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KARYA ILMIAH : PROSIDING**

Judul karya ilmiah (paper) : Transit Oriented Development (TOD) on the Commuter Train Network
 Jumlah Penulis : 2 orang
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Transit Oriented Development (TOD) on the Commuter Train Network (Conference Paper) [\(Open Access\)](#)

Ramadhan, R.A. , Pigawati, B.

Department of Urban and Regional Planning, Diponegoro University, Indonesia

Abstract

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The rapid development of Semarang City has formed a metropolitan city pattern. The city of Semarang is as the core city, while the surrounding cities are as periphery. The high intensity of movement of the population from the periphery area to the core city during rush hour causes congestion at several regional liaison points. The implementation of the concept of Transit Oriented Development (TOD) is expected to solve these problems. The development of TOD-based areas in Kedungsepur has been demonstrated by the existence of commuter trains in early 2014 serving the Semarang City, Demak District, and Grobogan District, but has not provided maximum results. The purpose of this study was to examine the suitability of the application of TOD in 8 (eight) locations around the station passed by Kedungsepur commuter train by using descriptive quantitative approach and spatial analysis. The spatial analysis carried out was the analysis of variable density, and diversity. Design variable analysis was done based on observation. The results show that 8 (eight) station areas have the potential to form a TOD area. Based on the density variables, the Alastua, Brumbung, Gubug, Karangjati, Sedadi and Ngrombo areas were in the high category, while Poncol and Tawang areas were in the low category. Based on diversity variables, only the Tawang and Alastua regions met the requirements, while other station areas did not meet the requirements. Based on the design variable, the feeder is available in all station areas. Connectivity between stations with feeders in 8 (eight) locations is also good enough but needs to be supported by adequate pedestrian infrastructure. © Published under licence by IOP Publishing Ltd.

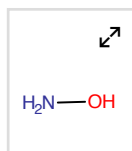
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TABLE OF CONTENTS

TABLE OF CONTENTS.....	ii
ABOUT GEOPLANNING.....	viii
INDEXING.....	viii
JOURNAL AIMS AND SCOPE.....	viii
EDITORIAL BOARD.....	ix
ABOUT GEOPLANNING CONFERENCE.....	xi
SPEAKERS.....	xii
ORGANIZING COMMITTEE.....	xii
SECRETARIAT.....	xii
FOREWORD.....	xiii
CONFERENCE PROGRAM.....	xiv
✓Analyzing of Land Use Pattern Changes in Mukim Pengerang, Johor <i>Noordini binti Che Man, Anis Farhan Binti Salihin</i>	1
Evaluating the Performance of Machine Learning Based Slum Mapping Using Very High Resolution Imagery in Support of Slum Upgrading Programs: The Case of Bandung City, Indonesia <i>Gina Leonita, Monika Kuffer, Richard Sliuzas, Claudio Persello</i>	2
Spatial Analysis of Flood and Landslide Vulnerable Areas (Case Study in Trenggalek Regency) <i>Rizka Windiastuti</i>	3
Development Pattern of Urban Sprawl and Urban Heat Island in Semarang Regency <i>Surya Tri Esthi Wira Hutama, Iwan Rudiarto</i>	4
Identification of Rainfall Pattern Changes Using TRMM Data Analysis <i>Fitria Nucifera; Widiyana Riasasi; Afrinia Lisditya Permatasari</i>	5
Land Subsidence Monitoring in Semarang and Demak Coastal Areas 2016 - 2017 Using Persistent Scatterer Interferometric Synthetic Aperture Radar <i>Reyhan Azeriansyah a</i>	6
Time Travel Estimations Using MAC Addresses of Bus Passengers: A Point to Path- QGIS Analysis <i>A Hidayat, S Terabe and H Yaginuma</i>	7
Determining the Spatial Connectivity of Surabaya's Peri-urban Area towards Urban Rural Linkage Framework Based on Population Movement Relation <i>Belinda Ulfa Aulia</i>	8

Transit Oriented Development (TOD) on Kedungsepur Commuter Train Network <i>Rezky Arief Ramadhan, Bitta Pigawati</i>	9
ICT Based Activities as Part of Smart Economy in Developing World: Learnt From Indonesia's Home Based Enterprises <i>Wido Prananing Tyas, Onixtin Octarina Sianturi</i>	10
The Importance of Aggregated Data in Learning from Gender Mainstreaming Poverty Reduction Program of Central Java Province <i>Landung Esariti, Lillah Haulah</i>	11
The Impact of Land Value to Urban Dynamics <i>Anita Ratnasari R., Imam Buchor, Wisnu Pradoto, and Bambang Riyanto</i>	12
Spatial Economic Analysis for The Base and Leading Sectors of The District / City in Central Java <i>Fakhryza Nabila Hamida, P. Pangsi</i>	13
Land Tenure System in Land Resource Utilization of Bengkulu <i>Zafis Zaim</i>	14
Identify Flood-Prone Zones and Disaster Evacuation Routes Based on Geographic Information System in Sub-district of Genuk, Semarang <i>Rianto Josua Roinson Sagala, Mardwi Rahdriawan</i>	15
Level of Readiness of SME Batik Surakarta Based on Indicators of Smart Economic Dimension <i>Godlive H I Sitorus, Wido Prananing Tyas, Nelli Graceulina Purba</i>	16
Waste Management System Based on Society and Geography Condition (Case Study: Setia Asih Village, Kec. Tarumajaya, Bekasi) <i>Ni Luh Widyaningsih</i>	17
Assessing Urban Resiliency Based on Disaster Risk at Yogyakarta Urban Area <i>Lulu Mari Fitria</i>	18
Assessing Landscape Pattern Relationship with Dengue Incidence <i>Nuramalina Mohamad</i>	19
A Game Theory Approach to The Conservation Issue of The Development of Semarang Chinatown <i>Chely Novia Bramiana, Rizqi Jamaluddin</i>	20
Fragmented Urbanization and the Dynamic of Urban Services: The Case of Schools Provision in the Metropolitanization of Surakarta <i>Fadjar Hari Mardiansjah, Paramita Rahayu</i>	21

Changes of Settlement Environmental Quality in Semarang City Center Bitta Pigawati, Nany Yuliastuti, Fadjar Hari Mardiansjah, Mia A Suryani	22
On the Search for Economic Externalities Acquisition in Rural Industry Clustering: A Study of Emerging Batik Industry Clusters in Lagging Regions of Wonosobo Regency and Purworejo Regency, Indonesia ²³ Prihadi Nugroho	23
Community Adaptive Capacity Model: A Case Study of Tanjungmas Sub-District in Semarang Municipality Intan Hapsari Surya, Rukuh Setiadi	24
Evaluation of Land Suitability of Horticultural Crops in Sembalun Sub-district, East Lombok Regency Dwi Pratiwi Mayanda, I Gusti Putu Ratna Adi Tati Budi Kusmiyarti.....	25
Spatial Modelling The Growth of Informal Settlement Using Logistic Regression in Samarinda City, Indonesia Rendy Akbar.....	26
Modeling of Land Prices in Karang Joang, Balikpapan City Dwi Fitrianiingsih	27
Modelling The Risk of Land Suitability Degradation for Oil Palm Cultivation due to Climate Change on Future Deforestation in Kalimantan Desi Suyamto, Aryo Condro, Lilik Prasetyo, Yudi Setiawan, Arif Wijayanto.....	28
Utilization of The Geography Information System to Support Business Enterprises Site Planning of Defense Industry Filya Rizky Lestari ,R S Indra Adhitiya, P Dwi Hariyanto , Gultom Rudy A G , Supriyadi Asep A, and M M Dwi Mandini	29
Slum Upgrading Strategy in Jepara City from Physical and Non-Physical Aspects Perspective Sunarti, Landung Esariti	30
Towards Smart Tourism The Old City of Semarang: An ICT System Application Form in Tourism Optimization Novia Sari Ristianti, Santy Paulla Dewi, Indah Fajriati Derman	31
Secondary City and TOD Concept in The Light Rail Transit (LRT) Development to The Sustainable Transportation Ismiyati	32
Space Compatibility of Street Vendors in Urban Public Spaces, Taman Tirto Agung, Banyumanik, Semarang Retno Widjajanti, Santy Paulla Dewi, Parfi Khadiyanta	33
Studentification Process in Tembalang Higher Education Area Santy Paulla Dewi, Novia Sari Ristianti, Tiara Rizkyvea Debby	34

Leveraging Integrated Bike-Sharing with Existing Bus Rapid Transit (BRT) to Reduce Motor Vehicle in Central of Jakarta <i>Daniella, Achmad Amri Dharma Wangsa</i>	35
The Spatial Pattern of Dengue Fever Risk in Semarang City <i>Widjonarko, Iwan Rudiarto</i>	36
Study on Pollution Load Capacity of Tidal Manggar Watershed, Balikpapan City <i>Syaria Fathi Bilqis Arneni</i>	37
Mapping Route for Children Go to School <i>Diah Intan Kusumo Dewi, Parfi Khadiyanto, Rina kurniati, Zulhamdi</i>	38
Mapping of The Child Friendly Parks availability for Supporting Child Friendly Cities in Semarang <i>P. Prihantini and Wakhidah Kurniawati</i>	39
Model of Community Empowerment in Tourism Village Development Planning in Bali <i>I Nyoman Sukma Arida, IA Suryasih, IGN Parthama</i>	40
The Existence of Subak inside the Northern Kuta Tourism Area, Bali <i>I Nyoman Sunarta, I Made Adikampana and Sapto Nugroho</i>	41
Geographic Object Based Image Analysis (GEOBIA) for Mangrove Canopy Delineation Using Aerial Photograph <i>Muhammad Kamal, Tito Kariekaputra, Rima Hermayani, Anwar Juniansah</i>	42
Needs and Obstacles in Utilising Geospatial Information in Local Government <i>Heri Sutanta</i>	43
Analysis of Kaligarang Fault Deformation With GNSS Survey in 2016-2018 <i>Moehammad Awaluddin, LM Sabri, Fauzi Janu Amarrohman, Bambang Darmo Yuwono, Laurentius Immanuel</i>	44
Land Subsidence Analysis of Semarang City Using Permanent Scatterer Interferometric Synthetic Aperture Radar (PS-INSAR) Method in Sentinel 1-A Imagery <i>Yudo Prasetyo, Bambang Darmo Yuwono, Diyanah</i>	45
Analysis Deformation Monitoring Techniques Using Gns Survey and Terrestrial Survey <i>Bambang Darmo Yuwono, Yudo Prasetyo</i>	46
Spatial Model of Micro Climate Assessment and Recommendation of Mitigation In Semarang City With Remote Sensing Technology Temperature Heat Index <i>Bandi Sasmito, Andri Suprayogi, Nurfajrin D Andani, Seprila P Darlina</i>	47

Large Scale Mapping Using Unmanned Aerial Vehicle (UAV)-Photogrammetry to Accelerate Complete Systematic Land Registration (PTSL) (Case Study: Ciwidey Village, Bandung Regency, Indonesia)

Sadikin Hendriatiningsih, Asep Yusup Saptari, Ratri Widyastuti, Putri Rahmadani, Andri Harpiandi 48

Estimating of Ecological Footprint for Sidoarjo Regency and Implication for Spatial Development

Eko Budi Santoso, Belinda Ulfa Aulia, Dea Nusa Aninditya..... 49

Citizen Preference on Arrangement of Slum Area in Banjarmasin Riparian Zone

Arif Rahman Nugroho 50

Mapping Community Environmental Sanitation Issue Using Household Spatial Cognition: a Case of Bulu Lor Subdistrict, Semarang, Indonesia

Artiningsih..... 51

Spatial Characteristics of Total Suspended Solid in Lake Rawapening

Gunawan Widiyasmoko 52

Evaluation of Sustainability on Indonesia Historical Streets

Bangun IR Harsritanto, Aditya Rio Prabowo, Rona Fika Jamila, Gentina Pratama Putra 53

Hazard Analysis of Belanding Village, Songan A Village and Songan B Village of Kintamani District, Bangli Regency, Indonesia

N M D Pradnyasari, Wiyanti, T Kusmawati 54

Analysis of Changes Settlement and Fair Market Land Prices to Predict Physical Development Area Using Cellular Model Automata Markov And SIG in East Ungaran Distric

Sawitri Subiyanto, Fauzi Janu Amarrohman 55

Urban Green Open Space Area Planning and Commodity Development in Farm Based Agriculture Area Based on Remote Sensing And GIS

Indayati Lanya, N. Netera Subadiyasa..... 56

Comparison of Land Surface Temperature Derived From Landsat 7 ETM+ and Landsat 8 OLI/TIRS for Drought Monitoring

A Sediyo Adi Nugraha, Totok Gunawan, Muhammad Kamal..... 57

Identification of Mangrove Critical Level Using RS-GIS Analysis

Septiana Fathurrohmah 58

Comparative Analysis of Accuracy to The Establishment of Three Dimensional Models From Diponegoro Prince Statue Using Close Range Photogrammetry Method in Non Metric Camera and Unmanned Aerial Vehicle (UAV) Technology

Yudo Prasetyo, Bernard Ray Barus 59

Analysis of Risk Assessment of Mount Merapi Eruption in Settlement Area of Sleman District	
<i>Arief L. Nugraha, Hani'ah, Hana S. Firdaus</i>	60
Using Open Data to Analyse Potential Shelter for Agung Volcano Hazard Mitigation	
<i>R. Suyarto, Ni Made Trigunasih and Wiyanti</i>	61
Land Provision for Decent and Affordable Housing for Low-income Community in Salatiga City	
<i>Sunarti</i>	62
Using Big Data to Analyse the Impact of Agung Volcano Eruption to Tourist Visits in Bali, Indonesia	
<i>Putu Perdana Kusuma Wiguna, Ketut Dharma Susila and I Nyoman Dibia</i>	63
Workers Mobility and Urban Infrastructure of Industrial Development in Semarang Regency, Indonesia	
<i>Holi Bina Wijaya</i>	64
Mapping of Unsafety Driving and Non-Eco-Driving Zones for Public Urban Transportation Service Improvement	
<i>Yudi Basuki, Sri Rahayu, Yovita Nufi Putri, Birta Nino Tanayo</i>	65
Link between Street Connectivity, Land Use and Pedestrian in Semarang City	
<i>Anita Ratnasari Rahmatullah, Diah Intan Kusumo Dewi</i>	66
Blue Space: Preliminary study for potential flood inundation in Semarang City	
<i>P.Pangi, S. Sariffudin, Khristiana Dwi Astuti</i>	67
Model of Motorcycle Ownership and Its Impact to Urbanization in Rural Area: A Case of Kudus Regency, Indonesia	
<i>Sam'ani Intakoris, Imam Buchori, Soegiono Soetomo</i>	68
The Influence Of Groundwater Basin Existence Towards The Urban Development In Java	
<i>Dian Prasetyaning Sukmawati, Imam Buchori, Rolan Firmanasari</i>	69

Analyzing of Land Use Pattern Changes in Mukim Pengerang, Johor

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Urbanization and urban land-use transition have a competitive environment to ensure and provide good facilities for human welfare. The landscape patterns resulting from urbanization influence processes at local, regional, and global scales. Quantifying the spatio-temporal pattern of urbanization is important for understanding its ecological impacts and can provide basic information for appropriate decision-making. The growth of urbanization in Mukim Pengerang, Johor has undergone rapid changes in agriculture, settlements, townships and various activities. The changes of land use take place in Mukim Pengerang due to rapid the economic development, especially in industrializations which are Refinery and Petrochemical Integrated Development (RAPID) project and Pengerang Integrated Petroleum Complex (PIPC). The industrialization boosts the growth in land property and commercial which progressing in rapid development since 2012, in resulting whether it can give good, bad or both impact to the human and surrounding. Therefore, the main objective of this paper is to quantify the changes of landscape pattern or land use pattern between 2008 and 2017 occurred in Mukim Pengerang. In monitoring the spatial pattern changes, and the changes of landscape structure, the matrix landscape were analyzed with determination of the Shanon Diversity Index (SHDI), the number of patches (NP), Edge Density (ED) and Total Edge (TE) in the period of 8 years. The results shows that the changes occurred with the three types of land use showed significant changes in the types of land use which are forest, agricultural land use and development land use. Based on SHDI analysis, the value show increases from 2008 until 2017. This situation illustrates that the higher the value of SHDI for an area, the level of land use is also higher. This is because the growing pattern of land use is reflected by the large number of patches due to the diversification of land use activities in this mukim. Overall from the matrix statistics test was found that there was a changes in land use that took place within 8 years.

Keywords: Land use pattern changes, spatio-temporal, Fragstat

Evaluating the Performance of Machine Learning Based Slum Mapping using Very High Resolution Imagery in Support of Slum Upgrading Programs: The Case of Bandung City, Indonesia

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The Survey-Based Slum Mapping (SBSM) conducted by the Indonesia Government to reach the national target "city without slums" by 2019 shows inconsistencies of the output due to the dependency on surveyors experiences. Thus, slum upgrading programs relying on such inconsistent maps face series problems to monitor the implementation of the national target. Remote sensing imagery combined with machine learning algorithms could help to address these consistency problems. This study evaluates the performance of two machine learning algorithms. i.e. Support Vector Machine (SVM) and Random Forest (RF) for slum mapping in support of slum upgrading programs in Bandung, Indonesia. The study used sequential feature selection (SFS) combined with the HSIC criterion to select significant features for classifying slums. Overall, the highest accuracy (88.5%) was achieved by the SVM with SFS using contextual, morphological, and spectral features, which is higher than the estimated accuracy of the SBSM. To evaluate the potential of such a machine learning based slum mapping approach in slum upgrading programs, interviews were conducted with several local and national stakeholders. Results show that local acceptance for a remote sensing based slum mapping approach varies among stakeholder groups. Therefore, a locally adapted framework is required to combine ground surveys with robust and consistent machine-learning methods to allow a rapid extraction of information on the dynamics of slums at large scale.

Keywords: machine learning; slums; slum upgrading programs, Bandung, Indonesia

Time Travel Estimations using MAC addresses of Bus Passengers: A Point to Path-QGIS Analysis

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Currently, the development of WiFi is proliferating, especially in the field of transportation and smart cities. At the same time, WiFi is a low-cost technology, which offers a longer survey time and is able to support the Big Data era. This paper describes our study, which first uses a WiFi scanner to capture media access control (MAC) address data of bus passengers' WiFi devices and then identifies each MAC address travel time to confirm the bus passengers. The MAC address is a unique ID for each device used such as mobile phones, smartphones, laptops, tablets, and other WiFi-enabled equipment. The WiFi scanner was placed inside the bus to capture all the MAC addresses inside and around the bus. The survey was conducted for one day (eight hours). The paper describes the procedure of the time travel estimation for each MAC address using the "point to path" analysis in QGIS open source software. This procedure, using point to path-GIS, produced 70,000-80,000 raw data points cleaned into 100-130 new data points. The procedure determined how many passengers traveled and explained which bus passengers used based on travel time.

Keywords: Time travel estimations, Path-QGIS analysis

Assessing Landscape Pattern Relationship with Dengue Incidence

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Dengue is the most common urban disease that is most prevalent in tropical areas. WHO 2009 stated that this diseases has grown a public health concern due to the risk of dengue infection that has increased dramatically between 50 and 100 million cases every year. This issue were very correspond with landscape and environment changes. The objective of this paper is to discuss on how landscape pattern in relation to dengue incidence. Open website; idengue were highly contributed in this study to locate the most risky area for dengue fever incidence at township level. Geographic information system (GIS) was used to demonstrate the spatial patterns of all dengue cases in Johor Bahru and Geoprocessing was used to measure the boundary of risk according to the distribution of dengue outbreak. After that, to analyze the spatial landscape pattern, satellite images were used. Spatial descriptive analysis shows non-strata housing, open space, road, planned commercial, strata housing and drainage system network is the most prevalence land use activity for dengue incidence in Iskandar Region. The finding shows the common landscape composition that relate to dengue cases. In conclusion, the future development of land use should be considered on landscape pattern towards rapid urbanization.

Keywords: Landscape pattern, Dengue incidence, Georgraphic Information System

Transit Oriented Development (TOD) On Kedungsepur Commuter Train Network

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The rapid development of Semarang has formed a metropolitan urban pattern of Kedungsepur (abbreviation of Kendal-Demak-Ungaran-Semarang-Purwodadi urban areas), with Semarang as the core city. The high intensity of population mobility from the peripheries during peak hours has generate congestions at several locations. The Transit Oriented Development (TOD) concept has been applied in Kedungsepur metropolitan through the operational of commuter train since early 2014 that connects Semarang with its neighbouring cities such as Demak and Grobogan, despite have not showing optimum result yet. This research aims to analyze the suitability of the TOD applications in 8 (eight) areas around the stations serving Kedungsepur Commuter Train, using a descriptive quantitative approach and spatial analysis. Spatial analysis used is density and diversity variable analysis. Then, design variable analysis is used based on observation. This research indicates that all 8 areas have the potency to be developed as TOD areas. The density variable clustered the areas of Alastua, Brumbug, Gubug, Karangjati, Sedadi and Ngrombo in the high category, while Poncol and Tawang are in the low category. Based on the diversity variable, only Tawang and Alastua areas areeligible, while the rest did not meet the requirements. Furthermore, based on design variable, feeder has been provided in all stations. Connectivity between stations and feeder in 8 locations is considered good, even though still needs to be supported by adequate pedestrian infrastructure. In addition, Park and Ride facilities are currently available only in Poncol, Tawang, Gubug, Sedadi and Ngrombo areas.

Keywords: *Transit Oriented Development, Commuter train, Kedungsepur*

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