

**LEMBAR**  
**HASIL PENILAIAN SEJAWAT SEBIDANG ATAU PEER REVIEW**  
**KARYA ILMIAH : PROSIDING**

Judul karya ilmiah (paper) : Preliminary Study of Smart Urban Waste Recycling in Semarang, Central Java, Indonesia

Jumlah Penulis : 2 orang

Status Pengusul : Penulis Pertama (**Maryono Maryono**, Intan Hapsari Hasmantika)

Identitas prosiding : a. Judul Prosiding : International Conference on SMART CITY Innovation  
b. ISBN/ISSN : e-ISSN: 1755-1315; p-ISSN: 1755-1307  
c. Tahun Terbit/tempat pelaksanaan : 2018, Semarang, Indonesia  
d. Penerbit/organiser : IOP Conference Series: Earth and Environmental Science  
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NIP. 196608221997022001  
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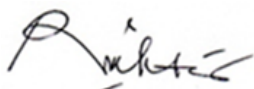
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<b>Total = (100%)</b>	<b>26,0</b>	<b>25,0</b>	<b>25,50</b>

Semarang, 22 Desember 2020

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# Preliminary Study of Smart Urban Waste Recycling in Semarang, Central-Java, Indonesia

Maryono M.<sup>a, b</sup> ; [Hasmantika I.H.<sup>b</sup>](#)[Save all to author list](#)

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<sup>b</sup> Center for Green Infrastructure Resilience and Development (C-Greinde), Master Program of Environmental Science, School of Postgraduate, Diponegoro University, Central-Java, Jl. Imam Bardjo SH, Pleburan, Semarang, 50275, Indonesia

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Views count [View all metrics >](#)[Full text options](#) [Export](#) **Abstract**[Indexed keywords](#)[Sustainable Development Goals 2023](#)[SciVal Topics](#)[Metrics](#)[Funding details](#)**Abstract**

The emergence of waste management technology innovation is able to inhibit the accumulation of waste in temporary collection sites and landfill. Innovations that have been developed in developed countries and summarized in the concept of "Smart Waste Management" are still not able to be applied to cities in developing countries, such as Indonesia. This is because the technologies that already exist in Indonesia are still far behind by developed countries in the world. In addition to sophisticated technology, the understanding and behaviour of the community has also been more advanced in the field of waste management, which starts from the process of sorting waste in each household to the

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## Preface

Dear honorable speakers, participants, board of committees, guests, ladies, and gentlemen.

On behalf of Scientific Modeling, Application, Research, and Training for City-centered Innovation and Technology Center for Collaborative Research (SMART CITY CCR), I welcome you all to Bandung for the very first International Conference on Smart City Innovation (ICSCI 2018), organized by Universitas Indonesia and Universitas Padjadjaran. It is my pleasure and privilege, knowing that this event happened by the cooperation between five Indonesian universities, which is funded by United States Agency for International Development (USAID), through one of our projects, Sustainable Higher Education Research Alliances (SHERA).

This conference has a role to expose excellent and useful scientific writings to a wider scope, especially the works of researchers around technological innovations as a response to challenges in urban development and planning. As we know, issues on urban are issues collateral with people's life. The research components from the data, information, experiments or interventions, and findings could be used by stakeholders such as influential societies, local leaders, governments, even ourselves as citizens to decide our way of living. The wonderful thing about ICSCI 2018 is it gives us an opportunity to listen to and get involved in the discussion with expert panellists (speakers) and presenters (participants), who are researchers focused in their respective fields. This conference also bridges the gap between scholars from various disciplines to bring and share their ideas about actual and relevant issues.

ICSCI 2018 results in a collection of 47 oral presentations of full papers and 67 poster presentations covering 10 topics around 4 big themes: (1) Energy and Environment, (2) Infrastructure, (3) Information and Communication Technologies and Mobility, and (4) Quality of Life. As the USAID concerns on addressing gender equality or female empowerment in science and technology research, we are glad that we have a dominant number of female researchers participating in this year conference (62 among 114 people).

We cherish each individual involved for making and contributing in this conference. I wish you a fruitful stay in Bandung, and above all a successful ICSCI 2018. Thank you.

**Director of SMART CITY CCR,  
Prof. Dr. Heri Hermansyah, S.T., M.Eng.**



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# Tropical houses with economics activities consideration in Wonosobo

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<sup>2</sup> Post-graduate Student of Faculté d'Architecture, d'Ingénierie Architecturale, d'Urbanisme – LOCI, École Nationale Supérieure d'Architecture de Paris-Belleville ENSA PB, 60 Boulevard de la Villette, 75019 Paris, France

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**Abstract.** Kampung Sruni is an urban settlement located in the Dieng plateau region, Wonosobo Regency, Central Java. Along with population growth, new house buildings have been being constructed. Unfortunately, these new houses are being built with a lack quality of planning: the availability of green space, natural air circulation, natural lighting, and material. Improving the conditions of houses with urban acupuncture pattern seems to be the most respectful way. Three site locations are chosen—according to the different contexts of topography and surrounding neighborhood. On these sites, houses are designed specifically to each site context. However, these houses have same design logic. The tropicality is emphasized by arrangement of space elements—wall, openings, and materials—to obtain fresh air circulation and natural lighting penetration along the day. Another important idea is to put large enough space to generate family's economy: to be freely used for shop, workshop, gallery, even guest house.

## 1. Introduction

Wonosobo is a district located in the highland region of Dieng, Central Java. Being at an altitude between 250 - 2,500 meters above average sea level makes the air temperature in this region tend to be cool—with a range between 14.3 - 26.5 0C—and relatively high air humidity—which is 66 - 88%. The area of Wonosobo Regency is surrounded by two active volcanoes, namely Mount Sindoro and Mount Sumbing. These two active volcanoes provide geological conditions that are rich in minerals due to volcanic processes [1]. This cool micro climate and fertile soil make agriculture as the main activity of the community. Rice, tea, coffee, tobacco, and various other horticultural vegetables are the types of plants cultivated by farmers. In addition to farming, people also specifically plant Dieng papaya known as *Carica papaya* (*Carica pubescens*) for compotes [2]. This compotes become a typical Wonosobo dish and a souvenir for tourists visiting this area.

In addition to agriculture, the Wonosobo society—both living in rural areas and in the city center—is known as an art community. In one year, various festival activities are held. The festivals that have been developed at this time firstly began with traditional ceremonies. Dreadlocks ceremony and



# The Indoor Positioning System Using Fingerprint Method Based Deep Neural Network

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**Abstract.** Highly dynamic indoor environments being one of the challenge in the Indoor Positioning System (IPS). Collecting the Received Signal Strength (RSS) value from every Wi-Fi access point known fingerprint method is presented by previous researchers. They proposed with different techniques in fingerprint methods to compete similar existing technology such as GPS in term of accuracy. The drawback using fingerprint is the IPS cannot maintain the high performance constantly. In this research, we propose the Deep Neural Network (DNN) algorithm for improving the fingerprint method in the IPS. Basically, the fingerprint method consists of two phases, Online and Offline phases. In the off-line, RSS values will be collected from several coordinates as known reference points and stored in the database. The online phase has different step which the current position will be compared to RSS values stored in the database. The DNN method was used to calculate the closest position estimation probability. The IPS using DNN was successfully applied using 5 layers consisting of a 1 input layer, 3 hidden layers and 1 output layer. The input and hidden layer have 28 nodes for each layers and output layer has 2 nodes. The simulation results from RSS data set has achieved 2 meters accuracy. It concluded that DNN performance depends on the number of hidden layers and the number of nodes in each hidden layer.

Keywords: Indoor Positioning System, Fingerprint method, Deep Neural Network

## 1. Introduction

The Indoor Positioning System (IPS) is a system that makes the location as an entity and estimate the object location. Location Based Service (LBS) is one of application use the IPS and integrating with existing wireless technology for indoor and outdoor environments [1]. Z.Liu, X. Luo, T. He in their paper improve indoor position estimation system using Weight K-Nearest Neighbour (W-KNN) algorithm, the result obtained the positioning error value was better 0.1% than original algorithm with accuracy 2.438 m [2]. Technology of indoor position estimation system becomes popular research, both the level of accuracy and the method used. because based statistics 80% - 90% of people spend time at indoors. Accuracy in the position estimation system was expected to be higher than previous research [3] [4]. Accuracy of position estimation system at outdoor has an average value 10 meters which implemented by Global Positioning System (GPS) technology [5]. It is a reason why an indoor position estimation system has a large enough market potential to be developed, if the accuracy can be improved



# Impact of Backoff Algorithm on IoT over Multichannel Slotted Aloha System

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**Abstract.** The increasing trend of Internet of Things brings new challenges to efficiently manage the resource in the access network. As a prominent solution to serve IoT services, LTE incorporates a small data transmission scheme for this reason. In this scheme, the overall system performance is greatly influenced by its random access procedure. Hence, studying the behavior of backoff during random access procedure is important. This work implements an iterative contending-user estimation model to analyze the performance of the contention-based random access procedure supporting finite-population. For the sake of generality, the system is modeled as a multichannel slotted Aloha. This allows our model to be used in wider specifications, including LTE and WiMAX systems. The behavior and performance of the system supporting multiple load scenarios is studied under different network loads. The simulation result demonstrates the accuracy of our proposed method to predict the normalized throughput, the packet-dropping probability, and the average access delay of each access-class. The performance of different backoff algorithm to resolve the collision in the system is compared and evaluated.

**Keywords:** Internet of Things (IoT); LTE; WiMAX; Multi-channel slotted ALOHA; Random access; backoff algorithm

## 1. Introduction

Cellular networks have been used to provide city-wide coverage for broadband services. In recent decade, the demand for data communication is nowadays increasingly high. Since the adoption of connectionless communication for data services, the method to handle non-voice communication over cellular network has been improving. Expanding from its main purpose to serve human-to-human communication, nowadays the widely-deployed cellular network is also a potential solution to serve machine-to-machine (M2M) or Internet of Things (IoT) services. The fact that cellular services are ready in most of the cities and villages has become main motivation to utilize it for serving IoT devices. In fact, in many places, this readiness is far surpassing the readiness of other wireless technologies such as ZigBee, and LoRa. Although these competing technologies are designed from the beginning to mainly serve data communication and IoT, deploying them widely (i.e. to really rivals cellular network) needs many efforts and investments. On top of that, cellular has strong history for being pretty stable business. Meanwhile ZigBee and LoRa are new technologies which possess risk to start the business with, must overcome public scepticisms, needs more advertisements to endorse adoption, etc.





# CERTIFICATE OF COMPLETION

THIS CERTIFICATE IS PROUDLY PRESENTED TO

*Intan Hapsari Hasmantika*

As Presenter in  
International Conference on SMART CITY Innovation 2018

This conference was conducted by Center for Collaborative Research on Scientific Modeling, Application,  
Research, and Training for City-Centered Innovation and Technology

Prama Grand Preanger Hotel, Bandung, West Java - Indonesia  
October 25th - 26th, 2018

Prof. Dr. Heri Hermansyah, ST, M.Eng  
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