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

Judul Karya Ilmiah

Smart controller design of air to fuel ratio (AFR) and brake control system on gasoline

Jumlah Penulis

4 Orang

Status Pengusul

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Unit Kerja: Teknik Elektro FT UNDIP

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Dr. Wahyudi, S.T., M.T. NIP. 196906121994031001

Unit Kerja: Teknik Elektro FT UNDIP

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### Smart controller design of air to fuel ratio (AFR) and brake control system on gasoline engine (Conference Paper)

Triwiyatno, A.<sup>a</sup> ⋈, Sinuraya, E.W.<sup>a</sup> ⋈, Setiawan, J.D.<sup>b</sup> ⋈, Munahar, S.<sup>b</sup> ⋈

<sup>a</sup>Department of Electrical Engineering, Engineering Faculty, Diponegoro University, Semarang, Indonesia <sup>b</sup>Department of Mehanical Engineering, Engineering Faculty, Diponegoro University, Semarang, Indonesia

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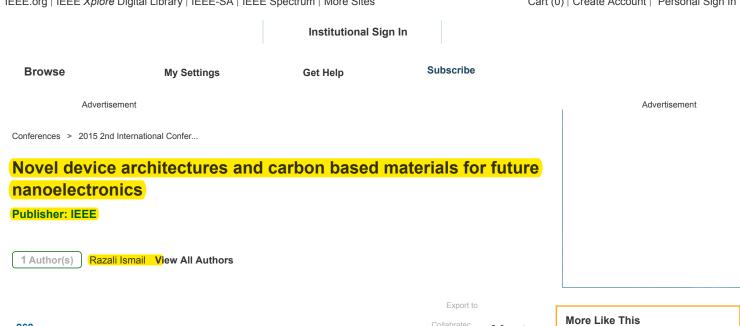






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The Metal-Oxide-Semiconductor Field-Effect Transistor (MOSFET) constitutes the backbone of today's microelectronics industry. MOSFETs are the building blocks of verylarge-scale-integrated (VLSI) circuits in microprocessors, memory chips and telecommunications microcircuits. A modern microprocessor can contain more than 2 billion MOSFETs. MOSFETs are mainly used as switches in logic microcircuits. To a large extent, the success of modern microelectronics is based on the continuous miniaturization or scaling of silicon MOSFET, which makes them smaller, faster, and cheaper. Over the past few decades, the miniaturization in silicon integrated circuits (IC's) has been well characterized and envisioned by Moore's Law, which predicted that the numbers of transistors on a chip will double every 18 to 24 months. So far, Moore's Law has been a useful way of describing the progress of ICs and the number of transistors fitted into each generation of processors. However, physical and performance limitations are encountered with the continuous downscaling of the transistor into the nanometer regime which motivates the semiconductor industry to explore alternative device technologies. Novel device architectures and materials are to be investigated in order to continue to increase the speed and scalability of MOSFET devices. This will lead to a new paradigm for future nanoelectronic device design. In

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#### Contents

#### **Brief Biography**

Razali Ismail received the B.Sc. and M.Sc. degrees in Electrical and Electronic Engineering from the University of Nottingham, Nottingham, U.K. in 1980 and 1983 respectively and the Ph.D. degree from Cambridge University, Cambridge, U.K., in 1989.

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Data on flow regimes is important in measuring and analyzing industrial process flow. This paper presents an investigation on the use of an infra red tomography system using 16 × 16 infra red sensors to monitor solid particles conveyed by a pneumatic conveyor in a vertical gravity flow rig. The sensor output is processed by a signal conditioning circuit followed by a data acquisition system before being displayed by a computer. The operation of the whole measurement is controlled by a digital timing controller. Four types of flow models i.e. single pixel, multiple pixels, half flow and full flow were experimented with. The system has been tested with solid particles at various flow rates using several algorithms and has shown to be capable of providing images of the flow concentration profiles.

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#### Contents

#### I. Introduction

Tomography derives from the two Greek words i.e. tomo which means slice and graph which means picture [1]. The history of tomography dated back to the discovery of x-ray. The discovery of x-ray by Wilhelm Roentgen in 1895 proved to be a significant contribution in modern medicine. Such invention enabled us to probe both non-living and living objects without invading the subject itself [2]. However this type of projection still has some flaws as the images were formed by superimposing all planes normal to the direction of X-ray propagation. Beginning from 1930s conventional tomography made use of the tomographic method based on the X-ray radiation which provided two and three dimensions of images [3]. In the late 1960s the use of tomography attracted the interest of those in the process industries including those involved in flow measurement [3]. They began to explore ways of exploiting tomography to extract vital data on flow.

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Time series modelling has long been used to make forecast in different industries with a variety of statistical models currently available. Methods for analyzing changing patterns of stock prices have always been based on fixed time series. Considering that these methods have ignored some crucial factors in stock prices, we use ARIMA model to predict stock prices given the stock-trading volume and exchange rate as independent variables to achieve a more stable and accurate prediction process. In this paper we will introduce the modeling process and give the estimate SSE (Shanghai Stock Exchange) Composite Index to see the model's estimation performance, which proves to be feasible and effective.

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#### Contents

#### I. Introduction

Autoregressive moving average model (ARIMA) is a statistical analysis model which utilizes time series data to predict future data. It is a form of regression analysis that seeks to predict future movements along the seemingly random walk taken by stocks and the financial market by examining the differences between values in the series instead of using the actual data values. Lags of the differenced series are referred to as "autoregressive" and lags within forecasted data are referred to as "moving average." The general model includes autoregressive as well as moving average parameters, and explicitly includes differencing in the formulation of the model. Some infit call on the model of parameters in the model are: the autoregressive parameters (p), the number of differencing passes (d), and moving average parameters (q) [1]. These models are fitted to time series data either to better understand the data or to predict future points in the series (forecasting). They are applied in some cases where data show evidence of non-stationarity, where an initial differencing step (corresponding to the "integrated" part of the model) can be applied to reduce the nonstationarity [2]. ARIMA modeling can take into account trends, seasonality, cycles, errors and non-stationary aspects of a data set when making forecast.

# Peihao Li Northwestern Polytechnical University, Xi'an, China Chaoqun Jing Northwestern Polytechnical University, Xi'an, China

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#### Abstract:

In this paper, we apply efforts to explore the insights of sustainable development of states and to develop a model based on factor analysis aiming at evaluating sustainability in a qualitative and quantitative method, thus distinguishing more sustainable countries which can help elaborate sustainable development plans, and evaluate the effectiveness of such plans. We use the term Comprehensive Sustainability Index (CSI) to measure sustainability and such index is determined by a linear combination of a set of indicators. Two primary challenges of establishing such sustainability model lie in the selection of indicators and determination of weights of indicators. We select 10 representative indicators coming from three aspects: social development, economic development and environmental protection. Considering it's difficult for us to figure out the insight relations among sustainability indicators, we use factor analysis to convert observations of correlated variables into values of linearly uncorrelated variables called factors thus determining the weights of indicators. In the evaluation section, we select 15 countries to form the sample-5 least developed countries, 5 developing countries and 5 developed countries. By calculating the value of CSI of each country, we find out that there are clear differences among the CSIs of the three kinds of countries. And based on such differences, we reach classification of CSI

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Furthermore, we define sustainable development by comparing CSI (whether the CSI is

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a more sustainable future. Based such analysis, we put forward our 20 Year Development Plan. We also conclude with concrete values of indicators that are required to be achieved.

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Conference Location: Semarang,

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#### Contents

#### I. Introduction

Today, how to realize sustainable development has become one of the priority issues in the face of human beings. The United Nations World Commission on Environment and Development in its 1987 report Our Common Future defines sustainable development: "Development that meets the needs of the psisse in the work Doubling the ability of future generations to meet their own needs." Given finite natural resources and vulnerable living environment, meeting the needs of human kinds require attaining sustainability in economic development, social development and environmental protection.

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#### Abstract:

The diagnosis and management of Diabetes is often a complicated process. The complications especially increases during the month of Ramadan wherein Muslim patients are obliged to observe fasting. Recent mobile health technologies are increasingly used in improving the self-management of chronic diseases such as diabetes and several studies have proven its efficiency. Further, research has shown that increased awareness of the disease helps the diabetics to effectively manage their disease and consequently reduce the complications arising due to diabetes. In this paper, an education program for fasting diabetes patients in Kingdom of Saudi Arabia is presented. The education program makes use of an intelligent mobile diabetes management system named SAED, tailored for Type-2 diabetes patients in Kingdom of Saudi Arabia to increase the awareness of the disease amongst the patients. The aim of the education program is to empower the diabetics with relevant knowledge about disease management during the fasting period in particular and improve their awareness about the disease in general. The proposed structure of the education program is presented in this paper which will be tested and evaluated extensively in a randomized controlled trial in Saudi Arabia.

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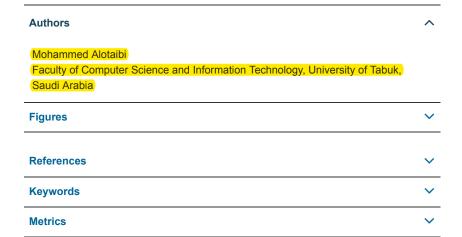
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#### Contents

#### I. Introduction

Globally, Diabetes Mellitus is one of the most common chronic diseases. It has been estimated that approximately 382.8 million people between the ages of 20 and 79 are suffering with this condition around the world. The worldwide costs for treatment of diabetes and its related complications in 2013 was estimated to be around \$548 billion [1]. Specifically, the Kingdom Signal Analytic Sanday the seventh highest prevalence of diabetes in the world with over one-fifth of its population suffering with the disease [2]. Clearly, Diabetes is a serious public health concern and hence requires significant attention for better diagnosis and management.



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