

**LAND COVER CLASSIFICATION OF LANDSAT IMAGE
USING LINEAR SUPPORT VECTOR MACHINES (SVMs)
(Study Area: Bandung Regency)**

Rahdhitya Yudhistira^a, Soni Darmawan^{ab}, Ketut Wikantika^{ab}

^a Geodetic and Geomatics Engineering, Faculty of Earth Sciences and Technology, ITB

^b Center for Remote Sensing Research Group, ITB

Ganesha 10 (Building IXC, 3rd floor) Bandung 40132, West Java, Indonesia

Tel: +62 22- 2530701; Fax: +62 22- 2530702

E-mail: rahdhitya@gmail.com, soni_darmawan@yahoo.com, ketut@gd.itb.ac.id

Abstract: *A remote sensing imagery can be used for many things nowadays. One of the most popular usages is land cover classification. Classifying the land cover of an area can produce a lot of useful information, such as the development of infrastructure in a city or the diversity of building build a city. Nowadays, there are a lot of methods use to classify land cover of some area using remote sensing imaging. One of the promising new methods is Support Vector Machines (SVMs). SVMs themselves are based from a statistical learning theory, which is, in basic, a binary classifier which can be used. In this paper, SVMs are used in their linear form to find out whether the overall accuracy of this method is better compared to another classifying method, Maximum Likelihood (MLC), when used to classify some areas in Bandung Regency using Landsat TM-5 data. The results showed that mainly Linear SVMs fared better than MLC, especially in homogenous area where there are only 2-3 classes in those areas, with the accuracy level between 90-95%. SVMs also performed rather well when dealing with minimum amount of training dataset, although there were some problems when dealing with dense area or area with 3 classes or more (accuracy level 75-86%). Overall, results showed us that Linear SVMs were mainly better than MLC, especially when dealing with homogenous areas. However, MLC were slightly better in dealing with heterogeneous areas, even though Linear SVMs were not far behind. The solution to this could be with applying the kernel function in future studies to gain a better result.*

Keywords: *Support Vector Machines, land cover, classifier, Maximum Likelihood, Landsat*