

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

Judul Makalah (Artikel) : Feed Forward Neural Network Modeling for Rainfall Prediction  
 Jumlah Penulis : 3 Orang Penulis ke : 1  
 Nama Penulis : **Hasbi Yasin**, Budi Warsito, Rukun Santoso  
 Identitas Makalah  
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 c. Volume, No, Bulan, Tahun : Vol. 73, December 2018  
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Komponen Yang Dinilai	Nilai Reviewer		Nilai Rata-rata
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a. Kelengkapan unsur isi buku (10%)	3	2,5	2,75
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c. Kecukupan dan kemutakhiran data/informasi dan metodologi (30%)	8	8,3	8,15
d. Kelengkapan unsur dan kualitas penerbit (30%)	9	8,0	8,5
<b>Total = (100%)</b>	<b>28</b>	<b>27,4</b>	<b>27,7</b>

Reviewer 2



Drs. Sudarno, M.Si  
NIP. 19640709 199201 1 001

Unit kerja :  
Departemen Statistika Undip

Semarang, 19 April 2019  
Reviewer 1



Dr. Rukun Santoso, M.Si.  
NIP. 19650225 199201 1 001

Unit kerja :  
Departemen Statistika Undip

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c. Kecukupan dan kemutakhiran data/informasi dan metodologi (30%)	9	8,15
d. Kelengkapan unsur dan kualitas penerbit (30%)	9	8,5
<b>Total = (100%)</b>	<b>30</b>	<b>27,7</b>

Reviewer 2



Dr. Sudarno, M.Si  
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Unit kerja :  
Departemen Statistika Undip

Semarang, 4 April 2019  
Reviewer 1



Dr. Rukun Santoso, M.Si.  
NIP. 19650225 199201 1 001

Unit kerja :  
Departemen Statistika Undip

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b. Ruang lingkup dan kedalaman pembahasan (30%)	9			8
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	9			8
d. Kelengkapan unsur dan kualitas penerbit (30%)	9			9
<b>Total = (100%)</b>	<b>30</b>			<b>28</b>
<b>Kontribusi Pengusul (Penulis Pertama)</b>				<b>18 (60%)</b>

Komentar *Peer Review*:

- a. Kelengkapan dan kesesuaian unsur: .....  
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 .....
- b. Ruang lingkup dan kedalaman pembahasan: .....  
 ..penomoran gambar tidak konsisten  
 ..equation kurang tajam.....  
 .....
- c. Kecukupan dan kemutahiran data/informasi dan metodologi:  
 ..cukup baik namun belum maksimal.....  
 .....
- d. Kelengkapan unsur dan kualitas penerbit: .....  
 ..lengkap.....  
 .....
- e. Indikasi Plagiasi: .....  
 ..tidak ada.....  
 .....
- f. Kesesuaian bidang ilmu: .....  
 ..sesuai.....  
 .....

Semarang, 13-8-2019  
 Reviewer 1



Dr. Rukun Santoso, M.Si.  
 NIP. 19650225 199201 1 001

Unit kerja:  
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Hasil Penilaian *Peer Review* :

Komponen Yang Dinilai	Nilai Maksimal Prosiding = 30			Nilai Akhir Yang Diperoleh
	Internasional Terindeks Scopus	Internasional	Nasional	
a. Kelengkapan unsur isi buku (10%)	3			2,5
b. Ruang lingkup dan kedalaman pembahasan (30%)	9			8,6
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	9			8,3
d. Kelengkapan unsur dan kualitas penerbit (30%)	9			8,0
<b>Total = (100%)</b>	<b>30</b>			<b>27,4</b>
<b>Kontribusi Pengusul (Penulis Pertama)</b>				<b>18 (60%)</b>

Komentar *Peer Review*:

- a. Kelengkapan dan kesesuaian unsur: .....  
 Hasil penelitian belum tersampaikan di abstrak  
 eConclusion belum menjawab judul makalah  
 .....
- b. Ruang lingkup dan kedalaman pembahasan: .....  
 Pernyataan penelitian yang sejenis tidak disajikan.  
 model Terapan belum dibahas.  
 .....
- c. Kecukupan dan kemutahiran data/informasi dan metodologi:  
 Referensi kurang banyak, jurnal dan sitasinya  
 tidak lengkap.  
 .....
- d. Kelengkapan unsur dan kualitas penerbit: .....  
 lengkap dan baik  
 .....
- e. Indikasi Plagiasi: .....  
 tidak terlihat  
 .....
- f. Kesesuaian bidang ilmu: .....  
 sesuai  
 .....

Semarang, 19/9-2019  
 Reviewer 2

Drs. Sudarno, M.Si.  
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Volume 73, 21 December 2018, Article number 05017

3rd International Conference on Energy, Environmental and Information System, ICENIS 2018; Semarang; Indonesia; 14 August 2018 through 15 August 2018; Code 143635

## Feed Forward Neural Network Modeling for Rainfall Prediction (Conference Paper)

(Open Access)

Hasbi, Y.  Budi, W., Rukun, S. 

Department of Statistics, Faculty of Science and Mathematics, Diponegoro University, Semarang, Indonesia

### Abstract

[View references \(9\)](#)

Prediction of rainfall data by using Feed Forward Neural Network (FFNN) model is proposed. FFNN is a class of neural network which has three layers for processing. In time series prediction, including in case of rainfall data, the input layer is the past values of the same series up to certain lag and the output layer is the current value. Beside a few lagged times, the seasonal pattern also considered as an important aspect of choosing the potential input. The autocorrelation function and partial autocorrelation function patterns are used as aid of selecting the input. In the second layer called hidden layer, the logistic sigmoid is used as activation function because of the monotonic and differentiable. Processing is done by the weighted summing of the input variables and transfer process in the hidden layer. Backpropagation algorithm is applied in the training process. Some gradient based optimization methods are used to obtain the connection weights of FFNN model. The prediction is the output resulting of the process in the last layer. In each optimization method, the looping process is performed several times in order to get the most suitable result in various composition of separating data. The best one is chosen by the least mean square error (MSE) criteria. The least of in-sample and out-sample predictions from the repeating results been the base of choosing the best optimization method. In this study, the model is applied in the ten-daily rainfall data of ZOM 136 Cokrotulung Klaten. Simulation results give a consecution that the more complex architecture is not guarantee the better prediction. © The Authors, published by EDP Sciences, 2018.

### SciVal Topic Prominence

Topic: Artificial neural network | Wavelet | Flood forecasting

Prominence percentile: 99.217 

### Author keywords

FFNN Prediction Rainfall RMSE

### Indexed keywords

Engineering controlled terms:

Autocorrelation Backpropagation algorithms Information systems Information use

Mean square error Rain

Engineering uncontrolled terms

Autocorrelation functions Complex architectures FFNN

Gradient-based optimization method Least mean square error Partial autocorrelation function

RMSE Time series prediction

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(2018) *Journal of Theoretical and Applied Information Technology*

Heavy rainfall forecasting model using artificial neural network for flood prone area

Sulaiman, J. , Wahab, S.H.

(2017) *Lecture Notes in Electrical Engineering*

Application of generalized regression neural network and support vector regression for monthly rainfall forecasting in western Jilin Province, China

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(2015) *Journal of Water Supply: Research and Technology - AQUA*

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A new hybrid artificial neural networks for rainfall-runoff process modeling  
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### Time-lagged recurrent network for forecasting episodic event suspended sediment load in typhoon prone area

(2009) *International Journal of Physical Sciences*, 4 (9), pp. 519-528. Cited 20 times.  
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□ 8 Yasin, H.

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Prediction of weekly rainfall in semarang city use support vector regression (svr) with quadratic loss function  
(2015) *International Journal of Science and Engineering (IJSE)*, 9 (1).

🔍 Hasbi, Y.; Department of Statistics, Faculty of Science and Mathematics, Diponegoro University, Semarang, Indonesia; email:hasbiyasin17@gmail.com

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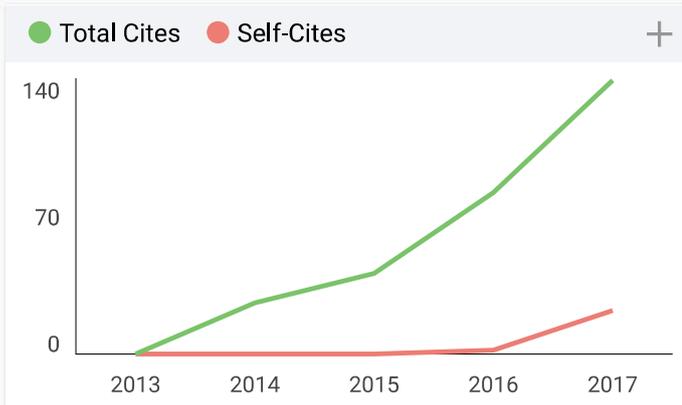
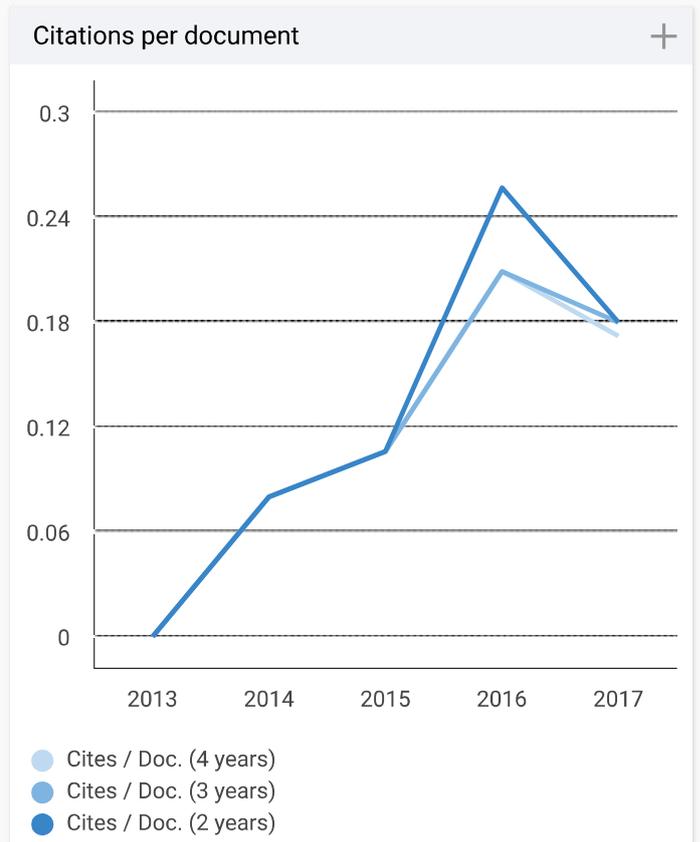
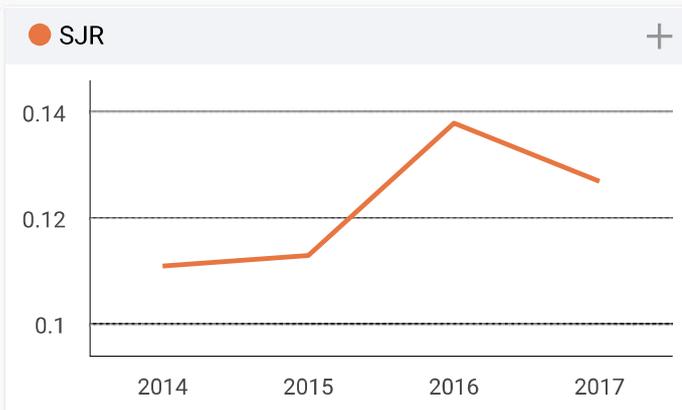
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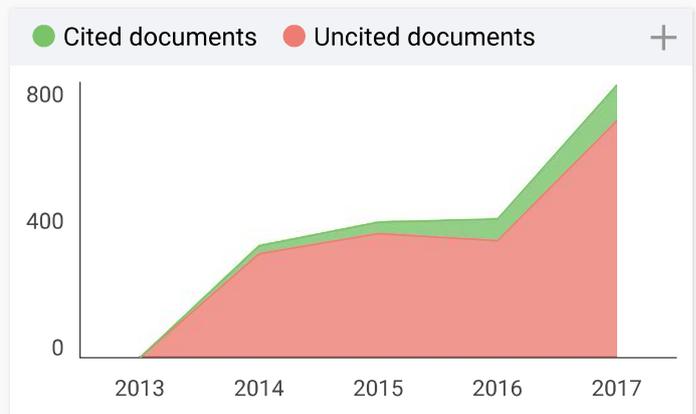
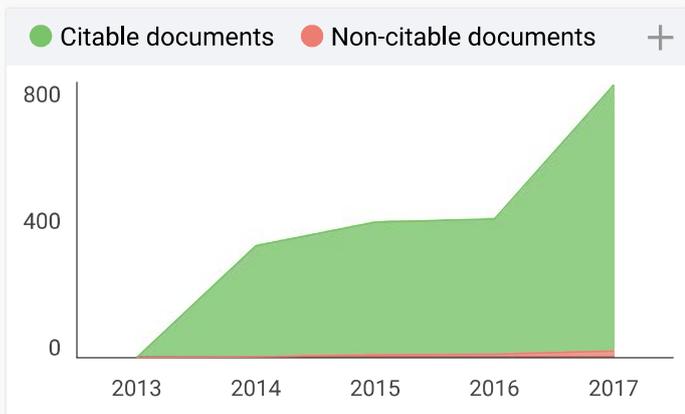
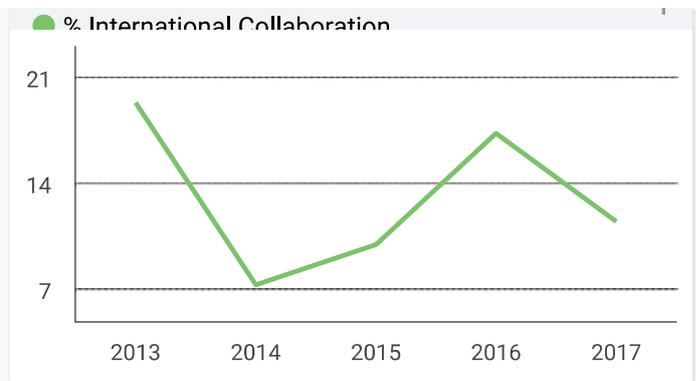
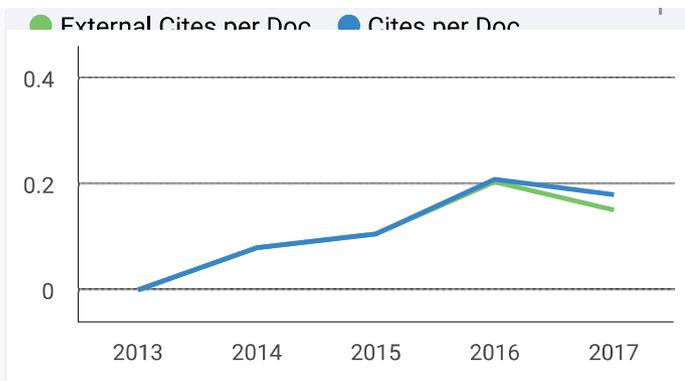
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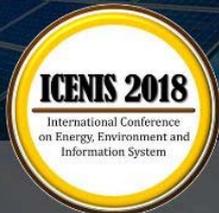
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# 3<sup>rd</sup> INTERNATIONAL CONFERENCE ON ENERGY, ENVIRONMENT AND INFORMATION SYSTEM 2018 (ICENIS 2018)

Tuesday - Wednesday, August 14<sup>th</sup> - 15<sup>th</sup>, 2018

Theme:

“Strengthening Planning and Implementation on Energy, Environmental and Information System Toward Low Carbon Society”

## Keynote Speakers



Prof. Dr. Takayuki Shimaoka  
Kyushu University, Japan



Prof. Dr. Nasrudin  
University of Malaya, Malaysia



Prof. Ho Ching Siong  
Universiti Teknologi Malaysia, Malaysia



Dr. Junichi Fujino  
IGES - Japan



Dr. Kanawut Inkaew  
Rajamangala University of Technology Phra Nakhon, Thailand



Dr.-Ing. Sudarno  
School of Postgraduate Studies Diponegoro University, Indonesia

## A Call for Participant

After Successful in the previous event with 200 selected paper, we invite for 3<sup>rd</sup> ICENIS 2018 on August 14<sup>th</sup> - 15<sup>th</sup>, 2018 at Santika Premier Hotel Semarang, with the theme “Strengthening Planning and Implementation on Energy, Environmental and Information System Toward Low Carbon Society”

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  - Energy Conversion Technology
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  - Nonrenewable Energy / Fossil Energy
2. Environments
  - Environmental Conservation
  - Environmental Policy, Planning and Education
  - Environmental Technology
  - Environmental Health and Toxicology
  - Environmental Epidemiology
  - Pollution Control
  - Waste Management
  - Green Infrastructure and Resilience
3. Information System
  - Business Intelligence
  - Supply Chain Information Systems
  - Industrial Information Systems
  - Decision Support Systems
  - Smart Information Systems
  - Health, Safety and Environment Information Systems
4. Societal Change, Culture and Low Carbon Development
  - Infrastructure Development and Low Carbon Society
  - Economic Perspective in Low Carbon Society
  - Government and International Relation
  - Public Policy
  - Labour and Formal- Informal Worker
  - Health and Gender
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Full Paper Submission : before July 15<sup>th</sup>, 2018  
Early Registration Payment : before July 10<sup>th</sup>, 2018

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Indonesian Presenter	IDR 2.500.000,00/paper
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# Preface

This is the proceeding of the 3<sup>rd</sup> International Conference on Energy, Environmental and Information System (**ICENIS**) 2018. The theme of ICENIS 2018 is “Strengthening Planning and Implementation Energy, Environment, and Information System Toward Low Carbon Society. ICENIS 2018 discussing the sustainability of the natural system, i.e energy management and policy, energy conservation, environmental education and planning, environmental conservation, environmental technology, environmental health, pollution control, waste management, green infrastructure and resilience, system information of supply chain and decision support system. Moreover the ICENIS 2018 introducing discussion of social aspect in low carbon society such as economic perspective, government, public policy and international relation, formal informal worker, gender, media and culture development

ICENIS 2018 organized by school of Postgraduate Studies, Diponegoro University has been conducted 14-15<sup>th</sup> august 2018. The conference has successfully performing forum to transferring and discussing research result among the researcher, students, government, private sector or industries. More than 390 participants and presenters from several countries such as Indonesia, Malaysia, Germany, Sudan, Australia, Japan, Libya have attended the conference to share their significant contribution in research related to energy, environment and information system. This proceeding contains 334 selected paper from the conference.

We would like to express our gratitude to all authors and members of scientific committee, reviewers and also organizing committee for their contribution to the success of the conference.

Guest Editors

Prof. Hadiyanto

Dr. Eng. Maryono

Dr. Budi Warsito



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