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

Judul Karya Ilmiah : Hoax Detection System on Indonesian News Sites Based on Text Classification using SVM and SGD  
 Jumlah Penulis : 6 Orang  
 Status Pengusul : Penulis Pendamping  
 Identitas Prosiding : a. Judul Prosiding : The 2017 4th International Conference on Information Technology, Computer, and Electrical Engineering  
 b. ISBN/ISSN : 978-1-5090-1434-7  
 c. Thn Terbit, Tempat Pelaks. : 18-19 Oktober 2017  
 d. Penerbit/Organiser : IEEE dan terindex Scopus  
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 Alamat Artikel :  
 f. Terindeks di (jika ada) : Scopus  
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b. Ruang lingkup dan kedalaman pembahasan (30%)	7,0	6,5	6,75
c. Kecukupan dan kemutakhiran data/informasi dan metodologi (30%)	7,0	7,0	7,00
d. Kelengkapan unsur dan kualitas terbitan/prosiding(30%)	7,0	7,0	7,00
<b>Total = (100%)</b>	<b>23,5</b>	<b>23,0</b>	<b>23,25</b>

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Reviewer 2

Dr. Wahyudi, S.T., M.T.  
 NIP. 196906121994031001  
 Unit Kerja : Teknik Elektro FT UNDIP

Reviewer 1

Dr. Eng. Wahyul Amien Syafei, ST, MT  
 NIP. 197112181995121001  
 Unit Kerja : Teknik Elektro FT UNDIP



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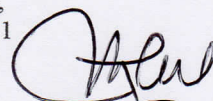
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b. Ruang lingkup dan kedalaman pembahasan (30%)	7,50		7,0
c. Kecukupan dan kemutakhiran data/informasi dan metodologi (30%)	7,50		7,0
d. Kelengkapan unsur dan kualitas terbitan/prosiding(30%)	7,50		7,0
<b>Total = (100%)</b>	<b>25,00</b>		<b>23,5</b>

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- Ruang lingkup dan kedalaman pembahasan:** Ruang lingkup cukup mutakhir, dilihat dari seksi related works yang dirujuk. Methodology dituliskan secara terstruktur meskipun tidak terlalu mendalam.
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- Kelengkapan unsur dan kualitas terbitan:** Makalah telah terpublikasi di prosiding, terindeks di IEEEExplore dan Scopus.

Semarang,  
 Reviewer 1



Dr. Eng. Wahyul Amien Syafei, ST, MT  
 NIP. 197112181995121001  
 Unit Kerja : Teknik Elektro FT UNDIP



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b. Ruang lingkup dan kedalaman pembahasan (30%)	7,50		6,5
c. Kecukupan dan kemutakhiran data/informasi dan metodologi (30%)	7,50		7,0
d. Kelengkapan unsur dan kualitas terbitan/prosiding(30%)	7,50		7,0
<b>Total = (100%)</b>	<b>25,00</b>		<b>23,0</b>

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- d) **Kelengkapan unsur dan kualitas terbitan:** Unsur pada makalah cukup lengkap dan kualitas penelitian berupa prosiding yang terindeks scopus

Semarang,  
Reviewer 2

  
 Dr. Wahyudi, S.T., M.T.  
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Proceedings - 2017 4th International Conference on Information Technology, Computer, and Electrical Engineering, ICITACEE 2017

Volume 2018-January, 12 January 2018, Pages 45-49

4th International Conference on Information Technology, Computer, and Electrical Engineering, ICITACEE 2017; The Wujil Resort and Conventions Semarang; Indonesia; 18 October 2017 through 19 October 2017; Category number CFP1789Z-PRT; Code 134244

## Hoax detection system on Indonesian news sites based on text classification using SVM and SGD (Conference Paper)

Prasetijo, A.B.<sup>a</sup>, Isnanto, R.R.<sup>a</sup>, Eridani, D.<sup>a</sup>, Soetrisno, Y.A.A.<sup>b</sup>, Arfan, M.<sup>b</sup>, Sofwan, A.<sup>b</sup>

<sup>a</sup>Department of Computer Engineering, Faculty of Engineering, Diponegoro University, Semarang, Indonesia

<sup>b</sup>Department of Electrical Engineering, Faculty of Engineering, Semarang, Indonesia

### Abstract

View references (13)

A deliberate falsehood intentionally fabricated to appear as the truth, or often called as hoax (hocus to trick) has been increasing at an alarming rate. This situation may cause restlessness/anxiety and panic in society. Even though hoaxes have no effect on threats, however, new perceptions can be spread that they can affect both the social and political conditions. Imagery blown from hoaxes can bring negative effects and intervene state policies that may decrease the economy. An early detection on hoaxes helps the Government to reduce and even eliminate the spread. There are some system that filter hoaxes based on title and also from voting processes from searching processes in a search engine. This research develops Indonesian hoax filter based on text vector representation based on Term Frequency and Document Frequency as well as classification techniques. There are several classification techniques and for this research, Support Vector Machine and Stochastic Gradient Descent are chosen. Support Vector Machine divides a word vector using linear function and Stochastic Gradient Descent divides a word vector using nonlinear function. SVM and SGD are chosen because the characteristic of text classification includes multidimensional matrixes. Each word in news articles can be modeled as feature and with Linear SVC and SGD, the feature of word vector can be reduced into two dimensions and can be separated using linear and non-linear lines. The highest accuracy obtained from SGD classifier using modified-huber is 86% over 100 hoax and 100 nonhoax websites which are randomly chosen outside dataset which are used in the training process. © 2017 IEEE.

### SciVal Topic Prominence ⓘ

Topic: Electronic mail | Internet | image spam

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### Author keywords

Hoax Stochastic Gradient Descent Support Vector Machine

### Indexed keywords

Engineering controlled terms:

Information retrieval systems Search engines Stochastic systems Support vector machines Text processing Vectors

Engineering uncontrolled terms

Classification technique Document frequency Hoax Nonlinear functions Political conditions Stochastic gradient descent Text classification Vector representations

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Performance Analysis of Artificial Neural Network Based Classifiers for Cyberbullying Detection

Curuk, E. , Aci, C. , Sarac Essiz, E. (2018) *UBMK 2018 - 3rd International Conference on Computer Science and Engineering*

Fake news identification characteristics using named entity recognition and phrase detection

Al-Ash, H.S. , Wibowo, W.C. (2018) *Proceedings of 2018 10th International Conference on Information Technology and Electrical Engineering: Smart Technology for Better Society, ICITEE 2018*

Review study of hoax email characteristic

Yuliani, S.Y. , Sahib, S. , Abdollah, M.F. (2018) *International Journal of Engineering and Technology(UAE)*

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Original language: English

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Volume Editors: Facta M.,Widianto E.D.,Eridani D.,Riyadi M.A.,Prasetijo A.B.

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Publisher: Institute of Electrical and Electronics Engineers Inc.

Fake news identification characteristics using named entity recognition and phrase detection

Al-Ash, H.S. , Wibowo, W.C. (2018) *Proceedings of 2018 10th International Conference on Information Technology and Electrical Engineering: Smart Technology for Better Society, ICITEE 2018*

Study of hoax news detection using naïve bayes classifier in Indonesian language

Pratiwi, I.Y.R. , Asmara, R.A. , Rahutomo, F. (2018) *Proceedings of the 11th International Conference on Information and Communication Technology and System, ICTS 2017*

Raising a model for fake news detection using machine learning in Python

Agudelo, G.E.R. , Parra, O.J.S. , Velandia, J.B. (2018) *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*

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- 1 Chen, Y.Y., Yong, S.-P., Ishak, A. Email hoax detection system using levenshtein distance method (2014) *J. Comput*, 9 (2). Cited 4 times. Feb.
- 2 Rasywir, E., Purwarianti, A. Eksperimen pada sistem klasifikasi berita hoax berbahasa Indonesia berbasis pembelajaran mesin (2016) *J. Cybermatika*, 3 (2). Cited 6 times.
- 3 Zhang, Y.-T., Gong, L., Wang, Y.-C. Improved TF-IDF approach for text classification (2005) *Journal of Zhejiang University: Science*, 6 A (1), pp. 49-55. Cited 38 times. doi: 10.1631/jzus.2005.A0049  
[View at Publisher](#)
- 4 Michie, D., Spiegelhalter, D.J., Taylor, C.C. (1994) *Machine Learning, Neural and Statistical Classification*. Cited 1572 times. New York: Ellis Horwood
- 5 Dyson, L., Golab, A. Fake news detection exploring the application of NLP methods to machine identification of misleading news sources *CAPP 30255 Adv. Mach. Learn. Public Policy*
- 6 Rubin, V.L., Conroy, N.J., Chen, Y., Cornwell, S. Fake news or truth using satirical cues to detect potentially misleading news (2016) *Proceedings of NAACL-HLT*, pp. 7-17. Cited 25 times.

- 7 Pedregosa, F., Varoquaux, G., Gramfort, A., Michel, V., Thirion, B., Grisel, O., Blondel, M., (...), Duchesnay, É.  
**Scikit-learn: Machine learning in Python**

(2011) *Journal of Machine Learning Research*, 12, pp. 2825-2830. Cited 8479 times.  
<http://jmlr.csail.mit.edu/papers/volume12/pedregosa11a/pedregosa11a.pdf>

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- 8 Nedrich, M.  
*An Introduction to Gradient Descent and Linear Regression*

Accessed October 1, 2017

<https://spin.atomicobject.com/2014/06/24/gradientdescent-linear-regression/>

- 9 Brownlee, J.  
*Gradient Descent for Machine Learning*

URL Accessed October 1, 2017

<https://machinelearningmastery.com/gradient-descent-for-machinelearning/>

- 10 Ng, A.  
Cs229 lecture notes  
(2000) *CS229 Lect. Notes*, 1 (1), pp. 1-3. Cited 26 times.

- 11 Sasaki, Y.  
The truth of the F-measure  
(2007) *Teach Tutor Mater*, 1 (5). Cited 37 times.

- 12 Bajaj, S.  
*The Pope Has A New Baby! Fake News Detection Using Deep Learning*. Cited 3 times.

- 13 Conroy, N.J., Rubin, V.L., Chen, Y.  
**Automatic deception detection: Methods for finding fake news**

(2015) *Proceedings of the Association for Information Science and Technology*, 52 (1), pp. 1-4. Cited 69 times.

<http://onlinelibrary.wiley.com/doi/10.1002/meet.2014.51.issue-1/issuetoc>

doi: 10.1002/pa2.2015.145052010082

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**ICITACEE 2017**

OCTOBER 18 -19, 2017



The Wujil Resort and Conventions  
Semarang, October 18 - 19, 2017



DEPARTMENT OF COMPUTER ENGINEERING  
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## The 2017 4th International Conference on Information Technology, Computer and Electrical Engineering (ICITACEE)

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October 18, 2017 – October 19, 2017

The 2017 4<sup>th</sup> International Conference on Information Technology, Computer, and Electrical Engineering (ICITACEE) provides a forum for researchers, academicians, professionals, and students from various engineering fields and with cross-disciplinary working or interest in the development and design of information technology, computer system, and electrical engineering to interact and disseminate the latest issues and researches. It also offers opportunity to enjoy the heritage and the beauty of Semarang.

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2. Azli Yahya, B.Eng., M.Sc., Ph.D. (Universiti Teknologi Malaysia).
3. Assoc. Prof. Dr. Mohamad Noorman Masrek (Universiti Teknologi Mara).

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Wednesday 18, 13.00-17.00

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2	EPW-02	Enhancing the DC Voltage Utilization of Twelve-Switch Voltage Source Inverter Feeding Symmetrical/Asymmetrical Nine-Phase Loads	Ahmed Elserougi, Ibrahim Abdelsalam, Ahmed Massoud, Shehab Ahmed
3	EPW-03	Determination of the Conduction Angle for Switched Reluctance Motor Drive	Slamet Riyadi
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5	EPW-05	A Three-Level Common-Emitter Current Source Inverter with Reduced Device Count	Suroso, Daru Tri Nugroho, Winasis Winasis
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7	EPW-07	Optimal Photovoltaic Placement at the Southern Sulawesi Power System for Stability Improvement	Ardiaty Arief, Muhammad Bachtiar Nappu, Sitti Marwah Rachman, Mustadir Darusman
8	EPW-08	Feature Extraction Using Hilbert-Huang Transform for Power System Oscillation Measurements	Buyung Sofiarto Munir, Muhamad Reza, Agung Trisetyarso, Bahtiar Saleh Abbas
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10	EPW-10	Harmonics Monitoring of Car's Inverter using Discrete Fourier Transformation	Mat Syai'in, N.H. Rohiem, R. K. Tobing, M.A. Atmoko, M. F. Adiatmoko, A. Soeprijanto, A.M Hatta, Sekartedjo

# A Bi-directional Boost Converter-Based Non-Isolated DC-DC Transformer with Modular Solid-State Switches for Medium-/High-Voltage DC Grids

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**Abstract**— In this paper, a bi-directional non-isolated dc-dc transformer is proposed, which can be used for connecting different dc voltage levels in medium-/high-voltage dc grids. The proposed dc-dc transformer is based on the conventional bi-directional boost converter, but with modular solid-state switches to avoid the complexity of employing series-connected Insulated Gate Bipolar Transistors (IGBTs) to meet the high-voltage requirement. The modular solid-state switch consists of cascaded modules, where each module consists of Half-Bridge Sub-Module (HB-SM) along with clamping IGBT. Small module capacitance is required in the proposed architecture as it is used typically to clamp the module voltage, not to store the energy to be delivered to the load. This affects positively the lifetime of the dc-dc transformer. On the other hand, clamping IGBTs ensure a successful operation with balanced capacitors' voltages without the need for voltage or current measurements. A detailed illustration for the proposed architecture is presented along with its operational modes and controller. Simulation results for a 2MW 10 kV/25 kV dc-dc transformer are presented to show the viability of the proposed architecture.

**Keywords**— *Bi-directional converter; dc-dc transformer; modular solid-state switch.*

## I. INTRODUCTION

The dc-dc transformer is an essential component in medium-/high-voltage dc grids for connecting two different dc voltage levels [1]. The dc-dc transformer can be classified into isolated [2-5] and non-isolated [6-10]. In the isolated type, an isolation transformer is employed to isolate between the high- and low-voltage sides.

The conventional non-isolated dc-dc boost converters are not normally used for applications requiring high voltage gains because of the difficulties with the main switch stresses [1], as the employed switches are rated at the higher voltage level. To meet the required high-voltage rating of the switch, series-connection of IGBTs [11], or multi-module dc-dc transformer configurations [9] can be used. In case of series connection of IGBTs, there are some challenges related to static and dynamic voltage sharing among the involved IGBTs. Active gate control can be deployed, yet with increasing system complexity [11].

While in case of multi-module converters, there are two possible connections [9]: cascaded converters and series converters. In cascaded converters [9], the first converter has intermediate voltage stresses and high current stresses, while the second converter has high voltage stresses and low current

stresses. In addition, there is a difficulty in the control due to the interaction between converters. In case of series converters with one dc input [9], each converter processes only half of the input power, which enhances the system efficiency, and the employed switches are rated at half of the total voltage stress, which is still high for one IGBT. To reduce the voltage rating of employed switches, multi-module (generally,  $n$  modules) can be employed by connecting their output in series, but their inputs should be isolated which necessitates isolating transformers.

In order to meet the required high-voltage rating of switches in medium-/high-voltage applications without employing series-connection of switches nor multi-module converters, multi-module-cascaded high-voltage composite switch can be employed which enables recruiting low-voltage IGBTs in high-voltage applications.

In [12], a high-voltage composite switch, which is based on Modular Multilevel Converter (MMC), is proposed. This composite switch entails cascaded modules, where each module consists of a dc capacitor, a resistor, and four IGBTs (i.e. a Full-Bridge Sub-Module (FB-SM)). The voltage balancing is guaranteed automatically during the conduction modes of this configuration. The main drawback is that the number of required gate drivers is four times that with the series-connected IGBTs.

In this paper, a modular high-voltage switch with a reduced number of IGBTs is proposed for a bi-directional boost converter-based dc-dc transformer. The proposed modular switch entails cascaded modules, where each module consists of Half-Bridge SM (HB-SM) (each SM has two IGBTs and a small dc capacitor) along with clamping IGBT. The capacitance of the HB-SM is small, as the dc capacitor is used as a snubber circuit to clamp the voltage of the HB-SM not to store the energy to be delivered to the load. While clamping IGBTs are employed to ensure balanced capacitors' voltages during the operation without the need for voltage or current measurement. The modular switch's modules are operated with Marx concept, i.e. basic cell for Marx [13] is employed, where the capacitors are connected in parallel during the bypass mode (turn-on) of the modular switch, and are connected in series during the turn-off period of the modular switch. The HB-SMs' capacitances should be selected small enough to ensure insignificant effect on the boost converter operation and to limit the inrush current emanated from the repetitive switching of modules' capacitors during the operation. Detailed illustration and design for the proposed architecture are presented in the following sections.

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4	INF-04	Student Learning Styles and Emotional Tendencies Detection Based on Twitter	Robet Habibi, Djoko Budiyanto Setyohadi, Kartika Imam Santoso
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# Regulatory Framework Creation Analysis to Reduce Security Risks The Use of Social Media in Companies

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**Abstract**— Companies, agencies and individuals currently use social media as a means of communication and business facilities, because through social media the staffs can connect globally in expressing ideas, feelings or emotions. However, social media users need to be aware of the security risk to their organization. In this paper, we present a perception of the risks, benefits, and strategies of social media applications developed from societies that use social media in the company by discussing existing regulations and how they apply to the use of social media by companies/institutions also to overcome this challenge. From this research, a solution is made for companies whose security rules are being used by the public. This regulatory framework can serve as a basis for establishing company internal policies for the use of social media by its employees. With the creation of policies that are the result of this study, companies that have the maximum ability in the field of information technology.  
**Keywords**— Social media, security risk, privacy, Security policy

## I. INTRODUCTION

Social media are common today. Social media is used for communication, from sending messages to sharing many things with the community and the people closest. The popularity of social media in the internet world has been widely used to build a network of friends to business networks, this forces businesses to adapt marketing strategies and involve social media as a marketing tool[1]. Some companies today are even actively creating specialized corporate social media communities such as corporate Twitter channels, YouTube channels, or Facebook fan pages. Social media are generally used for communication facilities in the company or as a media campaign and marketing[2].

The popularity of social media cannot be separated from the security risks that threaten users. The threat of this risk certainly affects the companies that are actively involved in social media and not alert[3]. Mistakes in using social media can lead to customer attacks, negative publicity and reputation damage to the company[4].

In addition to this, organizations are also facing threats from their own employees who often post on social media on behalf of the organization either through their personal

accounts or company accounts. Other risks received can include phishing, information leakage, malware to hacking.

Social media policies are seen as an important part of the organization[5]. The regulatory framework is an important aspect of controlling the use of social media within corporations[6]. In this paper, we find the risks of using social media to develop more effective strategies to decrease the security threat by social media to companies through the establishment of a regulatory framework.

## II. SOCIAL MEDIA SECURITY RISKS

The development of an increasingly modern era encourages the change of the system, either directly or indirectly, as in a company. Technological advances, especially the internet make the limitations of distance, time and cost can be easily overcome. Implementation of technology, in this case, to improve business, sales and buy of products is to use electronic commerce[7]. Company policies that are made for enterprise information security from social media are often only accepted for that purpose without being read and understood by users. The implications are privacy and security[8].

Through good communication, a company will feel comfortable and cut the perception of corporate risk, and ultimately can influence consumers in determining decisions in a company through social media. In accordance with research conducted by Khailil Leonil (2015) which states that perceived risk perception of consumers have a significant impact on online decisions, and related to the existence of online fraud, the company always pay attention to the quality of service in terms of risk perception, this is due to perception Risk contains uncertainty of a risk situation in a company that is product risk, transaction risk and psychological risk[9].

Understanding the perception of risk is needed[10]. Every person within a company has different perceptions of risk. A member of the IT department will see viruses or malware as a risk that could impact data loss on the company,

6	INF-06	Integration Of Pharmacy And Drug Manufacturers In RSUD Dr Samratulangi Tondano By ESB WSO2 To Improve Service Quality (A Case Study of RSUD Dr Samratulangi Tondano, Minahasa Regency, North Sulawesi)	Damar Suryo Sasono, Frendy Rocky Rumambi, Ressa Priskila, Djoko Budiyanto Setyohadi
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25	CSI-10	Analysis of Custody Transfer on Moving Bundle Protocol of Wireless Router in Delay Tolerant Network (DTN)	Fitri Noviani, Deris Stiawan, Sri Desy Siswanti, Tri Wanda Septian, Munawar A. Riyadi, Fahad Aljaber, Rahmat Budiarto

**Track: Electronics, Robotics, and Instrumentation, Image & Signal Processing, Wireless & Telecommunications**

**Room: ELROINS**

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2	ERI-02	Hardware Design of Queuing Free Environmental Friendly Automatic Toll Gate Using RFID	W. A. Syafei, A. F. Listyono, Darjat Darjat
3	ERI-03	Smart Meter based on Time Series Modify and Constructive Backpropagation Neural Network	M. F. Adiatmoko, Adi Soeprijanto, Mat Syai'in, Nasyith Hananur R
4	ERI-04	The Development of Soil Water Content Detector	Amin Suharjono, Muhammad Mukhlisin, Nur Khodijah M. Alfisyahrin
5	ERI-05	Applying Maritime Wireless Communication to Support Vessel Monitoring	Zahir Zainuddin, Wardi Wardi, Yurika Nantan

# A Multiple Classifiers Broadcast Protocol for VANET

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**Abstract**—Many types of artificial intelligent machines have been used for decision making purposes. In VANET broadcast protocols, vehicles must decide the received messages are to be rebroadcast or not. Several attributes such as sender-to-receiver distance, sender-receiver speed difference, number of neighboring vehicles, as well as vehicle's movement direction are important measures to take the broadcast decision. As the relationships of attributes to the broadcast decision cannot be mathematically defined, the use of a classifier-based artificial intelligence may approximately predict the relationships of all the incorporated attributes to such a decision. As the decision is based on prediction, the use of multiple classifiers in decision making may increase accuracy. Therefore, this research employs a combined-classifiers at an abstract level to provide firmer broadcast decisions on VANET. Our research results justify that the performance of our combined multiple-classifiers outperformed a single-classifier scheme. The multi-classifiers scheme contributes to an average increase of 2.5% in reachability compared to that of the efficient counter-based scheme (ECS). The combined multi-classifiers scheme also improves the saving in rebroadcast tries by 38.9%.

**Keywords**—Broadcast-storm, classifier, VANET, vehicular attribute.

## I. INTRODUCTION

An efficient broadcast has always been a hot issue in broadcast protocol area. Several schemes have been available, from heuristic (e.g. probability-based, counter-based broadcast) to topology-based broadcast (e.g. distance-based broadcast). However, most of the solutions have used mostly only a few attributes (whether local or global), such as the use of sender-to-receiver distance, number of message duplicates received, or even only employing probability to reduce the number of nodes/vehicles that rebroadcast messages to mitigate the broadcast-storm problem (the massive message redundancy, contention and collision) [1, 2, 3, 4].

In reality, considering many attributes in the broadcast decision mechanism may lead to a more efficient broadcast scheme. For example, a vehicle having a greater distance from the sender vehicle is more potential to rebroadcast messages than that of having a smaller distance. Likewise, a vehicle that has a higher speed differential to the sender is considered to be a better broadcast candidate as it will go out from the sender's

radio coverage fast. The number of neighboring vehicles can also be used to select the rebroadcast candidates. The denser the neighbors, the smaller the probability for a vehicle to rebroadcast. Therefore, a multiple-attributes scheme are more probable to outperform a single-attribute scheme if such attributes are properly treated.

To properly handle the attributes, a classification algorithm (known as a classifier or an expert) can be used to examine all the possible situations of the attributes dealing with current vehicular network situation. For example, a greater distance threshold should be applied for vehicles deserved rebroadcast in a dense network. However, a smaller threshold is required to maintain high network reachability. A classifier is able to recognize the input conditions of the attributes and to make decisions based on the knowledge obtained from prior training (called as model). Our work employs the following attributes: sender-to-receiver distance, number of message copies, vehicular density, as well as speed differential and movement direction.

Discussion of the research are presented in what follows. Research in broadcast protocols are presented in section 2. Sections 3 and 4 discuss how our experiments are set up and experimented. Results of the study are presented and discussed in section 5 and conclusions can be found in section 6.

## II. THE BROADCAST-STORM MITIGATION SCHEMES

One simple method to reduce the broadcast-storm is to use a probabilistic approach. The probabilistic based scheme uses probability mechanism for node selection rather than using a threshold mechanism (such as in distance-based threshold) for determining rebroadcast nodes. Basic broadcast techniques in VANETs follow either a  $l$ -persistence or a  $p$ -persistence scheme. The  $l$ -persistence scheme has the advantages of low complexity and high penetration rate, but creates massive redundancy. The  $p$ -persistence scheme may reduce message redundancy but may increase in total latency and degraded penetration rate. For example, literature [5] proposed three schemes: weighted  $p$ -persistence, slotted  $l$ -persistence, and slotted  $p$ -persistence broadcast schemes, whilst literature [6] proposed an adaptive probabilistic based scheme that senses idle channel time to represent the broadcast probability.



# Analysis of Custody Transfer on Moving Bundle Protocol of Wireless Router in Delay Tolerant Network (DTN)

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**Abstract**—Delay Tolerant Network (DTN) is a network architecture to provide a solution for networks which have intermittent connectivity, long delay, a different data rate and high error rate. DTN is used as an alternative solution for communication networks in remote areas. DTN communications model based on the nodes mobility to transmit data between nodes which geographically separated so if disconnection problem happens when data transfer is running, bundle which already has been sent will remain stored in the last node where the data reached, and then when connection reconnects, the data transfer process can be continued without repeating the process from the beginning until the data reaches the destination node. This paper analyzes the custody transfer on moving bundle protocol of wireless router in a DTN. The analysis uses a delivery data scenario that implements a wireless router moving on a DTN Network by showing custody transfer bundle protocol and takes into account the time of transfer in any data from DTN log. The scenario considers two conditions, namely the LoS (Line of Sight) and n-LoS (near Line of Sight) with distance and data variation. Experimental results show the important role of the custody transfer agent in DTN network.

**Keywords**—Delay Tolerant Network; Custody Transfer; Bundle Protocol; Wireless Router; Digital Courier

## I. INTRODUCTION

The concept of Delay Tolerant Network (DTN) can be applied on the network by utilizing the tools which acts as a digital courier to spread data from one place to another [1]. Digital courier itself is in the form of wireless routers which move to the area which requires network access and data collection. The digital courier moves to a place which has the connection access and processes those requests so that internet services can be applied and presented to an area which has the following characteristics: long delay, high rate of loss, and the low level of connectivity [2]. Bundle layer or bundle protocol is the main protocol used in DTN. Bundle layers have role to save and forward the whole or a portion of the bundle between the nodes.

In DTN, there is a term called the custody transfer. Custody transfer [3] is a mechanism to improve reliability of delivery using the hop-by-hop reliability, one or more hops, with no end-to-end connectivity thru more reliable and responsible transferring of delivery. Custody Transfer gives responsibility in every data transfer to destinations between its nodes (node to node one another). In this work people are modelled as carrier routers (digital couriers) with intermediate delivery of data between servers and clients using DTN.

The rest of the paper is organized as follows. Related works on mapping research area is described in Section 2. Section 3 presents the experimental scenario. Section 4 discusses the result. Finally, Section 5 provides our conclusion and identified potential future work to be carried out in this area.

## II. RELATED WORKS

Bundle layer or bundle protocol [4] is the main protocol which used in DTN. Bundle layer is in charge of storing and forwarding the whole or part of bundles between nodes. A bundle layer protocol is used when across all networks (region) in the DTN, it supports resending the data from one node to another, which being damaged and lost on both transport layer and bundle. Unfortunately, in a proposal by [5] there was not a single transport layer which works end-to-end at DTN. It means that the end-to-end reliability can only be implemented in the bundle layer.

Meanwhile, proposals by [3] and [6] described the custody transfer or "sending custody data" was performed on nodes which have been successfully received a bundle. This node which will send a bundle will ask the next node to send bundle acknowledgment. If the next node was ready to accept a bundle then the acknowledgment will be sent to the previous node.

## III. EXPERIMENTAL SCENARIO

The research is conducted through a series of experiments using simulation consisting of three devices (laptops) which act as server, router, and a client. Scenarios consider two

6	ERI-06	Design of Lungs Volume Measuring Instrument using Pressure Sensor Based on Arduino Uno R3 with Bluetooth Integration	Gayuh Nurul Huda, Eko Didik Widiyanto, Oky Dwi Nurhayati
7	ERI-07	Designing and Implementing the Arduino-based Nutrition Feeding Automation System of a Prototype Scaled Nutrient Film Technique (NFT) Hydroponics using Total Dissolved Solids (TDS) Sensor	Dania Eridani, Olivia Wardhani, Eko Didik Widiyanto
8	ERI-08	Door And Light Control Prototype Using Intel Galileo Based Internet of Things	Yudi Eko Windarto, Dania Eridani
9	ERI-09	Particle Swarm Optimization (PSO)-Based Self Tuning Proportional, Integral, Derivative (PID) for Bearing Navigation Control System on Quadcopter	Sumardi, Muhammad Surya Sulila, Munawar Agus Riyadi
10	ERI-10	Design of Integrated SCADA Systems in Piston Production Manufacturing Case Study on the Conveyor, the Coolant, the Hydraulic, and the Alarm Systems using PLC CJ1M and CJ1W-ETN21	Syahril Ardi, Agus Ponco, Rizky Awaludin Latief
11	ERI-11	Design of Pokayoke Systems to Increase the Efficiency of Function Check Oxygen Sensor Machine using Programmable Logic Controller in Manufacturing Industry	Syahril Ardi, Harits Abdurrahman
12	TEL-01	Design of Measurement System for HF MIMO NVIS Channel	Sarah Lasroma Manalu, Gamatyo Hendranto, Achmad Mauludiyanto
13	TEL-02	Design and Analysis of Slimjim Dual Band VHF and UHF Antenna with Crossarm Variation	Yuli Christyono, Ihsan Atmaji, Teguh Prakoso
14	TEL-03	Bandwidth Enhancement of Circular Microstrip Antenna Using Characteristic Mode Analysis	Teguh Prakoso, Liya Y. Sabila, Denti A. Damayanti, Aghus Sofwan, Munawar A. Riyadi, Sudjadi, Sukiswo, Enda W. Sinuraya, Karnoto
15	IMG-01	Pattern Recognition Analysis of Herbal Leaves Based on Distance-Based Similarity Measures Using the Gray Level Co-Occurrence Matrix Feature Extraction	M. Fahmi Awaj, R. Rizal Isnanto, Munawar Agus Riyadi
16	IMG-02	StegoCrypt Method using Wavelet Transform and One-Time Pad for Secret Image Delivery	De Rosal Ignatius Moses Setiadi, Andik Setyono, Mulyono
17	IMG-03	A Secure Image Watermarking using Chinese Remainder Theorem Based on Haar Wavelet Transform	De Rosal Ignatius Moses Setiadi, Usman Sudibyo, Fatma Eranisa, Eko Hari Rachmawanto, Christy Atika Sari
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