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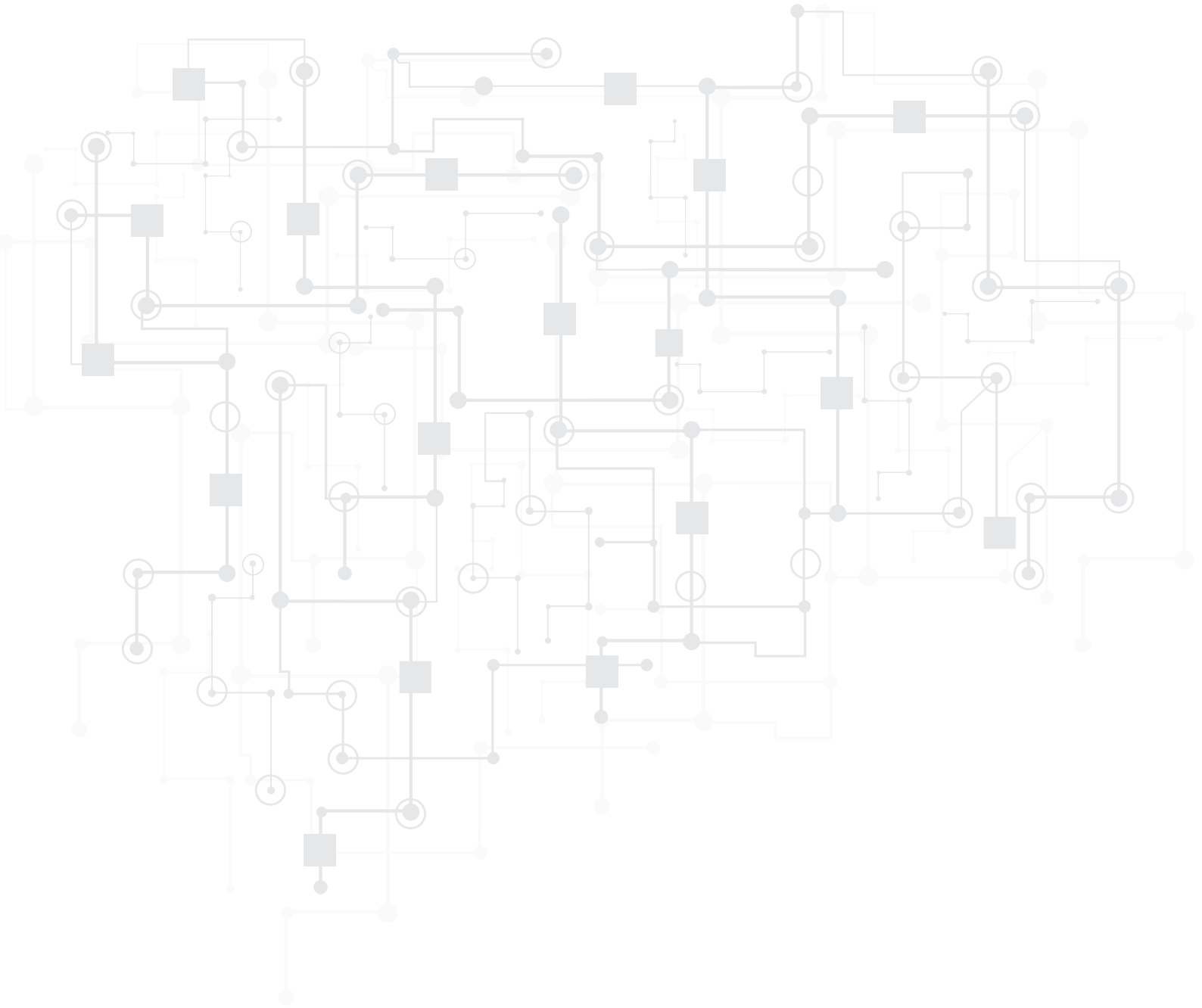
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Applications and Systems (ICITAS)

**“Managing Digital Development
for Sustainable Economy”**

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- Multimedia Applications on Arts and Design
- Visual Communication Design and Knowledge Media

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- Business and Information Technology Allignment
- Business Intelligence
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 - Integration of Data and Processes
 - Management Information System
 - Supply Chain Processes

FOREWORD

We welcome you to the First International Conference on Information Technology Applications and Systems (ICITAS) held February 3, 2018 in Surabaya, East Java, Indonesia. ICITAS 2018 provides a highly competitive forum for global exploration of the latest developments in Information Technology and their direct impact on the economic sustainability. Therefore, we carefully chose and embraced the theme of this conference as “Managing Digital Development for Sustainable Economy”.

We are pleased to present the proceedings of the conference as its published record. In overall, the technical committee has selected 40 papers to be published, which comprises authors from various countries and regions. The topics may include, but not limited to the following: Information and Communication Technology, Business and Economics Applications, and Applications of Digital Media Technology in Arts Design.

We want to express our gratitude to the members of the Program Committee and the Technical Committee, as well as the external reviewers for their hard work in reviewing all the submission papers. We also thank the three invited speakers, Prof Nai-Wei Lo (National Taiwan University of Science and Technology), Prof. Kamarul Hawari bin Ghazali (Universiti Malaysia Pahang), and Mr. Kresnayana Yahya, for sharing their insights with us. Finally, the conference would not be possible without the excellent papers contributed by authors. We thank to all the authors for their contributions and their participation in ICITAS 2018! We hope that this program will further stimulate research in Information Technology systems and their applications in the present time and in the future, and provide practitioners with better techniques, algorithms, and tools for deployment.

Dr. Jusak

General Chair of the ICITAS 2018

KEYNOTE SPEAKER

Keynote Speaker 1



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- 2001 - 2002: Lecturer, Politeknik Johor Bahru, Jalan Kongkong Masai, Johor
- 2002 - 2009: Lecturer at Faculty of Electrical and Electronics Engineering, Universiti Malaysia Pahang
- 2010 – 2012: Deputy Dean Research and Postgraduate Studies, Faculty of Electrical and Electronics Engineering, Universiti Malaysia Pahang
- Feb 2014 till present:
Dean of Faculty of Electrical and Electronics Engineering, Universiti Malaysia Pahang
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CURRENT POSITION

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FIELD OF SPECIALIZATION

• Machine Vision System, Image Processing, Signal Processing, Intelligent System, Vision Control, Computer Control System, Thermal Imaging Analysis (in all related applications - Electrical, Medical, Environment) and Computer Engineering.

THERMAL IMAGING APPLICATION: THERMAL - VISIBLE FUSION FOR HUMAN DETECTION

Abstract - An increased interest in detecting human beings in video surveillance system has emerged in recent years. Multisensory image fusion deserves more research attention due to the capability to improve the visual interpretability of an image. This study proposed fusion techniques for human detection based on multiscale transform using grayscale visual light and infrared images. The samples for this study were taken from online dataset. Both images captured by the two sensors were decomposed into high and low frequency coefficients using Stationary Wavelet Transform (SWT). Hence, the appropriate fusion rule was used to merge. The coefficients and finally, the final fused image was obtained by using inverse SWT. From the qualitative and quantitative results, the proposed method is more superior than the two other methods in terms of enhancement of the target region and preservation of details information of the image.

Keynote Speaker 2

Dr. Nai-Wei Lo got his Ph.D. degree in Electrical Engineering from State University of New York at Stony Brook, USA, in 1998. He worked as research assistant at TNT Information Systems Inc. in 1997 to 1998. From 1998 to 2000, he worked at H&L Technique Inc. as a software consultant for AT& T Business and Global Services. From 2000 to 2002, he worked at Lucent Technologies as member of technical staff.

Dr. Nai-Wei Lo joined the Department of Information Management in National Taiwan University of Science and Technology in 2003, and he has become professor from 2015. In addition, he has been the director of Taiwan Information Security Center, National Taiwan University of Science and Technology (TWISC@NTUST) since 2014. His research interests include smart grid security, IoT/IoV security, web technology, and cloud security.

Keynote Speech Title: Indoor Positioning-based Mobile Payment System Using BLE Technology

Abstract – The development of information technology has paved the way for faster and convenient payment process flows and new methodology of design and implementation for next generation payment system. The usage growth of smartphones in nowadays has fostered a new and popular mobile payment environment. Most of the current generation smartphones support BLE technology to communicate with nearby BLE-enabled devices. It is plausible to construct an Over-the-Air BLE-based mobile payment system as one of the payment methods for people living in modern societies. In order to secure the BLE-based mobile payment system, a secure indoor positioning-based mobile payment authentication protocol and corresponding mobile payment system is designed. The authentication protocol consists of three phases: initialization phase, session key construction phase, and authentication phase. A prototype is implemented to assess the performance of the designed mobile payment system.

Keynote Speaker 3

Krenayana Yahya is a Director of Enciety Business Consult and also a Lecturer at Department of Statistics ITS. Not only served as Director of Enciety Business Consult, this Jakarta-born man is also listed as a Commissioner of PT Petrokimia Gresik. In addition he is also a Board of Trustees LEAD Indonesia (one of the program The Foundation of Sustainable Development or Foundation for Sustainable Development of the UK). Not only that, a number of important positions in several organizations such as the Chairman of the Association of Indonesia Manager Surabaya Branch, President of the Association of Indonesian Marketing area of East Java, and various other important positions in the field of statistics, environment, marketing to democracy. Mr. Yahya who holds a master's degree at the University of Wisconsin, USA is known to actively fill interactive dialogue in various mass media such as Suara Surabaya and JTV radio. His writing was often appeared in print media Java Post and Kompas Daily.

Keynote Speech Title : Digital development for sustainable economy

Abstract - The development issues today is strongly related to the developments of Technology. Technology introduction to a society is mainly a choice and related to the readiness to accept and utilized for the good of the improvement of welfare. Digitalization becomes a mean and a purpose to achieve sustainable development. Educating the young and bridging the digital divide becomes the most important aspect before to decide what and which technology should be implemented in a society, in a public sector and overall for business development. Disruptions will come and replacing, renewing, through innovation and developing application to reduce time, increasing speed and integrating most activities that reduce the impact on the degradation of the earth.

The role of development should define and prioritize the steps toward improving quality of life through managing the digital policy in the stages of development. Consideration the impact and the negative side of the use of IT should be anticipated through

policy developments. Technology by itself is neutral, but preparing the infrastructure to used, to be used by whom and for what purposes will be the main cause to regulate. The digital divide should be considered as a real concern not to widen the welfare gaps and the increase of economic disparity.

Currently in Indonesia the IT Index of developments showed that Jakarta has the most advanced IT usage, Infrastructure and supported for business, while most villages and outer Island like Papua has very poor access for internet

Indonesian archipelago has its problems in disparity of level support for mostly several infrastructure. Better and more justice in prioritizing is on the way to make it even and more welfare instruments will cover.

On the other hand better access for communication and improving connectivity will improve the chances to integrate IT with most public sectors like transportation, online courses, retail, and public utility access. The future of IT will certainly a great help for human development in general. The improvement of policy development will be a real support for most development instrument. Specifically policy development for digitalization will be most valuable through the better understanding and the right implementation of sustainable development

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Application Evaluation of Simulation of Agribusiness Concept of Livestock (SPEKTRUM) at SMK Al Jauhar Ngawi, East Java

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Abstract – The objective of this research is to evaluate the students' understanding on the concept of livestock agribusiness using application of Simulation of Agribusiness Concept of Livestock (SPEKTRUM). To build the application, the method used is Luther Models Multimedia Development Lifecycle. This method was chosen because it has been widely used to create similar learning applications. To determine the degree of differences in students' understanding the material between before using the application and after using the application, the researchers add evaluation menu on SPEKTRUM application to assess the students' final outcome. The evaluation menu in the application uses a multiple-choice question form. Test of evaluation menu was conducted to 35 students of SMK Al Jauhar Ngawi. the total 35 students, the average value generated without using the application was 67.71. While the average value generated after the students use the application was 76.28. Thus, there is an increase in students' score as much as 8.57 points compared to without using the application. Based on this result, it can be concluded that SPEKTRUM application can help to improve students learning outcomes in SMK Al Jauhar Ngawi.

Keywords: *Evaluation, Simulation of Livestock Management, Agribusiness, Cattle.*

I. INTRODUCTION

This study took a case study at SMK Al Jauhar Ngawi, because it is the only Vocational High School majoring in Livestock Agribusiness in Ngawi District. The purpose of education in a vocational school tends to focus on how to prepare students to be able to work in certain areas as workers / employees [1]. SMK Al Jauhar Ngawi also prepares the students to be able to open their own business after graduation, especially in the field of animal husbandry.

The school stated that they have difficulty in doing practice of the process of cattle farming in the field because the land provided is not proportional to the number of students and cost constraints are quite high. For vocational schools majoring in livestock agribusiness, it is not easy to give examples of how to apply good farming cultivation to their students. On the other hand, breeders should spend

approximately 70% of the production cost for feed costs [2] [3].

The farms are currently only built on very limited land [4]. Thus, students majoring in livestock will do the practicum to the location of the cattle ranchers which are outside the school location [5]. To assist the learning process with a simple simulation, this research builds an application of Simulation of Agribusiness Concept of Livestock (SPEKTRUM). This application presents a simulation process designed with characteristics ranging from types of livestock, feeding, cow weighting, cattle breeding, livestock distribution in Indonesia, processed cattle, and marketing and profit calculations.

This learning application is intended for teachers in the process of delivering the materials in the classroom, so that the students can know the proper cultivation model to manage the farm before going directly to the field. This app is created using the concept of multimedia. Multimedia is an element that can increase the motivation or interest in understanding the material presented by the teachers [6].

Various previous researches on simulation application of livestock feeding calculation have been done, such as application to calculate the weight of livestock and livestock recording [7]. In addition, there is also a research on Java-Based Visual Programming Application of Chicken Ranch in Independent Chicken Farming [8]. The application has an optional menu for livestock data input, livestock sales data, and nutrition feeding calculation, as well as analysis of chicken breeding profits based on breeding chickens and selling prices.

To know the degree of differences in students' understanding between before and after using the application application, researchers added SPEKTRUM evaluation menu to assess student outcomes. This evaluation menu in the application uses a multiple-choice question form. The evaluation test was conducted to 35 students of SMK Al Jauhar Ngawi.

II. RESEARCH METHODS

A. Software Development with *Luther Models*.

Based on the analysis of the situation and background, The main problem that is found is the difficulty of applying cattle breeding due to the lack of land and high constraints for the school. Thus, the solution offered is the development of Application of Simulation of Agribusiness Concept of Livestock (SPEKTRUM) by specializing in cows.

To build the application, the method used is *Luther Models Multimedia Development Lifecycle*. This method was chosen because it has been widely used to create similar learning applications [6][9].

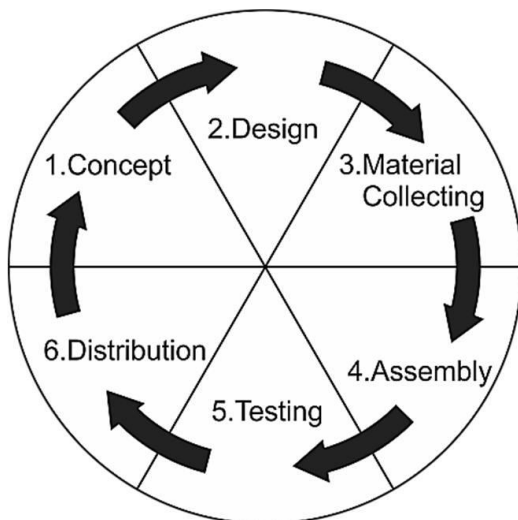


Fig 1. Stages of Multimedia Application Development.

The stages in making the learning application using *Luther Models*, are as follows:

1. Concept

The concept stage is a step to identify the needs of users (teachers and students). The end goal of the users is to simulate the management of cattle for the needs of learning in school.

2. Design

Tahapan design ini merupakan tahapan untuk membuat daftar spesifikasi arsitektur program seperti pembuatan *storyboard* dan diagram alir. This design stage is the stage to create a list of programming architecture specifications such as storyboard creation and flowchart.

3. Material Collecting

This stage of collecting materials is the stage for collecting application supporting files, such as images (images / clip art), additional animations, audio / music that can be designed by image processing applications such as Adobe Photoshop or Corel Draw.

4. Assembly

The assembly stage becomes an important stage of all stages, namely the development of multimedia applications by including all contents and material collecting in accordance with the storyboard that has been made.

5. Testing

This stage is a stage that serves to test whether the application is in accordance with the wishes and goals of the users or not. To determine the level of understanding between students before using the application and after using the application, the researchers add SPEKTRUM evaluation menu to assess the students' outcome. This evaluation menu in the application uses a multiple-choice question form.

6. Distribution

This stage of distribution becomes the last stage for distributing applications to teachers and students for the learning process.

The application of Simulation of Agribusiness Concept of Livestock (SPEKTRUM) uses projected media concept, because it is applied to the computer / laptop of the learners.

III. RESULTS AND DISCUSSIONS

A. The implementation of Application of Simulation of Agribusiness Concept of Livestock (SPEKTRUM)

This research has been able to produce an application of Simulation of Agribusiness Concept of Livestock (SPEKTRUM) with 7 main menus. Figure 3.1 shows the opening page of the SPEKTRUM Application and Figure 3.2 shows the menus provided in the application.



Fig 2. the opening page of the SPEKTRUM Application

There are 7 menus that can be accessed in this application, namely types of livestock, feeding, cow weighting, cattle breeding, livestock distribution in

Indonesia, processed cattle, and marketing and profit calculations. Addition is done by adding the SPEKTRUM Evaluation Menu located at the bottom of the 7 menus for testing to the students.



Fig 3. Main Menu Page of SPEKTRUM

3.2. Results of Application Evaluation and Students' Value Comparison

To find out the level of differences between the students understanding before using the application and after using the application, the researchers add SPEKTRUM Evaluation Menu to assess the students' final outcome. The value of the Evaluation Results before using the application has been done by the teacher during the Mid Semester Exam.



Fig 4. Spektrum Evaluation Menu – Multiple-Choice Questions



Fig 5. Spektrum Evaluation Menu that has already been done by the student.

TABLE 1 THE RESULTS OF STUDENTS' EVALUATION

No.	Score Range	Predicate	Number of students - Exam before using the application	Number of students - Exam after using the application
1.	96 – 100	A	-	5
2.	91 – 95	A-	4	
3.	86 – 90	B+	-	2
4.	81 – 85	B	4	
5.	75 – 80	B-	-	11
6.	70 – 74	C+	8	10
7.	65 – 69	C	1	
8.	60 – 64	C-	9	6
9.	55 – 59	D+	9	
10	< 54	D	-	1
		Total of students	35 students	35 students
		Average Scores	67.71	76.28

The SPEKTRUM Evaluation Menu in the application uses the multiple-choice question form (see Figure 3.3). Evaluation Menu Testing was conducted on 35 students and differences of comparison results without or with using application can be seen in Table 3.1.

There are differences in the students' values from the table above. The scores of the exam before using the application were taken from the students' mid-test where the learning process did not use the application.

Of the total 35 students, the average value generated without using the application was 67.71. While the average value generated after the students use the application was 76.28. Thus, there is an increase in students' score as much as 8.57 points compared to without using the application. Based on this result, it can be concluded that SPEKTRUM application can help to improve students learning outcomes in SMK Al Jauhar Ngawi.

IV. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

From the research of making the application, it can be drawn some conclusions as follows:

- a. The application of Simulation of Agribusiness Concept of Livestock (SPEKTRUM) can be used as a learning tool that can help teachers and students to apply the knowledge obtained, especially in the field of cattle farming.
- b. The application of Simulation of Agribusiness Concept of Livestock (SPEKTRUM) has been evaluated through student learning outcomes that have increased students' values as much as 8.57 points compared to without using the application.

B. Suggestion

A suggestion that can be done for the development of the research and application is to create a similar application based on the website.

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