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Setiap Rabu, Pukul 12.30 - 15.00 WIB



Narasumber:

Prof. Dr. Wisnu Jatmiko

*Koordinator MIK-DIK Fasilkom UI
Ketua IEEE Indonesia Section*



1

Panduan
**PENULISAN
ARTIKEL
ILMIAH**

Bedah Buku :
"Penulisan Artikel Ilmiah"

Rabu, 6 Mei 2020

Profil Prof. Dr. Eng. Wisnu Jatmiko, S.T., M.Kom.



Profil lengkap dapat dilihat di:
<http://staff.ui.ac.id/wisnuj>

Name	Prof. Dr. Eng. Wisnu Jatmiko S.T., M.Kom.
Bachelor	Universitas Indonesia
Master	Universitas Indonesia
Doctoral	Nagoya University, Japan
Research Exp.	<p>During 2009- 2020, there are More Than 50 Grants and 180 international publications that are mostly indexed in Scopus and Google Scholar, 12 BOOKS, and 9 Copyrights</p> <p>In 2015, HABIBIE CENTER has awarded me as one of the WINNER OF Habibie Award in the engineering category.</p> <p>In 2014, received an award as a research ambassador (Widyasilpawijana) from the Ministry of Research and Technology</p>

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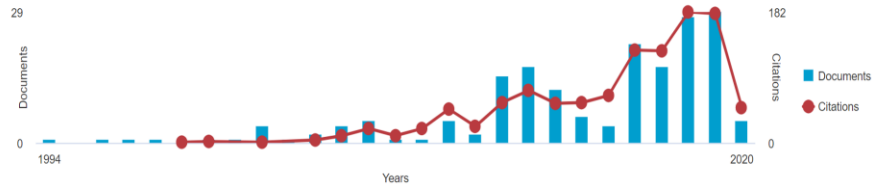
Total citations

1112 by 752 documents

h-index:

18

Document and citation trends:



Wisnu Jatmiko

Universitas Indonesia
186 Documents

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☆ W ⋮



Wisnu Jatmiko ✎

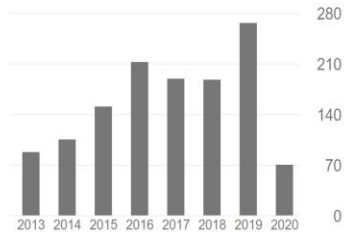
✓ MENGIKUTI

Professor, Faculty Computer Science [University of Indonesia](#)
Email yang diverifikasi di [cs.ui.ac.id](#) - [Beranda](#)
[Robotic and Intelligence Sy...](#)

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	Semua	Sejak 2015
Kutipan	1653	1082
indeks-h	22	17
indeks-i10	44	30



<input type="checkbox"/> JUDUL	DIKUTIP OLEH	TAHUN
<input type="checkbox"/> A pso-based mobile robot for odor source localization in dynamic advection-diffusion with obstacles environment: theory, simulation and measurement W Jatmiko, K Sekiyama, T Fukuda IEEE Computational Intelligence Magazine 2 (2), 37-51	174	2007
<input type="checkbox"/> Simulation of intelligent unmanned aerial vehicle (uav) for military surveillance MA Ma'Sum, MK Arrofi, G Jati, F Arifin, MN Kurniawan, P Mursanto, ... 2013 International Conference on Advanced Computer Science and Information ...	79	2013
<input type="checkbox"/> A PSO-based mobile sensor network for odor source localization in dynamic environment: theory, simulation and measurement W Jatmiko, K Sekiyama, T Fukuda 2006 IEEE International Conference on Evolutionary Computation, 1036-1043	68	2006
<input type="checkbox"/> Traffic big data prediction and visualization using fast incremental model trees-drift detection (FIMT-DD) A Wibisono, W Jatmiko, HA Wisesa, B Hardjono, P Mursanto Knowledge-Based Systems 93, 33-46	59	2016
<input type="checkbox"/> Vehicle counting and speed measurement using headlight detection	45	2013

Pengarang bersama

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- Petrus Mursanto**
Senior Lecturer, Faculty of Comp... >
- M. Anwar Ma'sum**
Faculty of Computer Science Uni... >



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Master Program, Computer Science

- > Master Program, Computer Science
- > Master Program, Information Technology
- > Doctorate Program, Computer Science

- Preface**
- Requirement
- Curriculum
- Double Degree Program
- FAQ



Vision

Being a study program that produces graduates who are able to do research in the field of Computer Science as a basis to implement education and information technology for international level.

Mission of Computer Science Master Program

In order to anticipate the challenges of globalization and contribute to the



Doctorate Program, Computer Science

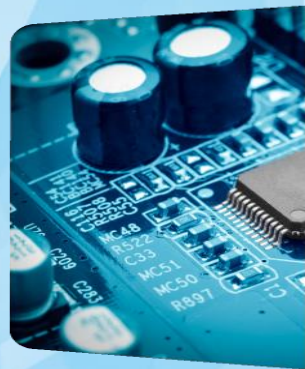
- > Master Program, Computer Science
- > Master Program, Information Technology
- > **Doctorate Program, Computer Science**

- Preface**
 - Requirements and Admission
 - Curriculum
 - List of Promotor/Co-promotor
 - Seminar DIK
- FAQ



Vision

Being a study program that produces best graduates who are able doing a research in order to create breakthroughs in the development of science and capable of transferring knowledge, as well as to produce independent and reliable graduates in the field of Computer Science to keep its development globally.



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IEEE at a Glance

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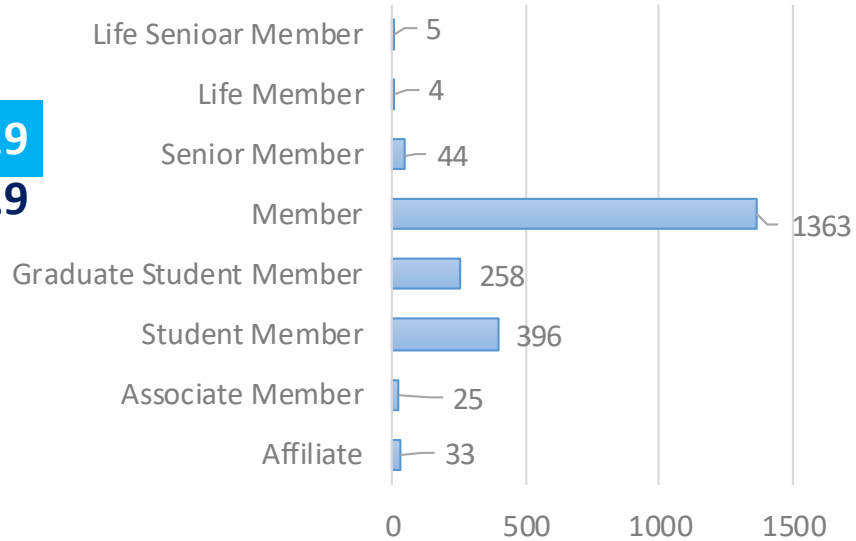
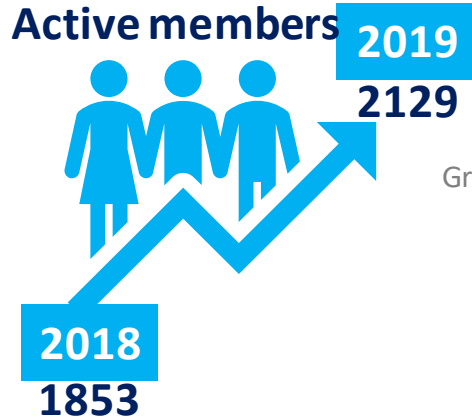


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Top-cited Periodicals



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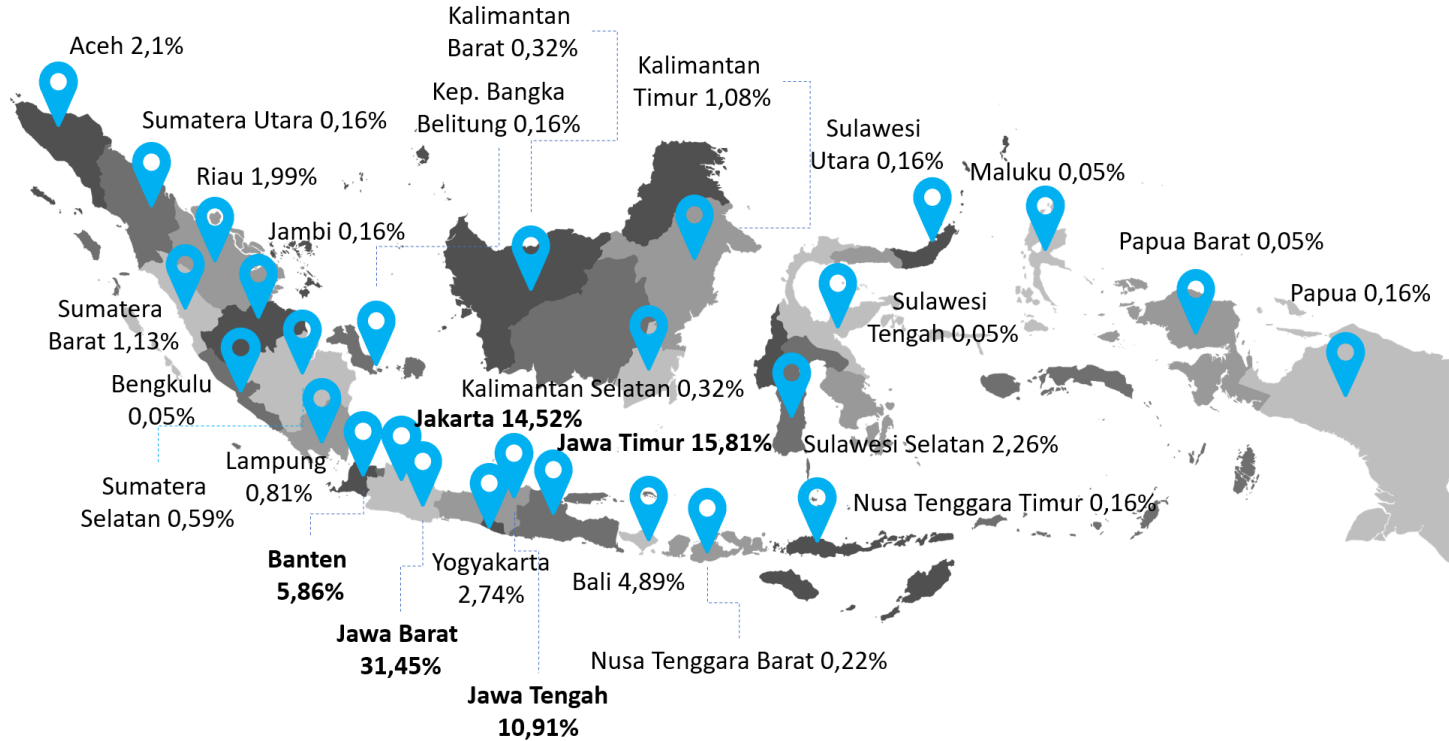
31 Years of IEEE Indonesia Section part of IEEE Global



Technical activities, non-technical activities, workshop, seminar, conferences

Conducted to raise awareness of IEEE and the introductions included background on the societies and encouragement to join IEEE

Indonesia Membership 2019



1 Enhancing The Number of International Journal Publication



Techniques in Finding a Journal with an Impact Factor

Publikasi



- ▶ International Journal
- ▶ National Journal
- ▶ Proceeding of ... (International Conference)
- ▶ Prosiding Seminar ... (National Conference)



ELSEVIER

The screenshot shows the IEEE Xplore Digital Library website. At the top, it says "IEEE Xplore DIGITAL LIBRARY" and "Access provided by: Universitas Indonesia Sign Out". The navigation bar includes "BROWSE", "MY SETTINGS", "MY PROJECTS", and "WHAT CAN I ACCESS?". A search bar is prominently displayed with a "SEARCH" button. Below the search bar, there are links for "beta", "Author Search", "Advanced Search", "Preferences", "Search Tips", and "More Search Options". The main content area displays "Pattern Analysis and Machine Intelligence, IEEE Transactions on". There are buttons for "Add Journal To My Alerts" and "Submit Your Manuscript". The bottom navigation bar includes "Home", "Popular", "Early Access", "Current Issue", "Past Issues", "About Journal", and "Submit Your Manuscript".



Apa itu Impact Factor?

(Springer)



- ▶ “The Impact Factor is considered the number 1 ranking value for scientific journals and has become a substantial part of any journal development discussion.”
- ▶ “Impact Factors are a benchmark of a journal's reputation and reflect how frequently peer-reviewed journals are cited by other researchers in a particular year.”

Menghitung Impact Factor



- ▶ “Pada suatu tahun tertentu, impact factor jurnal adalah jumlah rata-rata kutipan per makalah yang diterbitkan di jurnal selama dua tahun sebelumnya.

- ▶ Contoh:
 - ▶ A = jumlah artikel yang diterbitkan pada tahun 2008 dan mengutip artikel (terbit 2006 dan 2007) pada suatu jurnal
 - ▶ B = jumlah artikel suatu jurnal (terbit 2006 dan 2007) yang dikutip selama tahun 2008
 - ▶ Impact Factor = A/B

Contoh Journal Ber-Impact Factor

The image displays three screenshots of IEEE journal websites, each showing its impact factor and Eigenfactor. The top-left screenshot is for IEEE Sensors Journal, the top-right for IEEE Computational Intelligence Magazine, and the bottom-center for IEEE Access.

Journal Name	Impact Factor	Eigenfactor	Article Influence Score
IEEE Sensors Journal	3.076	0.02933	0.557
IEEE Computational Intelligence Magazine	5.857	0.00185	1.614
IEEE Access	4.098	0.03922	0.835

IEEE Sensors Journal
The *IEEE Sensors Journal* is a peer-reviewed, semi-monthly online journal devoted to sensors and sensing phenomena. The articles in this journal are peer reviewed in accordance with the requirements set forth in the *IEEE PSPB Operations Manual* (sections 8.2.1.C & 8.2.2.A). Each published article was reviewed by a minimum of two independent reviewers using a single-blind peer review process, where the identities of the reviewers are not known to the authors, but the reviewers know the identities of the authors. Articles will be screened for plagiarism before acceptance. Corresponding authors from low-income countries are eligible for waived or reduced open access fees.

IEEE Computational Intelligence Magazine
The *IEEE Computational Intelligence Magazine* (CIM) publishes peer-reviewed articles that present emerging novel discoveries, important insights, or tutorial surveys in all areas of computational intelligence design and applications, in keeping with the Field of Interest of the *IEEE Computational Intelligence Society* (IEEE/CIS).

IEEE Access
IEEE Access® is a multidisciplinary, applications-oriented, all-electronic archival journal that continuously presents the results of original research or development across all of IEEE's fields of interest. Supported by author publication fees, its hallmarks are a rapid peer review and publication process with open access to all readers. This journal is 100% open access. Learn more.

Apa itu H-Index?

(Wikipedia)

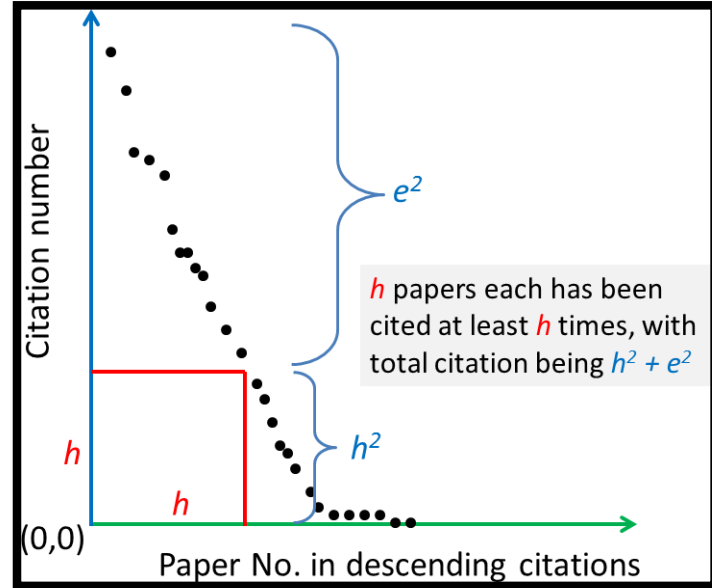


- ▶ “index that attempts to measure both the productivity and impact of the published work of a scientist or scholar”
- ▶ “The index can also be applied to the productivity and impact of a group of scientists, such as a department or university or country, as well as a scholarly journal.”

Menghitung H-Index



- ▶ “A scientist has index h if h of his/her N_p papers have at least h citations each, and the other $(N_p - h)$ papers have no more than h citations each. ”



Contoh Jurnal dan Peneliti dengan H Indeks

The image displays two examples of journals and researchers with high H-index scores. The top row shows the IEEE Computational Intelligence Magazine, which has an H-index of 48. It is published by the Institute of Electrical and Electronics Engineers and covers the field of Artificial Intelligence. The bottom row shows IEEE Access, which has an H-index of 56. It is also published by the Institute of Electrical and Electronics Engineers and covers a broad range of subjects including Engineering and Materials Science. To the right of each journal page is a Google Scholar profile for a researcher. The first researcher is Anil K. Jain, with an H-index of 205699, known for his work in Biometrics and Machine Learning. The second researcher is Toshio Fukuda, with an H-index of 30389, known for his work in Intelligent robotic systems and self-organizing systems. Both researcher profiles include a list of cited works and a bar chart showing their citation trends over time.

IEEE Computational Intelligence Magazine

Country: United States - [IRII](#) SIR Ranking of United States

Subject Area and Category: Computer Science, Artificial Intelligence

Publisher: Institute of Electrical and Electronics Engineers

Publication type: Journals

ISSN: 1556603X

Coverage: 2006-ongoing

Scope: The IEEE Computational Intelligence Magazine (CIM) publishes peer-reviewed articles that present emerging novel discoveries, important insights, or tutorial surveys in all areas of computational intelligence design and applications in keeping with the Field of Interest of the

H Index: 48

IEEE Access

Country: United States - [IRII](#) SIR Ranking of United States

Subject Area and Category: Computer Science, Computer Science (miscellaneous)

Publisher: Institute of Electrical and Electronics Engineers Inc.

Publication type: Journals

ISSN: 21693536

Coverage: 2013-ongoing

H Index: 56

Google Scholar Profile: Anil K. Jain

Michigan State University
Verified email at cse.msu.edu - [Homepage](#)

Biometrics Computer vision Pattern recognition Machine learning Image processing

TITLE	CITED BY	YEAR
Data clustering: a review AK Jain, MM Murty, PJ Flynn ACM computing surveys (CSUR) 31 (3), 264-323	16394	1999
Algorithms for Clustering Data AK Jain, RC Dubes	14253	1988
Statistical pattern recognition: A review AK Jain, RPW Duin, J Mao IEEE Transactions on pattern analysis and machine intelligence 22 (1), 4-37	7817	2000
Data clustering: 50 years beyond K-means AK Jain Pattern recognition letters 31 (8), 651-666	7053	2010
Introduction to biometric recognition AK Jain, AA Ross, K Nandakumar Introduction to Biometrics, 1-19	5618	2011

Year	Citations
2013	~14000
2014	~14000
2015	~14000
2016	~14000
2017	~14000
2018	~14000
2019	~14000
2020	~14000

Google Scholar Profile: Toshio Fukuda

Candidate for 2019 IEEE President Elect (2020 IEEE President) - [www.toshiofukuda.org/](#)

Professor, Beijing Institute of Technology (BIT)
Verified email at nifty.com - [Homepage](#)

Intelligent robotic system self-organizing system micro-nano robotics

TITLE	CITED BY	YEAR
Theory and applications of neural networks for industrial control systems T Fukuda, T Shibata IEEE Transactions on industrial electronics 39 (6), 472-489	495	1992
A new type of fish-like underwater microrobot S Guo, T Fukuda, K Asaka IEEE/ASME Transactions on Mechatronics 8 (1), 136-141	425	2003
Neuro-fuzzy control of a robotic exoskeleton with EMG signals K Kiguchi, T Tanaka, T Fukuda IEEE Transactions on fuzzy systems 12 (4), 481-490	384	2004
Dynamically reconfigurable robotic system T Fukuda, S Nakagawa Proceedings. 1998 IEEE International Conference on Robotics and Automation ...	363	1998
Assembly of nanodevices with carbon nanotubes through nanorobotic manipulations T Fukuda, S Nakagawa	346	2003

Year	Citations
2013	~1500
2014	~1500
2015	~1500
2016	~1500
2017	~1500
2018	~1500
2019	~1500
2020	~1500

Co-authors: [Fumihito Arai](#) Nagoya University, [Yasuhisa Hasegawa](#) Nagoya Univ., Univ of Tsukuba



Designing a Scientific Publication

Tujuan



Memahami cara menentukan state of the art dari penelitian

Menentukan kontribusi ilmiah dari penelitian

Membuat matriks kontribusi ilmiah berdasarkan proposal penelitian

Cara penulisan artikel ilmiah

Apa itu State of The Art

(Wikipedia)



- ▶ “the highest level of development, as of a device, technique, or scientific field, achieved at a particular time.”
- ▶ “It also refers to the level of development (as of a device, procedure, process, technique, or science) reached at any particular time as a result of the latest methodologies employed.”

Menentukan State of The Art



- ▶ Cara menentukan state of the art dalam penelitian adalah dengan merujuk rencana penelitian terhadap 3 parameter
 - ▶ Contribution
 - ▶ Originality
 - ▶ Novelty

Contribution (Undergraduate Level)



- ▶ Kontribusi ilmiah adalah segala sesuatu (hasil penelitian) yang secara umum memberi tambahan pengetahuan terhadap suatu disiplin ilmu atau achievement yang dapat diraih dari suatu disiplin ilmu
- ▶ Ex: laporan studi, implementasi teknologi dll.

Originality (Graduate Level)



- ▶ Originality / orisinalitas merupakan salah satu bentuk yang lebih spesifik dari kontribusi ilmiah yang merujuk kepada sesuatu yang belum pernah dikerjakan sebelumnya.
- ▶ Ex: teknologi pengenalan gangguan tidur dalam bentuk jam.

Novelty (Graduate Level)



- ▶ Novelty / keterbaruan adalah kontribusi ilmiah yang secara spesifik menambah pengetahuan secara teoritis maupun praktek dari suatu disiplin ilmu.
- ▶ Ex: penemuan teori baru di bidang koordinasi multiple robot.

Matriks State of The Art



- ▶ Metode yang akan membantu dalam menentukan state of the art salah satunya dengan membuat matrix

	Metode 1	Metode 2	Metode 3
Problem 1			
Problem 2			
Problem 3			

Posisi Penelitian (Matrix Originality)

(Sani M. Isa)



Author	Intersample Decorrelation	Interbeat Decorrelation	Interchannel Decorrelation	Entropy Coding	# Ch	Max Performance
Mammen, 1990	AZTEC	-	Time sync, Classified VQ	-	2	JaggedCR:8.6 E:24.5%
Linnenbank, 1992	Polynomial fitting	-	Channel subtraction	Huffman	64	SR& PVT CR:4.52
Cetin, 1993	DCT, Scalar quantization	-	PCA	-	12	CR:4.65 P:6.19%
Paggeti, 1994	-	Template based	-	Huffman	2	CR:11.02 P:0.54%
Sastry, 1995	DCT	-	DWT, VQ	-	12	CR=8.19 P=0.34%
Cohen, 1998	Linear prediction	Multichannel VQ	Multichannel VQ	-	2	CR=? P=7.1%
Miaou, 2001	Multichannel Adaptif VQ	-	Multichannel Adaptif VQ	-	2, 3	CR=16.62 P:13.8%

Vector quantization

Transform based

Relevant Studies: Multichannel ECG Compression [3]



Author	Intersample Decorrelation	Interbeat Decorrelation	Interchannel Decorrelation	Entropy Coding	# Ch	Remarks
Prieto, 2001	-	-	FIR system identification, DCT	-	12	CR:14 P:?
Alesanco, 2003	-	Template based, DWT	-	Huffman, ADPCM	2	CR:46.8* P:6.6%
Sharifahmadian, 2006	ESPIHT	-	ESPIHT	-	2	CR:24 P:6.47%
Sgouros, 2007	MPEG-4 ALS	-	Multilinear regression	-	12, 15	CR:8.5 P:4%
Lukin, 2008	DCT	-	DCT	-	12	CR:26 P:5%
Martini, 2009	JPEG2K	JPEG2K	JPEG2K			CR:16 P:4.7%
Qin Tan, 2010	-	-	SMP	-	6	CR 6.5 P<5%

Transform Based

System Modelling

Relevant Studies:

Multichannel ECG Compression [4]



Penelitian dalam kompresi data ECG multichannel termasuk sedikit, pada IEEE library tidak lebih dari 20 penelitian di bidang ini sejak 1990 hingga sekarang

Belum banyak penelitian yang membahas kompresi sinyal ECG 12 channel

Belum ada penelitian yang memanfaatkan metode kompresi yang mendukung transmisi secara progresif untuk data ECG 12 channel

Belum ada penelitian yang memanfaatkan metode 3D SPIHT untuk kompresi data ECG 12 channel



Understanding Guidelines and Article Format

Tahapan Penulisan Artikel



- ▶ **Penelitian (Persiapan)**
 - ▶ Lingkungan Penelitian
 - ▶ Topik Penelitian
 - ▶ Rancangan Eksperimen
- ▶ **Pengiriman Paper (Paper Submission)**
 - ▶ Memilih Jurnal
 - ▶ Menulis Artikel
 - ▶ Review Internal
- ▶ **Hasil Review**

Persiapan



- ▶ **Lingkungan Penelitian**
 - ▶ Pembimbing: Memiliki banyak publikasi ilmiah yang konstan
 - ▶ Lingkungan yang Kondusif: Memungkinkan dilakukannya penelitian yang baik

- ▶ **Topik Penelitian**
 - ▶ Originalitas
 - ▶ Posisi dalam Penelitian (Ditentukan dengan membuat matriks penelitian)
 - ▶ Perlunya banyak membaca literatur

- ▶ **Rancangan Eksperimen**



- ▶ **Pendahuluan**
 - ▶ Latar Belakang
 - ▶ Rumusan Masalah
 - ▶ Related Work – Posisi dalam Penelitian

- ▶ Analisis Solusi

- ▶ Evaluasi terhadap Solusi

Paper Submission



- ▶ **Penulisan Artikel Ilmiah**
 - ▶ Mengikuti format yang ditetapkan Jurnal
- ▶ **Pemilihan Jurnal**
 - ▶ Impact Factor
 - ▶ Perlunya membaca paper-paper yang diterima di Jurnal tersebut
- ▶ **Review Internal**
 - ▶ Pengecekan oleh native speaker
 - ▶ Review oleh Kolega

Format Penulisan Artikel Ilmiah



- Biasanya publisher jurnal memberikan template artikel dengan format Ms. Word (*.doc) atau LaTeX (*.tex)

1 Kolom

INTERNATIONAL JOURNAL ON SMART SENSING AND INTELLIGENT SYSTEMS VOL. 7, NO. 3, SEPTEMBER 2014



KNOWLEDGE-BASED MODELING FOR PREDICTING CANE SUGAR CRYSTALLIZATION STATE

Yanwei Meng, Xian Yu, Haijing He, Zhihang Tang, Xiaochun Wang, Jian Chen
College of Mechanical Engineering, Guangxi University, Daxue Road 100, Nanning, China
Email: gxm_mengyun@163.com

Submitted: Mar. 10, 2014 Accepted: June 30, 2014 Published: Sep. 1, 2014

Abstract: This paper proposes a knowledge-based model applied to an experimental scale evaporative cane sugar crystallization process, which combines the methods of offline and online knowledge acquisition. Firstly, a data mining method based on rough set theory is utilized to extract information from the large quantity of relevant data obtained in experiment. This method produces an offline predictive knowledge. Thereafter, a method for online knowledge learning and self-improvement is put forward, based on support vector machine with particle swarm optimization, to improve the predictive accuracy and generalization capacity. Furthermore, the intelligent system is tested using a self-regulating intelligent comprehensive monitoring and controlling platform that represents the cane sugar process. Results demonstrate the feasibility of the system for predicting the crystallization state in a real cane sugar process.

Index terms: Cane sugar crystallization state, intelligent system, knowledge acquisition, rough set, support vector machine

2 Kolom

Okabe, M. and Yamada, S.

Paper:

Active Sampling for Constrained Clustering

Masayuki Okabe* and Seiji Yamada*

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(Received October 15, 2013; accepted January 31, 2014)

Constrained clustering is a framework for improving clustering performance by using constraints about data pairs. Since performance of constrained clustering depends on the set of constraints used, a method is needed to select good constraints that promote clustering performance. In this paper, we propose an active sampling method working with a constrained cluster ensemble algorithm that aggregates clustering results that a modified COP-Kmeans iteratively produces by changing the priorities of constraints. Our method follows the approach of uncertainty sampling and measures uncertainty using variations of clustering results where data pairs are clustered together in some results but not in others. It selects the data pair to be labeled that has the most variable result during cluster ensemble process. Experimental results show that our method outperforms random sampling. We further investigate the effect of important parameters.

Keywords: active learning, constrained clustering, cluster ensemble

1. Introduction

Clustering is known to be a basic technique in the field of information retrieval or data mining that is applied to tasks such as image segmentation [1] and topic analysis [2]. There have been vigorous studies to enhance clustering performance by using labeled data pairs in the framework of constrained clustering [3, 4]. Constrained clustering is a semi-supervised learning technique that uses labeled and unlabeled data to enhance learning performance. Constrained clustering is different from normal clustering as the use of constraints about some data pairs where each data item of a pair is constrained about cluster assignment. Such constraints are of two kinds, usually called must-link and cannot-link. Must-link is a constraint for a data pair that must be in the same cluster, and cannot-link is a constraint for a data pair whose halves must be separated from each other. Several methods have been proposed to utilize such constraints to improve clustering performance. One

method introduced constraint to a k -means algorithm, for example, to reduce erroneous data grouping [5], and another method used it to create a better distance measure of kernel means [6–10].

Although the use of constraints is an effective approach, we find problems in preparing constraints. One problem is the efficiency of the process. Because constraints must be manually labeled must-link or cannot-link, the user cognitive cost seems very high. We must help users cut down on such labeling cost. Another problem is the effectiveness of prepared constraints. Many experimental results in recent studies have shown that clustering performance does not improve monotonically and sometimes may even deteriorate – as the number of applied constraints increases [6, 10, 11]. The degree of performance improvement depends on the quality of constraints, not on the quantity. These results imply that constraints are not all useful and that some are effective but others are not effective – or even may be harmful to the clustering. We also must help users to select only effective constraints that improve clustering performance. These problems are solved by the active learning framework [12] that automatically selects constraint candidates expected to be useful.

We propose an active sampling method to select a data pair that is expected to be the most effective if its true constraint label, or must/cannot link, is given. Our method is based on a bagging-based cluster ensemble technique [13] and constrained k -means with a random data assignment trick. This method is a cluster ensemble framework that creates partially coherent data groups from clustering k -means and integrates them into a set of final clusters. Cluster variation is created by changing the data assignment order in a constrained k -means algorithm that is a modified version of COP-Kmeans [5]. The original COP-Kmeans algorithm tends to create inconsistent clusters because results depend significantly on the data assignment order, which is generally undesirable, thus we use such behavior to produce diversity for the cluster ensemble.

Once we produce a diversity of clustering results, we observe the diversity of a data pair to be clustered together (or not) during the cluster ensemble process. We regard diversity as an uncertainty sampling measurement [14] that is one of major criteria for active learning [15] to se-

2 Ethics in Writing Journal Publication





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Abstract

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Abstract

As wireless sensor networks (WSNs) are increasingly widespread, probability of being under attack also will soar, so the security of WSNs has raised more concern. Broadcast communication plays an important role in WSNs due to the existence of a large number of sensor nodes and the broadcast nature of wireless communications. Therefore, the security of broadcast communication directly relates the safety of the entire network. Authentication is one of the basic security services

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Abstract—As wireless sensor networks (WSNs) are increasingly widespread, probability of being under attack also will soar, so the security of WSNs has raised more concern. Broadcast communication plays an important role in WSNs due to the existence of a large number of sensor nodes and the broadcast nature of wireless communications. Therefore, the security of broadcast communication directly relates the safety of the entire network. Authentication is one of the basic security services needed to construct a practical WSNs. In this paper, we present a high-security broadcast authentication protocol. Our proposal combines time synchronization with the Chinese Remainder Theorem (CRT) to implement dual authentication. As a result, this scheme has greatly improvement to some existed schemes in term of security.

widely applied to battlefield management, medical monitoring, environmental monitoring and so on. Broadcast communication plays an important role in WSNs due to the existence of a large number of sensor nodes and the broadcast nature of wireless communications. Therefore, the security of broadcast communication directly relates the safety of the entire network, especially nodes being deployed in the harsh conditions and lack of supervision. In order to ensure the security of WSNs, many security mechanisms are proposed, and broadcast authentication mechanism is one fundamental and essential of them. It can save WSN bandwidth and reduce the communication delays. In a broadcast authentication mechanism, the base station generally broadcasts the network nodes commands or sends data packets. When receiving the broadcast data from the base station, nodes need verify the authenticity of source, integrity, freshness of the packet. Due to the limited computing power of the

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 - ▶ Lakukan paraphrase tanpa melihat tulisan aslinya untuk menghindari penggunaan kata yang sama

Paraphrase



- ▶ Contoh: Heredity – Hein 2004: Kutipan:
 - ▶ Fred Hein explains, “Except for identical twins, each person’s heredity is unique” (294)
- ▶ Paraphrase
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5 any short-read alignment tools based on different indexing techniques have been developed during the past couple of year among them are the Burrows-Wheeler Transform (BWT) based alignment tools such as BWA, SOAPv2, and Bowtie which have become increasingly popular because of their superior memory efficiency and flexibility to support seed lengths [6][7]. Moreover, despite the tools being superior they are not accurate when it comes to aligning longer reads.

6 The Burrows-Wheeler transform (denoted BWT, also called block-sorting compression) was invented by Michael Burrows and David Wheeler in 1994 [6] while working at DEC Systems Research Center in Palo Alto, California. It is based on a previously unpublished transformation discovered by Wheeler in 1983. The Burrows-Wheeler Transform (BWT) is a way of permuting the characters of a string T into another string BW T(T). This permutation is reversible; one procedure exists

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algorithm for tandem repeat search in section III. Analysis of results and discussion in section IV finally conclusion in section V.

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II. PRELIMINARIES

A method for detecting tandem repeats in a sequence length n , with the time complexity $O(n \log n)$ has already presented by Stoye *et al* [9]. According to method it is based on suffix trees. However, memory capacity requirements for this algorithm make it inefficient to be use for large genomic sequences. To our knowledge, there is no available application, for searching for DNA tandem repeats based on the algorithm that the space efficient for structured data, namely the enhanced suffix array (a suffix array enhanced with the table of longest common prefixes). This enables replacing a bottom-up traversal of a suffix tree approach by a corresponding algorithm that is based on an enhanced suffix array [5], [9], [10].

Abouelhoda *et al* [9] demonstrated the application of the enhanced suffix array to the problem of tandem repeats identification using the idea of Stoye and Gusfield. In the study done by Kolpakov and Kucherov they addressed the question of finding all maximal repeats in a word in a linear time [11], [6]. They used a combinatorial result asserting that the number of maximal in a word is linearly bounded [11]. A study done by Karkinen *et al* presented an algorithm for finding all occurrences of tandem repeats in a string S of length n in $O(n^2)$ time. Their proposed approaches use the so called s -factorization method and a suffix tree like index structure [12], [8]. Another line of research by Fedral *et al* on mreps showed a serious limitation of program. They discovered mreps is restricted to process only DNA sequences containing symbols A, C, G or T and when one additional symbol is allowed its percentage must be lower than 5% in all frames making analysis at the chromosome scale impossible (or very difficult). As a consequence mreps does not handle special IUPAC characters (like N, S, Y, W, R, K, V, B, D, H,

III. METHODOLOGY

To achieve our objectives, we used the improved BWT to analyze complete genomes of three organisms by searching for the occurrences of exact and inexact tandem repeats. The assembled chromosomes of Bovin Papular Stomatitis Virus (Locus NC005337, DNA linear VRL, November 23,2012), Salmonella *enterica* (Locus AHUQ000100025.1 str.13-1SEE13-031) and Ohiophagushanna Scaffold 1852.177 Accession Number:AZIM0100000, Locus AZIM001851) were downloaded from the NCBI ftp site (<ftp://ftp.ncbi.nih.gov/genomes/>).

```
graph TD
    Input[Genome data from NCBI] -- INPUT --> BWT[BWT]
    BWT --> Convert[Convert genome into string]
    Convert --> Matrix[Form a matrix containing cyclic shift]
    Matrix --> Sort[Sort lexicographically by prefix tree]
    Sort --> Optimize[Optimize by LZ by encoding and decoding string]
    Optimize --> Analysis[Sequence alignment and analysis]
    Analysis --> Output[OUTPUT]
```

Fig. 1. Schematic work flow of BWA

Match Overview

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algorithm for tandem repeat search in section III. Analysis of results and discussion in section IV finally conclusion in section V.

II. PRELIMINARIES

A method for detecting tandem repeats in a sequence length n , with the time complexity $O(n \log n)$ has already presented by Stoye *et al* [9]. According to method it is based on suffix trees. However, memory capacity requirements for this algorithm make it inefficient to be used for large genomic sequences. To our knowledge, there is no available application for searching for DNA tandem repeats based on the algorithm that the space efficient for structured data, namely the enhanced suffix array (a suffix array enhanced with the table of longest common prefixes). This enables replacing a bottom-up traversal of a suffix tree approach by a corresponding algorithm that is based on an enhanced suffix array [5], [9], [10].

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III. METHODOLOGY

To achieve our objectives, we used the improved BWT to analyze complete genomes of three organisms by searching for the occurrences of exact and inexact tandem repeats. The assembled chromosomes of Bovin Papular Stomatitis Virus (Locus NC005337, DNA linear VRL, November 23,2012), Salmonella *enterica* (Locus AHUQ000100025.1 str.13-1SEE13-031) and *Obiophagus-hanna* Scaffold 1852.1 (Accession Number:AZIM0100000, Locus AZIM001851) were downloaded from the NCBI ftp site (<http://ftp.ncbi.nih.gov/genomes/>).




Fig. 1. Schematic work flow of BWA

Fig. 2. BWT is a reversible, block-circulant, transform that can be

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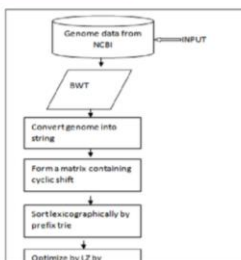
II. PRELIMINARIES

Studies show that in order to analyze the DNA sequence efficiently using compression algorithms the complexity of search algorithms should be $O(n \log n)$ for a given sequence of length n . A study on BWT shows that during sorting using suffix tree there is great challenge regarding the memory capacity requirements required to store the huge data. Due to that BWT tends to be inefficient when dealing with very huge genomic data [9]. Many studies have tried to address the problem elaborates the application of the suffix array to used in BWT to sort sequence in this research the suffix array is implemented to address the idea of Stoye and Gusfield to enhance sorting of sequence lexicographically. Suffix array showed and slight improvement in sorting the sequence this is because with Suffix array the sorting is achieved by bringing all similar character close together thereby making this method more effective for sorting however, there is problem of recalling the original sequence from the newly transformed sequence [10]. Another school of thought, tried to address the memory problem by identifying maximal repeats words in a sequence in a linear time using the prefix tree. In this study the author implements combinatorial technique to ascertain the output and the findings the number of maximal words is linearly bounded [11]. In addition further studied were done to represent this algorithm for locating all sequence occurrences in the analysis of reads, spy string S of length n in genome the findings showed that the algorithm depict a time complexity of $O(n)$ this was due to the fact that this approach applied S -factorization method and suffix tree method to perform sorting [8], [12]. Another line of research using a program Mreps shows that Mreps also face vast challenges during sorting stage. This program is restricted to DNA sequencing which contains universal nucleotide symbols A, C, T and G thereby with additional new symbols apart from those this program reports an error in the analysis of DNA sequence. Due to inefficiency by Mreps to handle International Union of Pure

our customary for string window search that will consequently help to retrieve sorted sequences and minimize space since the dictionary store data in numeric form.

III. METHODOLOGY

To achieve the objective of this study we implemented LZ source code and Prefix trie to original BWT based alignment algorithm to analyze genomes by coding and searching tandem repeats. The assembled chromosomes of Bovin Papular Stomatitis Virus (Locus NC005337, DNA linear VRL, November 23,2012), Salmonella *enterica* (Locus AHUQ000100025.1 str.13-1SEE13-031) and *Obiophagus-hanna* Scaffold 1852.1 (Accession Number:AZIM0100000, Locus AZIM001851) is downloaded from the NCBI data base (<http://ftp.ncbi.nih.gov/genomes/>).



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1. Experimentation board is the main reason to choose fixed point as number representation format. In terms of precision, floating point format is capable to represent a wide range of number. In terms of speed and resource utilization, fixed-point format is faster and more efficient. Initial tests involves the addition of two 32-bit number showed fixed point unit spends 32 slices with 1 clock, while floating point unit spends 500 slices if configured to run at 1 clock.

After all necessary arithmetic functions and components unit are ready, FNGLVQ learning algorithm is implemented using register transfer level state machine. The learning phase state machine design can be seen on Fig. 18. The state machine of testing procedures is similar to the state machine of learning phase. The differences are just on the subsets of state machine and the active components to be used. The testing procedure is responsible to find the most similar reference vector, which is determined as class prediction value. In general, the design can be considered as heavily based on Block RAM and the flow of state machine.

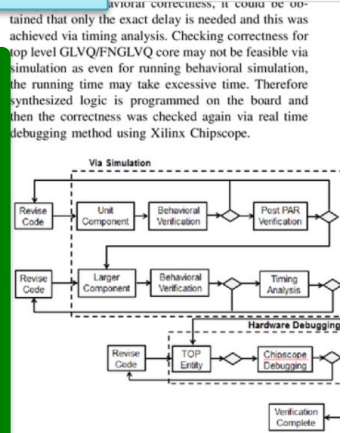


Fig. 19. Functional Verification Check

In this research, we have also imolemented GLVO

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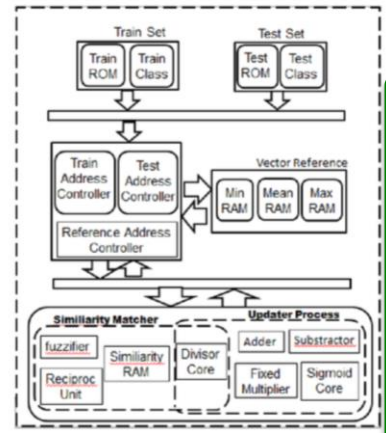


Figure 15: FNGLVQ Core



Figure 16: FNGLVQ Train State Machine

All arithmetics operations involved in this implementation only uses the 32-bit fixed-point format. The 32-bit format consists of 2 parts, 16 bit for the integer and 16 bit for fraction. We chose the fixed point number representation format because the limited resource of the experimentation board as the floating point format is more expensive. Fixed point number representation is also faster and more efficient, however, floating point is more precise and can represent a wide range of number. We did several initial tests to prove that floating point spends 500 slices at 1 clock, while the fixed point only spends 32 slices at 1 clock.

After the necessary arithmetic functions and components unit are ready, register transfer level state machine is utilized to implement the FNGLVQ learning algorithm. The learning phase state machine design can be seen on Fig. 16. The state machine of testing procedures is similar to the state machine of learning phase. The differences are just on the subsets of state machine and the active components to be used. The testing procedure is responsible to find the most similar reference vector, which is determined as class prediction value. In general, the design can be considered as heavily based on Block RAM and the flow of state machine.

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do this procedure because the observation result on the extracted beat shows that for every category of the arrhythmia beat, there are several beats that resides outside the category distribution which can disrupt the classification performance as can be seen from a sample beat on Fig. 5.

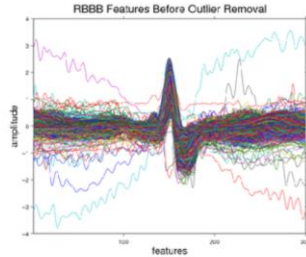


Fig. 5. Sample of RBBB Features overlay each other

In this step, we utilize a simple procedure to remove the outlier from beat collection, called Inter Quartile Range (IQR) technique. This technique uses percentile as boundary to determine the outlier. We chose 25th and 75th percentile as the lower (Q_1) and upper quartile (Q_3) and then calculate the range in between as following formula;

$$IQR = Q_3 - Q_1 \quad (1)$$

The extremity levels for the outlier boundary are defined as follow:

Fig. 6. Illustration of outlier data removal by using IQR

Figure 7 shows the result of outlier removal process on RBBB beat category.

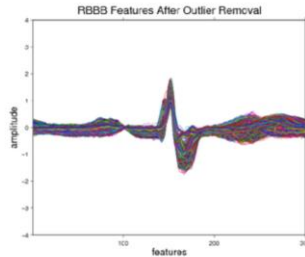


Fig. 7. RBBB beat after outlier removal process

3.4. Feature Extraction

There are many ways to do feature extraction process, in this step, we used discrete wavelet transformation to extract the feature contained in the individual signal beat. The Wavelet Transform (WT) of a signal $f(x)$ is defined as:

$$W_s f(x) = f(x) * \psi_s(x) = \frac{1}{s} \int_{-\infty}^{+\infty} f(t) \psi\left(\frac{x-t}{s}\right) dt \quad (2)$$

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is the R peak annotation. Each beat will be a cut off from the continuous signal of each R-Peak. The start of the beat will be at the R-150 position and the end peak will be the R+149 position, as seen on Fig. 3b. The total width of a single beat will be 300 sample data.

3.4. Outlier Removal

The final step in this pre-processing stage is the outlier removal. This removes the beat that is unrelated to the data and could disrupt the data. This process is done because not all of the beats inside the arrhythmia beat category is categorized as arrhythmia beats. These non-related beats could hamper the classification performance. This could be seen in Fig. 4a.

To remove outliers from the heartbeat collection, we utilized a simple technique called Inter Quartile Range (IQR). The IQR used the percentile information to determine the outlier. In this research, we used the 25th percentile as the lower (Q_1) and 75th percentile as the upper quartile (Q_3). The range between those quartiles is calculated using the following formula:

$$IQR = Q_3 - Q_1 \quad (1)$$

The outlier boundary's extremity levels are defined as:

$$\begin{aligned} \text{LowLevel} &= Q_3 - 1.5 \times IQR \\ \text{UpLevel} &= Q_3 + 1.5 \times IQR \end{aligned} \quad (2)$$

The boundary will be applied to every feature on the data. The beats which are outside the extremity level is considered as an outlier and it is removed from the dataset. This process assumes that the correlation for each features is not taken into account. Fig. 4b illustrates the removal of outliers using IQR.

Figure 5 shows the result of outlier removal process on RBBB beat category.

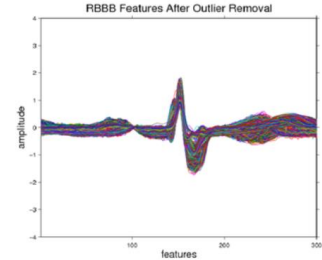


Figure 5: RBBB beat after outlier removal process

3.5. Feature Extraction

In order to extract the feature, we utilized discrete wavelet transformation so that every feature is extracted in the pre-processed individual beat data. The definition of a signal $f(x)$ Wavelet Transform is:

$$W_s f(x) = f(x) * \psi_s(x) = \frac{1}{s} \int_{-\infty}^{+\infty} f(t) \psi\left(\frac{x-t}{s}\right) dt \quad (3)$$

Where s denotes the scaling factor, ψ_s wavelet dilation $\psi(x)$ is $\psi_s(x) = \frac{1}{s} \psi\left(\frac{x}{s}\right)$ using scaling factor s . Let $s = 2^j$ ($j \in \mathbb{Z}$, \mathbb{Z} is the integral set), then the WT is called dyadic WT [31]. The dyadic WT of a digital signal $f(n)$ is calculated with Mallat algorithm:

2

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- ▶ **DITOLAK**
- ▶ This paper reports a work on building SentiWordNet for Indonesian by translating the English SentiWordNet into Indonesian. This paper is difficult to read because it is not well written. It is suggested that the authors get help with their English from the translators.
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- Inadequate

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Contoh Hasil Review (con't)

▶ DITERIMA DENGAN REVISI

- ▶ The paper studies the automatic generation and manual update of shallow-transfer rules for Indonesian-to-English automatic translation. The paper is not very well written but it is well structured. The main contribution is the set of experiments and the empirical results reported. It makes it all the more important to guarantee the reproducibility of the experiments: publish the aligned corpora, the rules and the post-edited rules.
- ▶ The typos listed and other remaining grammatical errors must be fixed if the paper is accepted.
- ▶ Misc. (some typos: there are many more.)
- ▶ According to this result, using this automatic approach is an effective way to build shallow-transfer rule at starting phase and then it can be further enhanced by performing rule post-editing. -> Make smaller sentences.
- ▶ different with preposition -> different from preposition
- ▶ After analyzing and Part-of-Speech -> After analysis and Part-of-Speech



Contoh Hasil Review (con't)

- ▶ DITERIMA DENGAN REVISI
- ▶ It uses shallow-transfer rule -> It uses shallow-transfer rules
- ▶ related language, for example: Indonesian-English -> How are they related? (Spanish-Catalan are)
- ▶ It makes transfer rule is highly needed -> It makes transfer rule highly needed
- ▶ Therefore, there were many rules has not been implemented yet that makes the rule based MT was still not powerful -> The fact that many rules had not yet been implemented made the rule based MT still not powerful enough
- ▶ significance improvement -> significant improvement
- ▶ We intend to find the information in what extent the performance-> We intend to find out to what extent the performance
- ▶ The remaining of this paper -> The remainder of this paper
- ▶ than in [3] that we -> than in [3] because we
- ▶ it is described more detail -> it is described in more details
- ▶ it is also proven to get satisfactory result based on their experimental result -> it is also proven to get satisfactory experimental results



Contoh 2

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Authors: Ari Wibisono

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Ref.: Revision of KNOSYS-D-15-00628R1
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Jie Lu, PhD
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It's great that authors appended section 3.2 to explain the traffic map visualization in detail. Would you please unify the number formations, such as '100.00', '7500' and '5,000,000'. The same problems for 'Fig. 6.d' and 'Fig. 6 (a)'.

Grammar error: 'we present the average error per 2,500,000 (Armstrong, 1985).'

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Professor : Toshio Fukuda
Director, Center for Micro-Nano Mechatronics,
Professor, Dept. of Micro-Nano Systems Engineering, Nagoya University

Distinguished Professor, Seoul National University



Toshio Fukuda received the B.A. degree from Waseda University, Tokyo, Japan, in 1971, and the M.S and Dr. Eng. from the University of Tokyo, Tokyo, Japan, in 1973 and 1977, respectively. In 1977, he joined the National Mechanical Engineering Laboratory. In 1982, he joined the Science University of Tokyo, Japan, and then joined Nagoya University, Nagoya, Japan, in 1989. Currently, he is Director of Center for Micro-Nano Mechatronics and Professor of Department of Micro-Nano Systems Engineering at Nagoya University, where he is mainly involved in the research fields of intelligent robotic and mechatronic system, cellular robotic system, and micro- and nano-robotic system. He is Distinguished Professor, Seoul National University since 2009.

Dr. Fukuda is IEEE Region 10 Director-Elect (2011-2012) and served President of IEEE Robotics and Automation Society (1998-1999), Director of the IEEE Division X, Systems and Control (2001-2002), and Editor-in-Chief of IEEE / ASME Transactions on Mechatronics (2000-2002). He was President of IEEE Nanotechnology Council (2002-2003, 2005) and President of SOFT (Japan Society for Fuzzy Theory and Intelligent Informatics) (2003-2005). He was elected as a member of Science Council of Japan (2008-).

He received the IEEE Eugene Mittelmann Award (1997), IEEE Millennium Medal (2000), IEEE Robotics and Automation Pioneer Award (2004), IEEE Robotics and Automation Society Distinguished Service Award (2005), Award from Ministry of Education and Science in Japan (2005). IEEE Nanotechnology Council Distinguished service award (2007). Best Googol Application paper awards from IEEE Trans. Automation Science and Engineering (2007). Best papers awards from RSJ (2004) and SICE (2007), Special Funai Award from JSME (2008), 2009 George Saridis Leadership Award in Robotics and Automation (2009), IEEE Robotics and Automation Technical Field Award (2010), ROBOMECH Award 2010 (2010), The Society of Instrument and Control Engineers Technical Field Award (2010), Distinguished Service Award, The Robotics Society of Japan (2010), World Automation Congress 2010 (WAC 2010) dedicated to Prof. Toshio Fukuda, Best Paper Award in 2010 International Symposium on Micro-Nano Mechatronics and Human Science (MHS2010), IEEE Fellow (1995), SICE Fellow (1995), JSME Fellow (2001), RSJ Fellow (2004), Honorary Doctor of Aalto University School of Science and Technology (2010).

Prof. Anil K. Jain

University Distinguished Professor in the Departments of Computer Science & Engineering, and Electrical & Computer Engineering at Michigan State University



Anil K. Jain is a University Distinguished Professor in the Departments of Computer Science & Engineering, and Electrical & Computer Engineering at Michigan State University. He received a B.Tech. degree from IIT, Kanpur (1969) and M.S. and Ph.D. degrees from Ohio State University in 1970 and 1973, respectively. His research interests include pattern recognition, computer vision and biometric recognition. His articles on biometrics have appeared in [Scientific American](#), [Nature](#), [IEEE Spectrum](#), [Comm. ACM](#), IEEE Computer^{1,2}, Proc. IEEE^{1,2}, Encarta, [Scholarpedia](#), and [MIT Technology Review](#).

He has received a number of awards, including [Guggenheim fellowship](#), [Humboldt Research award](#), [Fulbright fellowship](#), [IEEE Computer Society Technical Achievement award \(2003\)](#), [IEEE W. Wallace McDowell award \(2007\)](#), [IAPR King-Sun Fu Prize \(2008\)](#), and [IEEE ICDM 2008 Research Contribution Award](#) for contributions to pattern recognition and biometrics. He also received the best paper awards from the IEEE Trans. Neural Networks (1996) and the Pattern Recognition journal (1987, 1991, 2005). He served as the Editor-in-Chief of the IEEE Trans. Pattern Analysis and Machine Intelligence (1991-1994). He is a Fellow of the ACM, IEEE, AAAS, IAPR and SPIE. He has been listed among the "[18 Indian Minds Who are Doing Cutting Edge Work](#)" in the fields of science and technology.

Holder of six patents in the area of fingerprints (transferred to IBM in 1999), he is the author of several books, including [Introduction to Biometrics \(2011\)](#), [Handbook of Biometrics \(2007\)](#), [Handbook of Multibiometrics \(2006\)](#), [Handbook of Face Recognition \(first edition: 2005; second edition 2011\)](#), [Handbook of Fingerprint Recognition \(first edition: 2003, second edition: 2009\)](#) (received the PSP award from the Association of American Publishers), [Markov Random Fields: Theory and Applications \(1993\)](#), and [Algorithms For Clustering Data \(1988\)](#). [ISI](#) has designated him as a highly cited researcher (his [h-index is 133](#)). According to CiteSeer, his book, *Algorithms for Clustering Data* is ranked # 75 in the [Most Cited Articles in Computer Science](#) (over all times) and his paper *Data Clustering: A Review (ACM Computing Surveys, 1999)* is consistently ranked in the [Top 10 Most Popular Magazine and Computing Survey Articles Downloaded](#).

He is serving as a member of the National Academies panel on *Information Technology* and previously served on panels on *Whither Biometrics* and *Improvised Explosive Devices (IED)*. He also served as a member of the *Defense Science Board*.



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