Introduction to Volume 7 Number 1: Special Issue on Generating New Knowledge through Best Practices in Computing and Mathematical Sciences

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FORWARD

Both mathematical sciences and computer science have contributed significantly to computational science that is multidisciplinary in nature. The mathematical sciences form an essential part of science and engineering, and serve as one of the pillars of education at all levels [1]. High performance computing is also becoming central for empowering fundamental research in various disciplines such as science and engineering as well as social sciences [2].

This special issue focuses on original research papers submitted to the 3rd International Conference on Computing, Mathematics and Statistics (iCMS2017), which was held in conjunction with UROS2017 in Langkawi, Kedah, Malaysia, 7-8 Nov, 2017. A collection of six research papers under the theme *Generating New Knowledge through Best Practices in Computing and Mathematical Sciences* is presented in this volume. The underlying message embraces in this theme is that computing and mathematical sciences research is inextricably linked to teaching students in all disciplines the computer and mathematical skills that are needed to function as informed citizens.

The special issue begins with an article by Tan et al. whose study engaged the cognitive diagnostic assessment (CDA) to abstract the common errors in the learning of time intervals based on pupils' knowledge states. The paper contended that CDA is a feasible testing tool that can inform the instructor where a test taker may be prone to making errors in the tests. A total of 269 primary six pupils from 11 elementary schools participated in the study. The diagnostic test scores were analyzed using the Artificial Neural Network which generated 12 knowledge states.

The article by Zarith Sofiah Othman et al. presents a study that evaluates student's satisfaction of using PowerPoint to learn Calculus. They employed Fuzzy Conjoint Model to evaluate student's satisfaction on learning the topic 'integration' using PowerPoint application. The fuzzy conjoint model presents linguistic terms in five-point Likert scale. This model explores three main attributes in learning: anxiety, learning enjoyment and mobility.

In view of the importance of data analysis technique which is sometimes very complicated especially for researchers who do not have any statistical basis, N. Ahmad et al. introduce new statistical software known as SS E Guide. This software is intended to facilitate

two things: how to choose the appropriate analysis data and how to use statistical software to get the correct output. Besides that, the E Guide also provides interpretation of output from example provided.

Zanariah Idrus et al.'s article delves into the world of big data that has become as one of the important contribution in database management. The unstructured data such as in news, reports, chats and surveys are basically loaded with heavy text data and numerous format. Thus, these data become challenging to be used for diverse purpose and are not appropriate to be stored in database. They pointed out that the main problem is the insufficient support between people using databases and the heap of data collection. Thus, in this paper they present the conception of clustered data using the interface design model. The alignment of features and connections between the interface and knowledge composition allow users to access knowledge proficiently.

Khairani Abd. Majid et al. conducted a study that applied a basic model for traffic systems to solve the perennial problem of traffic congestions at toll plazas. In their article, the Basic Traffic Unit (BTU) was introduced with the aim to contribute towards a longer-term solution with the means for explaining and predicting congestions.

Lastly, Yuhanim Hani Yahaya et al.'s article focuses on finger vein identification that is becoming increasingly important especially in the field of biometric identification and in the field of forensics. This article features a study that exploits the Maximum Curvature Directional Feature (MCDF) to improve the scheme of finger vein identification. Experimental results based on two public databases, SDUMLA-HMT datasets and PKU datasets show high performance of the proposed scheme in comparison with state-of-the art methods.

References
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