove sebagai kawasan konservasi jalur hijau dapat memberikan dua sisi manfaat. Sebagai kawasan lindung penuh (*Full Protected Area*/FPA) dalam rangka pelestarian ekosistem laut, penurunan kadar CO2, dan faktor penting pengaturan iklim, pemanfaatan berkelanjutan (*Sustainable Used* - SU) dari hutan mangrove memiliki potensi ekonomi dalam bentuk hutan ekowisata bagi masyarakat setempat. Namun fakta menunjukkan bahwa keberadaan *microclimate station* (MCS) di kawasan hutan mangrove hampir tidak ada sehingga data penting terkait perkembangan FPA dan SU tidak tersedia. penelitian ini memiliki tujuan, yaitu: dalam jangka pendek, Peneliti akan mengembangkan dan membangun stasiun pemantauan mikro di kawasan hutan mangrove *embedded system* dan *Internet of Things* (IoT). Penelitian ini akan menganalisis unsur-unsur iklim berikut: suhu, tekanan dan kelembaban udara, suhu air, radiasi matahari, curah hujan, arah dan kecepatan angin.

Kata Kunci: ***Microclimate, Artificial Intelligence,*** **dan** ***Internet of Things*****.**