Detection Model of Landslide-Potential Areas based on Local-Learning using Iterative Dichotomiser Three Algorithm

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Abstract— Landslide is the most destructive natural disaster since it causes very significant environmental and socioeconomic damages. Java, Indonesia is the most densely populated island in the world. High population density and careless land conversion lead to frequent landslides. Landslide itself is the most frequent natural disaster in Indonesia. This research aims to develop an early warning model of landslide-potential areas based on local-learning that suits local geographical conditions using Iterative Dichotomiser Three (ID3) in Java as the most landslide-prone area in Indonesia. We analyze and map landslide data with climate and soil characteristics using ID3 algorithm. In this research, we utilize landslide-causing attributes i.e. area slope, rainfall, soil type, and land cover. This research produce 36 leaf-node decision tree, where 19 leaf-node indicate “Landslide-potential” and 17 leaf-node points to “Not Landslide-potential”. Furthermore, the accuracy level of this model is 92.37% with land cover attribute is the main attribute that trigger landslide.

Keywords— ID3 Algorithm; Landslide; Land Use; Learning Algorithm; Local Geographic