

# **Estimation of Wetland in Indonesia with multitemporal satellite imagery Extraction Model-based Neural Network (NN), Genetic Algorithm (GA) and Fuzzy Logic**

Ketut Wikantika<sup>(1)</sup>, Lilik Budi Prasetyo<sup>(2)</sup>, Agung Budi Harto<sup>(3)</sup>, Deni Suwardhi<sup>(4)</sup>, Soni Darmawan<sup>(5)</sup>,  
Chairuddin<sup>(6)</sup>

<sup>1,3,4,5,6</sup>Institute of Technology Bandung (ITB), Jl. Ganesha 10, Bandung 40132 Indonesia,  
ketut@gd.itb.ac.id

<sup>2</sup>Forest Resources Conservation Department Forestry Faculty, Bogor Agricultural University  
email : lbpras@indo.net.id

Corresponding author: ketut@gd.itb.ac.id

## **ABSTRACT**

Advantages of remote sensing technology in making estimates through the object image data with satellite vehicle into an alternative decision makers in order to support and obtain information as well as the best solution in determining the steps to be taken to determine a reliable decision. This study aims to estimate and predict wetland to determine yields in Indonesia with multitemporal satellite images. Estimation, prediction and image extraction process are done by using a model of Artificial Intelligence (AI), namely Artificial Neural Networks, Genetic Algorithm and Fuzzy Logic, and maximum likelihood. The comparison show that the algorithm model using Artificial Intelligence approach is more accurate than the statistical method. This is indicated by the results of the classification accuracy with the field of Artificial Intelligence methods is higher than statistically method (maximum likelihood). The result is expected to be a benchmark solution for the further research in determining the method or model which used in image processing of AI-based classification model is needed to accelerate the process of identification of rice fields in Indonesia. Finally with better accuracy of rice field, government will be able to take a decision or policy related to food, where it is most closely related to national food security.

Keywords: remote sensing, estimation, extraction, Artificial Intelligence