UNIVERSITI TEKNOLOGI MARA

FORECASTING SPATIAL PATTERN OF LAND COVER CHANGES USING CELLULAR AUTOMATA

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Disertation submitted in fulfillment
of the requirements for the degree of
Bachelor of Surveying Science and Geomatics
(Honors)

Faculty of Architecture, Planning and Surveying

January 2018

AUTHOR'S DECLARATION

I declare that the work in this disertation was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

Land cover changes prediction is important for a better understanding of dynamic landscape change and consciousness on the sustainable development. Geographical information system (GIS) and remote sensing have been used in this research as its consider as the most effective method in order to monitor the changes of the land use and land cover. The aim of this research is to forecast land use 2020 refer to land cover changes between year 1997 and 2008 using Cellular Automata (CA) and evaluate it with existing development planning land use of Perlis for 2020. The prediction of the CA model was successfully applied into this research by using modelling tools namely Methods of Land Use Change Evaluation (MOLUSCE plugin in Quantum GIS). The processing involving two stages which are the data preparation and prediction of land use. For the data land use of Perlis for year 1997 and 2008 are have been classified into four (4) classes while the existing planning map for year 2020 as the reference to the prediction also have been classified equivalent with the land use classes. The validation result of the prediction shows 78% similarity with the existing Development Land Use Planning 2020, which indicates the validity of the model for the future prediction. In conclusion, based on the behavior of cells changes using CA method can be a useful tools for government planners to observe development pattern in this country and enable them to use land source in better way.

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