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

Judul Karya Ilmiah (Artikel) : Real-time Decision Support System for Carbon Monoxide Threat Warning using Online Expert System

Jumlah Penulis : 4 Orang ( **Suryono Suryono**, Bayu Surarso, Ragil Saputra, Sudalma Sudalma)

Status Pengusul : Penulis pertama/~~penulis ke-.....~~ /~~penulis korespondensi~~ \*\*

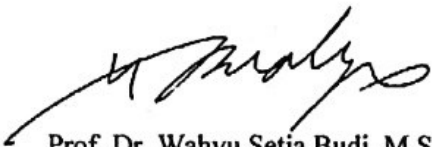
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b. Nomor ISSN : 1451-4117 (Printed), 1821-3197 (online)  
c. Volume, Nomor, Bulan, Tahun : Vol. 17, No. 1, 2019  
d. Penerbit : Institut za Istrazivanja I Projektovanja u Privredi, Serbia  
e. DOI artikel (jika ada) : <https://doi.org/10.5937/jaes17-17429>  
f. Alamat web jurnal : [http://www.engineeringscience.rs/article/2019/Volume\\_17\\_1/Volume\\_17\\_article\\_572](http://www.engineeringscience.rs/article/2019/Volume_17_1/Volume_17_article_572)  
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Reviewer 1



Prof. Dr. Wahyu Setia Budi, M.S.  
NIP. 195806151985031002  
Bidang ilmu/Unit kerja : Fisika FSM UNDIP

Semarang, 15 Januari 2020

Reviewer 2



Prof. Dr. Heri Sutanto, S.Si., M.Si.  
NIP. 197502151998021001  
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Semarang, 5 September 2019

Reviewer 1

Prof. Dr. Wahyu Setia Budi, M.S.  
NIP. 195806151985031002  
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| b. Ruang lingkup dan kedalaman pembahasan (30%)                   | 12   |  |  | 10,5                       |
| c. Kecukupan dan kemutakhiran data/informasi dan metodologi (30%) | 12   |  |  | 11                         |
| d. Kelengkapan unsur dan kualitas penerbit (30%)                  | 12   |  |  | 12                         |
| Total = (100%)  | 40   |  |  | 37,5                       |
| Nilai untuk Pengusul = (60% x 37,5) = 22,5                        |  |  |  |                            |

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- d. Unsur terbitan lengkap, terbitan baik, jurnal terindek scopus Q2 dengan SJR=0.22 dan similarity 4%, isi jurnal seusui dengan bidang keilmuan pengusul.


Semarang, 2 Agustus 2019  
Reviewer 2

  
Prof. Dr. Heri Sutanto, S.Si., M.Si.  
NIP. 197502151998021001  
Bidang ilmu/Unit kerja : Fisika FSM UNDIP

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Journal of Applied Engineering Science Open Access  
Volume 17, Issue 1, 2019, Pages 18-25

## Real-time decision support system for carbon monoxide threat warning using online expert system (Article) (Open Access)

Suryono, S.<sup>a</sup> , Surarso, B.<sup>a</sup>, Saputra, R.<sup>a</sup>, Sudalma, S.<sup>b</sup>

<sup>a</sup>Diponegoro University, Indonesia

<sup>b</sup>Semarang Occupational Health and Safety Office, Indonesia

### Abstract

View references (35)

Carbon monoxide (CO) pollution is a threat both to our health and well-being. CO concentration above safety threshold triggers serious illnesses that may even lead to death. Unfortunately, no system is yet capable of detecting and making decision online and in real-time concerning carbon oxide threat. Hence, decisions related to CO threat are often made late as they require expert analyses. This paper proposes a solution to this problem by developing a decision support system for CO threat using internet-based online measurement and an early warning system using cellular phone. Node station of CO sensor has been built using System on Chip (SOC) WIFI-Microcontroller capable of sending data via internet gateway. The pollution index value and the rule-based algorithm used to determine CO pollution categories in the web server program are in line with those stated in the Indonesia Air Pollutant Index (IAPI). Expert system programming based on expert knowledge is used to make decision on pollution. At the detrimental level, information is sent to users using a cellular phone. Results in this research show that the use of wireless sensor system integrated to the internet helps provide precise information on CO concentration that in turn, results in proper analyses using the expert system, in line with the regulations in place. © 2019 Institut za Istrazivanja. All rights reserved.

### SciVal Topic Prominence ⓘ

Topic: Carbon Monoxide Poisoning | Carbon Monoxide | Carboxyhemoglobin

Prominence percentile: 86.670 ⓘ

### Author keywords

Decision support system Information Node station Online Rule-based

ISSN: 14514117

Source Type: Journal

Original language: English





DOI: 10.5937/jaes17-17429

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## DIFFERENCES IN ANTHROPOMETRIC MEASUREMENTS BETWEEN LIBYAN AND SERBIAN PASSENGER CAR DRIVERS AND CRANE OPERATORS

Vesna Spasojevic Brkic<sup>1\*</sup>, Zorica Veljkovic<sup>1</sup>, Ahmed Ali Essdai<sup>1</sup>, Aleksandar Brkic<sup>2</sup>

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*This paper is a part of ongoing research on passenger car drivers' and crane operators' anthropometric measurements data collected in aim to make comparison, explore ergonomic adaptation and finally improve safety. It represents one of the rare explorations containing the Libyan male drivers and crane operators' data, and accordingly it is one of the first researches in anthropometric field on Libyan population. Herein, statistical analysis on Libyan 300 male drivers and 50 crane operators collected data shows that male drivers are taller, and have higher sitting height as well as upper leg length values, while crane operators have slightly wider shoulders and hips. Both Libyan groups have the same arm and foot lengths. Apart of Libyan male car drivers and crane operators, research includes also and Serbian car drivers (921 Serbian male drivers) compared with crane operators (83 crane operators). Obtained data show that Serbian male car drivers have significantly larger standing height and upper leg length values, while foot length is significantly lower for drivers than for crane operators. Passenger vehicle and crane cabins designers can benefit from this survey.*

**Key words:** Passenger car drivers, Crane operators, Anthropometric measurements, Weight, Comparison

### INTRODUCTION

Ergonomic adaptation results in better users' accommodation and their better performances when executing certain tasks. Therefore, anthropometric measurements, together with ergonomic principles have to be considered in aim to achieve effective ergonomic adoption of workplaces.

There are significant measurements differences on Anthropometric measurements between different nationalities, gender, age, race, occupation and nutrition patterns [1], [2], [3]. Anthropometric measurements also change over time, causing a constant need for their updating in order to achieve comfortable and safe vehicles or cabins interior design [2], [4], [5], [6], [7].

In surveys [8], [9], [10] [11], [12], [13], [14], [15], [16], [17], [18] the importance of the ergonomics issues solution in the crane cabin design has been considered with aim to increase crane operators safety and improve their working conditions, safety and efficiency. Occupational fatalities, injuries and risks caused by the operation of cranes pose a serious public problem that till today has not been solved although it produces also huge cost implications [8], [19], [20], [21], [22]. The ergonomic design of crane cabin is vital to improve operators comfort and consequently crane operation safety, which should be achieved through a better understanding of the anthropometric characteristics of crane operators [11], [14], [18], [23], [24], [25], [26].

Similarly, driving can causes musculoskeletal disorders and surveys such as [1], [2], [3], [4], [5], [6], [7] emphasize that further studies are needed in the field of interi-

or space of a passenger vehicle. Vehicle interior space modeling includes aspects of seat comfort, human interactions, visual displays of location, pedal controls, reaches etc., that have to be modeled depending on fresh anthropometric data [27]. Klarin et al. [6] point out the need for continual evaluation of interior vehicle space design and modeling, with different approaches such as the algorithm model, that could be used to quantify and determine the parameters related to the interior vehicle space modeling. Also, authors in [5], [6], [7] analyze an adaptation of the passenger car to driver, including the limits of anthropometric measurements and technical limitations of the car, in order to improve the comfort, safety, and efficiency of vehicle operation.

Anthropometric measurements on Libyan population, till now are rarely collected and considered [28], [29], [30]. When those data are available they are in the field of drivers [31], while crane drivers in Libya are considered only from economic/workforce aspect, since numerous number of cranes operates there in petrol industry [32], [33].

This paper presents one of the first seriously conducted researches concerning Libyan male passenger car drivers and crane operators, comparing their anthropometric characteristics and statistically testing their similarities and differences, together with our surveys given in [11], [31]. It also covers Serbian samples of male passenger car drivers and crane operators with its fresh anthropometric measurements.

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# ONE APPROACH TO COMPACT TESTING OF DIGITAL CIRCUITS

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*A problem of signature analyzer synthesis with required properties is solved for digital schemes compact testing. The main attention is devoted to the issues of eliminating losses of diagnostic information and to simplicity of structural organization. Solutions are based on detecting all error vectors or matrices resulting from failures of diagnostics objects related to the postulated class. Any other error vectors or matrices can be non-detectable and are excluded from consideration. For the compact testing of separate units of complex digital systems, the problem of synthesis of the generator structure that reproduces an assigned sequence of binary sets is being solved. Increased attention is given to issues of the non-excessive reproduction of sets sequence and structural organization simplicity. The solution is based on the application of a mathematical tool for linear sequence machines. A software implementation of the mathematical model is proposed. Error vectors or matrix detection process visualization aids are given. Additionally, means of the binary sets generation process visualization are presented.*

**Key words:** Vector, Tests, Synthesis, Sequencing, Matrices, Digitization, Compactness, Approach

## INTRODUCTION

Self-testing of diagnostics objects (DO) is a maximally self-contained method of embedded diagnostics testing, because the generation of test inputs and analysis of the results of test information are not supported by the system facilities [1]. Actually, any self-testing method is based on test impacts generation and compact representation of test impact passage results. Therefore, the problem of sound selection of embedded equipment parameters is essential for any DO manufacturing process [2-3].

Currently the need for cost-effective testing systems is increasing due to the enhanced level of integration of computing equipment component base. Therefore, the trend toward decreasing the complexity of diagnostic facilities hardware exists. Built-in test aids are of great importance, for example, in large and extra-large integrated circuits development [3-4].

The methodology of digital systems diagnosis based on transformation of binary sequences coming to the DO into compact specifications -- signatures, comparison of obtained signatures with reference signatures, and corresponding processing of comparison results -- are the essence of signature analysis [5-7]. As a rule, mathematical tools from antinoise coding theory are used as a theoretical apparatus for signature analyzer development. However, theoretical substantiation of the development of hardware signature analyzers (SA) with required properties is most advantageous when based on the mathematical tools of linear sequential machines (LSM) [8-9].

A classical signature analyzer is in principle unable to detect all possible combinations of errors. Some part of them will never appear at the DO output, and therefore

there is no need to detect them. The following task is posed in this paper: to build a simple signature analyzer that would detect all DO errors caused by the faults from the postulated class.

A control test, especially when dealing with limited time dedicated to the control, is a "mixture" of pseudo-random and deterministic sets of test impacts. Hardware for the generation of pseudo-random sets is well known, and there are no serious problems in their implementation [10-11]. However, the storage of the deterministic part of a check test in read-only memory, as a rule, is not always acceptable, because it is related to significant hardware requirements. In conjunction with this, the task of creating simple hardware that reproduces assigned binary sets sequence that compose the deterministic part of the check test arises.

## A LINEAR SEQUENTIAL MACHINE AS A SIGNATURE ANALYZER

Processes in LSM with  $l$  -inputs,  $m$  -outputs, and  $n$  -memory elements (Figure 1) are described by linear system of state equations and linear system of output equations, which appear as follows in matrix form:

$$S^{t+1} = AS^t + BU^t$$

$$Y^t = CS^t + DU^t$$