i-SPiKE 2023

INTERNATIONAL EXHIBITION & SYMPOSIUM ON PRODUCTIVITY, INNOVATION, KNOWLEDGE & EDUCATION

"Optimizing Innovation in Knowledge, Education and Design"

EXTENDED ABSTRACT

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CATEGORY: CSP YOUNG INVENTOR

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Assalamualaikum warahmatullahi wabarakatuh,

First and foremost, I would like to express my gratitude to the organizing committee of i-Spike 2023 for their tremendous efforts in bringing this online competition a reality . I must extend my congratulations to the committee for successfully delivering on their promise to make i-Spike 2023 a meaningful event for academics worldwide.

The theme for this event, 'Optimizing Innovation in Knowledge, Education, and Design,' is both timely and highly relevant in today's world, especially at the tertiary level. Innovation plays a central role in our daily lives, offering new solutions for products, processes, and services By adopting a strategic approach to 'Optimizing Innovation in Knowledge, Education, and Design,' we have the potential to enhance support for learners and educators, while also expanding opportunities for learner engagement, interactivity, and access to education.

I am awed by the magnitude and multitude of participants in this competition. I am also confident that all the innovations presented have provided valuable insights into the significance of innovative and advanced teaching materials in promoting sustainable development for the betterment of teaching and learning. Hopefully, this will mark the beginning of a long series of i-Spike events in the future.

It is also my hope that you find i-Spike 2023 to be an excellent platform for learning, sharing, and collaboration. Once again, I want to thank all the committee members of i-Spike 2023 for their hard work in making this event a reality I would also like to extend my congratulations to all the winners, and I hope that each of you will successfully achieve your intended goals through your participation in this competition.

Professor Dr. Roshima Haji Said
RECTOR
UiTM KEDAH BRANCH

WELCOME MESSAGE (i-SPiKE 2023 CHAIR)

We are looking forward to welcoming you to the 3rd International Exhibition & Symposium on Productivity, Innovation, Knowledge, and Education 2023 (i-SPiKE 2023). Your presence here is a clear, crystal-clear testimony to the importance you place on the research and innovation arena. The theme of this year's Innovation is "*Optimizing Innovation in Knowledge, Education, & Design*". We believe that the presentations by the distinguished innovators will contribute immensely to a deeper understanding of the current issues in relation to the theme.

i-SPiKE 2023 offers a platform for nurturing the next generation of innovators and fostering cutting-edge innovations at the crossroads of collaboration, creativity, and enthusiasm. We enthusiastically welcome junior and young inventors from schools and universities, as well as local and foreign academicians and industry professionals, to showcase their innovative products and engage in knowledge sharing. All submissions have been rigorously evaluated by expert juries comprising professionals from both industry and academia.

On behalf of the conference organisers, I would like to extend our sincere thanks for your participation, and we hope you enjoy the event. A special note of appreciation goes out to all the committee members of i-SPiKE 2023; your dedication and hard work are greatly appreciated.

Dr. Junaida Ismail
Chair
3rdInternational Exhibition & Symposium Productivity, Innovation, Knowledge, and Education 2023 (i-SPiKE 2023)

SMART EXPOSURE TO ARTIFICIAL INTELLIGENCE (AI) AMONG THE PRIMARY SCHOOL STUDENTS

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ABSTRACT

As one of the efforts to support the nation's aspiration to increase students' interest in STEM, this project presented smart exposure to AI among primary school students. AI is one of the branches that contribute to IR 4.0. This project consists of a basic introduction to AI as a general knowledge and hands-on to AI application itself where the primary school students are guided to develop the AI in modern software i.e. MATLAB. The results found that the students were provided info on AI, which has very used in daily life. From the hands on conducted, students were exposed to modern software and were able to run AI applications using MATLAB easily. This project revealed that smart exposure to AI among primary school students is achievable. It is user friendly and bring fun in learning process. In general, AI brings a lot of benefits not only to students but also in realizing the nation's aspiration towards primary school students in STEM.

Keywords: Artificial Intelligence, AI, STEM, primary school, students

INTRODUCTION

Developed countries adopt learning approaches such as experiential learning and hands-on learning from the early stages of education. The Science, Technology, Engineering and Mathematics (STEM) learning must apply real world context and use open exploration approaches. Several focuses that are capable of being national game changers include Artificial Intelligence, biosciences and blockchain technology as stated in the 10-10 Malaysia Science, Technology, Innovation and Economy (10-10 MySTIE) Framework (ASM, 2020). The ability to master the fields of focus can be a catalyst to technological development, especially in Artificial Intelligence, internet of things, big data, virtual reality and augmented reality, which are needed in future job markets in line with the growth of Industrial Revolution 4.0 (IR 4.0). The data from the National STEM Centre indicates that students in the field of STEM are at 47 per cent, while only 19 per cent are in pure sciences (NSA, 2020). It is important that all parties cooperate, for example schools can develop partnerships with non-governmental organizations and companies to get students interested in STEM. The Artificial Intelligent (AI) makes it possible for machines to learn from experience, adjust to new inputs and perform human-like tasks. Most AI examples are chess-playing computers, self-driving cars, and more. Using these technologies, computers can be trained to accomplish specific tasks by processing large amounts of data and recognizing patterns in the data (J. Goodnight, 2022).

METHODOLOGY

This methodology for this project focus on the basic knowledge on the AI given to the primary school students. It took two hours' duration for the students to reach on how the AI is all about together with the discussion among them on the related topic. Next focus is on the hands-on on the AI implementation. The one hour is required to guide the students on the AI model development with the step-by-step guide. The MATLAB software were used and with only 6 coding lines. As for this hands-on (or case study) the students were given data of essential oil and they developed AI to classify the oil grades as shown in Figure 1.

```
clear, close all, clc

%% load input-output data to the workspace
load('C:\Users\BEST\OneDrive\Desktop\INDES2022\dataAI.mat');

x=dataAI(:,1:7);
y=dataAI(:,8);

%% develop AI for essential oil grades
net= patternnet(10,'trainlm', 'mse');
[net,tr]=train(net,x',y');
view(net);
```

Figure 1: MATLAB coding for AI implementation

FINDINGS

During the hands-on session, the students have fun because they managed to develop the AI as a case study where essential oil data in different grades were given. Figure 2 shows the confusion matrix resulted from the developed AI, consists of (a) Training, (b) Validation and (c) Testing. The confusion matrix is one of the performances used to measure the developed AI. In general, the accuracy obtained from these confusion matrix is above 86.0%, which indicating that the developed AI model is acceptable. In details, the accuracy for training is 86.8% and 92.9% for both; validation and testing. In other words, the finding proved the capability of AI in grading the essential oils.

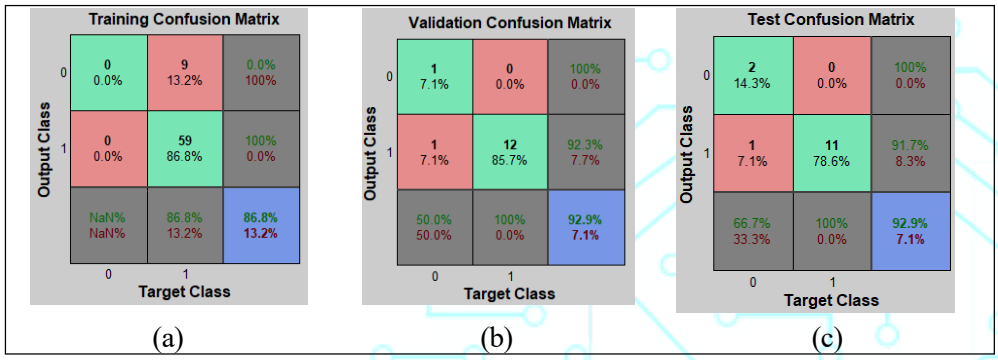

Figure **2:** The confusion matrix resulted from the developed AI, consists of (a) Training, (b) Validation and (c) Testing

CONCLUSION

The smart exposure to artificial intelligence the among the primary school students was successfully presented in this project. It showed that AI exposure among the primary school students benefits to only the students but also to the nations especially when it supports nation's aspiration in increasing the interest of students in STEM. This project revealed that smart exposure to AI among primary school students is achievable, user friendly and fun in learning process.

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