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# i-JAMCSIIX 2022

International Jasin Multimedia & Computer Science Invention and Innovation Exhibition

## ABSTRACT BOOK

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**In Partnership:**



Tadulak • University

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# **i-JaMCSIIX** **2022**

International Jasin Multimedia & Computer Science Invention and Innovation Exhibition

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i-JaMCSIIX

Universiti Teknologi MARA Cawangan Melaka Kampus Jasin

77300, Merlimau, Melaka

Web: <https://jamcsiix.wixsite.com/2022>

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# Contents

<b>Registration ID</b>	<b>Project Title</b>	<b>Page</b>
<b>JM006</b>	Hiding Information Digitally Under Picture (HIDUP) Using Image Steganography	1
<b>JM007</b>	Target Heart Rate Zone Detector during Exercise based on Real-time Facial Expression using Single Shot Detection Algorithm	2
<b>JM009</b>	Learning Shapes and Colours using JomLearn & Play Application for Children	3
<b>JM010</b>	A Novel Quality Grading Determination using Boxplot Analysis and Stepwise Regression for Agarwood Oil Significant Compounds.	4
<b>JM011</b>	A Novelty Classification Model for Varied Agarwood Oil Quality Using The K-Nearest Neighbor Algorithm	5
<b>JM012</b>	The Development of Web-Based Student Leadership Program Management System for 'Unit Kepimpinan Pelajar'	6
<b>JM013</b>	MARC 1.0: Apps to integrate culture the fun way in a university orientation programme	7
<b>JM014</b>	Re: Gen - Web-based Resume Generator With Content Recommender For It Job Field	8
<b>JM015</b>	Zakat Distribution System for Asnaf Selection using Artificial Neural Network Algorithm in UiTM Cawangan Melaka	9
<b>JM017</b>	Jasin Smart Library	10
<b>JM019</b>	Nursery Plants Recommendation System Using Collaborative Filtering Technique	11
<b>JM020</b>	An Interactive Android Mobile Application in Learning Wudhu and Salah for Children with Learning Disabilities	12
<b>JM021</b>	Absolute Fitness	13
<b>JM022</b>	The Library	14
<b>JM023</b>	Dashcam with cloud storage using raspberry pi with FFmpeg video compression	15
<b>JM024</b>	Gold Price Forecasting by Using ARIMA	16

<b>JM025</b>	Recycle Now: Learning the 3R of Waste Management Through Game-Based Learning	17
<b>JM026</b>	Learning Corpse Handling for Primary School Students using Game-Based Learning	18
<b>JM028</b>	Mathematical Learningmate For Children With Dyscalculia	19
<b>JM029</b>	BC-DIGIT: An Interactive Digital Application	20
<b>JM030</b>	Energy Consumption Prediction In Educational Building During Lecture Week using Multiple Regression Model	21
<b>JM031</b>	Go Travel Application	22
<b>JM032</b>	SmartPark	23
<b>JM033</b>	iKEN 3D Environment Mobile Application	24
<b>JM034</b>	Click Car Services	25
<b>JM035</b>	Smart Vector Backpack	26
<b>JM036</b>	My Ole-Ole Application	27
<b>JM040</b>	SH Jacket	28
<b>JM041</b>	FemaleSafe2Go	29
<b>JM042</b>	Avalyn	30
<b>JM043</b>	MyConvenient Travel Application	31
<b>JM044</b>	Visnis Apps	32
<b>JM045</b>	Cyclo Application	33
<b>JM046</b>	i-seeuWatch	34
<b>JM047</b>	ArenaSport Application	35
<b>JM048</b>	Melastomaceae sp : A New Potential of Antioxidant Agent	36
<b>JM049</b>	Travesy	37
<b>JM051</b>	The Food Hunter	38
<b>JM052</b>	NIXON PACK	39
<b>JM053</b>	Ecoin Sustainable Smartwatch	40

<b>JM054</b>	SpaceBook	41
<b>JM055</b>	Prayer Mate Jacket	42
<b>JM056</b>	Backpack Hoodie	43
<b>JM057</b>	"Cintre Multifunction"	44
<b>JM058</b>	Phone Holder Multifunction 3 In 1	45
<b>JM059</b>	Business Financial Forecasting System Using Autoregressive Integrated Moving Average (ARIMA) Algorithm	46
<b>JM060</b>	Kesho Bearer	47
<b>JM061</b>	Nafas Face Mask	48
<b>JM062</b>	Handy Scrubby	49
<b>JM063</b>	Beanie Shawl	50
<b>JM064</b>	POMCUT (Portable Multi-cooking Utensil)	51
<b>JM065</b>	4 in 1 Tumbler	52
<b>JM066</b>	Multifunctional Holder	53
<b>JM067</b>	Visualizing the spread of Coronavirus disease using a Density-based Clustering Algorithm	54
<b>JM068</b>	Developing Biometric Facial Registration For Jobfinder Mobile Application	55
<b>JM069</b>	Development of Virtual Kenong with Leap Motion Controller	56
<b>JM070</b>	EYE DISTANCER DEVICE	57
<b>JM071</b>	Fuzzy Delphi Method Analytical Tool: An Excel VBA-Based Approach	58
<b>JM072</b>	Understanding Social Media Influence In Reviving The Trishaw Or "Beca" As A Popular Tourism Attraction In Melaka.	59
<b>JM073</b>	Non-immersive Virtual Reality for Learning Steps of Umrah: Effect from Covid-19 Pandemic	60
<b>JM074</b>	First Aid Stick	61
<b>JM075</b>	Istiqamah App by As-Sunnah Global Ventures Sdn Bhd	62
<b>JM077</b>	SWARM-L : Security Warning Area Mode of Liquifaction	63

<b>JM078</b>	T-LOBSTER : Transformation of Local Batik Motifs Central Sulawesi for the World	64
<b>JM079</b>	The IoT-based instrument for conservation law of mechanical energy	65
<b>JM080</b>	Web Application for Clustering Potential Earthquake Region in Central Sulawesi	66
<b>JM081</b>	Let's Read!	67
<b>JM084</b>	Anxiety Disorder Management System (ADMS)	68
<b>JM085</b>	A Guide to Water Purification	69
<b>JM086</b>	Bright Gas Distribution Information System Design Pertamina by Applying the Distribution Method Requirement Planning (DRP)	70
<b>JM087</b>	Detection of Flight Data Anomalies Based on Automatic Dependent Surveillance-broadcasting	71
<b>JM088</b>	Classification of Formalin Fish Based on Color Characteristics of Fish Eye Images Using Artificial Neural Network Algorithm	72
<b>JM089</b>	Coco-pine Bioplastic	73

## Energy Consumption Prediction In Educational Building During Lecture Week using Multiple Regression Model

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***Abstract***—Energy consumption prediction in educational building is vital before any activities pertaining to energy management (EM) and energy conservation measures (ECM) were conducted. The successfulness of the mentioned activities relies on the accuracy of energy consumption prediction through a baseline energy model (BEM). BEM is a tool that were used to assess the changes and behaviour of energy consumption in any buildings. Currently, Single Linear Regression (SLR) model were widely used for BEM modelling and prediction purposes. SLR model that were used for BEM modelling and prediction purpose poses significant weakness where it relies only on one independent variable as the contributing factor for the energy consumption. Thus, the innovation objective of this project is to use the Multiple Linear Regression (MLR) model for BEM modelling and energy consumption prediction purposes in an educational building. An educational building will be used as a case study where SLR model and MLR model will be used for BEM modelling hence predicting the energy consumption. Both model will be compared using coefficient of determination ( $R^2$ ) and statistical error MSE, RMSE and MAPE to assess its reliability and prediction accuracy respectively. Results demonstrate that MLR model has a higher  $R^2$  and low statistical error compared to SLR model which concludes MLR model has higher advantages and accuracy in modelling and prediction. In addition, it is safe for building owner if they intend to use the MLR model for BEM modelling and energy consumption prediction purposes.

***Keywords***—*Baseline, Modelling, Prediction, Regression and Energy Consumption,*