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Theme :

"The Role of Industry 5.0, Innovation and Infrastructure for SDGs."

Book of Abstract

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ROOM 1

Improvement of hardness and micro structure of cu-zn as a propeller material by shot peening method

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Abstract

Brass metal is widely used as a supporting equipment material, one of which is a propeller. The propeller itself is one component of the boat that rotates and produces thrust energy. The continuous use of propellers results in degradation or a decrease in quality and service life. The degradation of the propeller is affected by the hardness, toughness, and corrosion resistance of the working environment. To improve the quality of the propeller, shot peening treatment was carried out on its surface. Shot peening is a continuous shooting process with fine particles in the form of steel balls on the surface of the object. Shot peening can increase the density of the microstructure and produce compressive residual stress which causes the surface hardness to also increase. Shot peening is carried out with variations in duration of 2, 4, 6, 8, and 10 minutes, 100 mm shooting range, and 7 Bar firing pressure. The steel ball particles used have a hardness of 40-50 HRC and a diameter of 5 mm. The results of the hardness test showed an increase in the surface hardness of the spesimens for a duration of 2, 4, 6, 8, and 10 minutes, respectively 189, 294, 302, 324, 330, dan 341 HV. The microstructure of the spesimen after shot peening looks tighter and denser. The highest hardness value is 341 HV or an increase of 80% compared to raw material.

Keywords: Cu-Zn, Shot peening, Hardness, Propeller

Bentonite filter as an absorber of acid gas contaminant in the use of portable fumehoods

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Abstract

Fume hood is an important tool in chemical laboratories for research activities that use hazardous chemicals. Fume hoods are generally installed patently in a laboratory, with a drain that only connects the fume hood with the outside air without going through a filter, so that chemical contaminants cause environmental air pollution. This study aims to design a portable fume hood that is equipped with a water filter housing and bentonite rock as an absorber of acidic gases. In this research, a portable fumehood has been produced which is equipped with a filter housing that absorbs acid gases, and the ability of the bentonite filter to absorb acid contamination has been determined. Bentonite is able to absorb 98.61% acid contamination for 40 minutes.

Keywords: Bentonite, filter, acidic gas, portable fumehoods

Laboratory studies on compressive strength of normal concrete using coral limestone on timor island, east nusa tenggara province as a substitute for coarse aggregate

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Abstract

Coral limestones are called by the people of East Nusa Tenggara as Batu Karang, scattered throughout the West Kupang area from Timor Island but are not used properly. Its use is limited as a filler in foundation and floor work, but has not been used as a structural or non-structural concrete constituent material. The research method is an experiment on 48 samples with a maximum size of 40 mm coral limestone, a maximum size of coarse aggregate (gravel) 20 − 30 mm, variations replacement coarse aggregate (gravel) with coral limestone is 0%, 5%, 25%, 50%, while the target quality, fc' = 30MPa and planned observation age is 7, 14, 28 days. The test results showed an increase in the compressive strength of concrete at the age of 28 days for variation 0% = 29,89Mpa, variation 5% = 31,35Mpa, variation 25% = 33,37Mpa while variation 50% = 29,51Mpa decreased 1,25% from targeted quality. The increase is more significant in the 25% variation, which is an increase of 11.66%. While the sample specific gravity decreased, for variation 0% = 2.370,71 kg/m3, 5% variation = 2.368,28 kg/m3, variation 25% = 2.311,87 kg/m3, 50% variation = 2.275,46 kg/ m3. Replacing coarse aggregate (gravel) with coral limestone can reduce the specific gravity of concrete up to 4,02%. The conclusion of the research is that coral limestones throughout West Kupang from Timor Island can be used as an alternative material for structural and non-structural concrete to support infrastructure in the province of East Nusa Tenggara.

Keywords: Coral Limestone, Coarse Aggregate, Normal Concrete, specific gravity, compressive strength of concrete

Concrete compressive strength with sea sand as fine aggregate

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Abstract

In 2015, Indonesia Geospatial Information Agency (BIG) noted the total number of Indonesian Islands approximately 17,000 islands and the length of cost`line more than 100,000 km. Therefore, it is possible to use sea sand as a constituent of concrete mixtures. Generally, fine aggregates obtained from river sand which in laboratory report explained that has not contained corrosive substances. However, in recent years research in maritime field was extended to find an appropriate formula for its use. This study describes the compressive strength of concrete with sea sand as fine aggregates mixed with gravel, cement and water. Concrete mix design based on Indonesian guideline (SNI) was desingned with fc' = 25 MPa. Pre eleminary testing on fine and coarse aggregates includes gradation grade, sludge test, water rate, density test and water absorption. Specimens are cylindrical concrete with class division based on the age of the concrete. The concrete age of 7 days, 14 days, 28 days and 56 days were tested in this study. Before speciments have tested, they are cured with fresh water in the pool. . The results of the study concluded that the compressive strength was not in accordance with mix design and because sea sand contains corrosive materials that reduced concrete compressive strength.

Keywords: Concrete, Compressive Stregth, Sea Sand

Concrete compressive strength using aggregates from kawaliwu quary, east flores district, indonesia

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Abstract

Concrete is a mixture of Portland cement or other hydraulic cement, fine aggregate, coarse aggregate and water. The quality of the concrete compositions determines how much strength the concrete. Indonesia have amount of natural resources, especially concrete building materials such as water, fine aggregate and coarse aggregate. Almost every island in indonesian region has at least minimum one source quarry to produce aggregates. Kawaliwu is a quarry located in Sinar Hading Village, Lewolema, East Flores District, East Nusa Tenggara Province, this location is a rocky area so that this quarry produces fine and coarse aggregate. This study to know aggregates from Kawaliwu that mixed with cement and water and then tested how much its concrete compressive strength. The results of the study concluded that aggregates from Kawaliwu can be used in concrete mixtures.

Keywords : Concrete, Compressive Strength, Aggregates, Kawaliwu

Concrete brackish water and fresh water in compressive strength comparison

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Abstract

Drought caused by climate changes that cause water deficiency. Therefore, the use of fresh water must be effective and efficient in normal condition in term in construction works. Commonly, Water supply widely used for civil works such as concrete mixtures, concrete treatment to the completion of structural work. Research on water supply for concrete mixtures besides fresh water such as sea water and brackish water has carried out in recent years. This study was developed to reduce fresh water using brackish water in concrete mixtures and compared with fresh water concrete. Besides brackish water, composition coarse aggregates, cement, and water ratio cement is similar to fresh water concrete. Concrete mix design is fc' 30 MPa than specimens were tested based on age of concrete i.e. 7 days, 14 days and 28 days. The results of the study concluded that the compressive strength of brackish water concrete was 10.06% higher at the age of 7 days; 13.02% at the age of 14 days and 8.89% at the age of 28 days than fresh water.

Keywords : brackish water, concrete, compressive strength, comparison

Change in the indeks of retained strength in the ac-wc mixture with the additional of waste rubber from used tires (crumb rubber)

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Abstract

The growth of the number of motorized vehicles in Indonesia every year always increases. The consequence of the growth in the number of motorized vehicles is the increasing production of motorized vehicle tires which results in the accumulation of used tire waste. One of the innovations to reduce the waste of used tire rubber is to use it in asphalt mixtures. The study was conducted to determine the change in the index of retained strength in the AC-WC mixture with the addition of waste rubber from used tires (crumb rubber) meeting the Bina Marga Specifications. The results showed that the addition of waste rubber tires affected the marshall characteristics, namely, the highest specific gravity, density, VFA, and stability values were at a level of 1%, while the highest values of VIM, VMA, and flow were at a level of 9%. From the index of retained strength test, it shows that water affects the durability of the AC-WC mixture, as evidenced by the highest value at the duration of immersion for 24 hours with a concentration of 1%, which decreases with increasing duration of immersion. The addition of used tire rubber waste (crumb rubber) to the AC-WC mixture has met the Bina Marga Specifications on the Marshall characteristics test, but the change in the index of retained strength was only for a 24 hour immersion duration, while for other durations it did not according the Bina Marga Specifications.

Keywords : Crumb ubber, Marshall, Indeks of Retained Strength.

The effect of addition of camphor to pertalite on the efficiency of four stroke motorcycles

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Abstract

Currently, the price of fuel for motorized vehicles is increasingly expensive, so research is needed on how to make the use of fuel more efficient. This paper will discuss the effect of adding camphor on pertalite on the level of fuel efficiency and how it affects the crust that arises on a four-stroke motorcycle piston. The variation of fuel used is pure pertalite, pertalite mixed with 3 grams of camphor and pertalite mixed with 5 grams of camphor. The testing method used was to turn on the motorcycle in a stationary condition and the engine speed was kept constant at 3000 rpm. The engine is turned on until the 300 ml of fuel provided is used up, and the time needed to spend the fuel is calculated. The test results show that the addition of camphor on pertalite can increase fuel efficiency. The efficiency obtained is better using a 5 grams camphor mixture compared to those using 3 grams of camphor. The crust that arises on the piston more if you use pertalite mixed with camphor.

Keywords: Efficiency, Pertalite, Camphor, Four-stroke motorcycle, Addition.

Improving The Cooling Performance Of Vehicle Radiator With SiO2 Nanofluid

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Abstract

This study aims to increase the fluid flow rate on the performance of the radiator by using a nanofluid consisting of a mixture of raw water with nano-silica (SiO2) particles. The study began with testing the silica material using a Scanning Electron Microscope (SEM) to know its microstructure. Furthermore, mixing silica nanoparticles (SiO2) with water using varying ratios of 0.1%, 0.3%, and 0.5%, was processed using a magnetic stirrer for 8 hours and precipitated for 24 hours. To disperse the nanofluid, it is inserted into the ultrasonic device. After being separated from the sediment, the nanofluid was tested for performance using a series of cooling system performance test equipment. A series of test equipment consisting of a radiator, flowmeter, water pump, pipe installation, heater, and reservoir tank. Research data retrieval is carried out at the inlet and outlet temperatures of the radiator and also on the radiator wall. In this study, variations in fluid flow velocities of 2.5, 4.5, and 6 LPM were carried out. The results showed that the decrease in temperature with the use of a fluid flow rate of 6 LPM was able to dissipate heat well to the environment. The decrease in temperature that occurs is 2.5%. Meanwhile, the lowest average radiator effectiveness value at the lowest speed of 6 LPM is 0.905, and the highest at a fluid flow rate of 4.5 is 0.930.

Keyword : Cooling, Vehicle, Radiator

Image analysis assisted by imagej to measure the area of monitor lizard skin

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Abstract

Monitor lizard leather is a unique raw material for leather product, such as wallet, shoes, and bags. Generally, leather is traded based on area. The leather area can be measured using both manual and machine methods. The manual method is simple and cheap, but it has low accuracy because the shape of the leather is unsymmetrical and irregular, while the modern method is the opposite. The measurement of the area of the leather object has been expanded with an easy and modern method. We develop a method by utilizing image analysis assisted by ImageJ to analyze leather areas quickly, cheaply, and accurately. The research was carried out by taking pictures, and the images are analyzed using ImageJ. The steps of measuring leather area in this study include determining the scale, color adjustment, calibration, and validation. The calibration stage can increase the accuracy by 12.7%, from the initial prediction of 85.20% to 97.58%. The ImageJ application is suitable for measuring skin area with a large number of skins

Keywords: Monitor lizard leather, Area measurement, Image analysis, ImageJ

Effect of polymer type and specimen surface roughness on fatigue life

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Abstract

Accidents encountered in a polymer can occur due to vibration and loads that exceed the fatigue life that can be predicted by fatigue testing. The purpose of the study was to determine the estimated fatigue life in order to prevent breakage or fracture of ABS (Acrylonitrile Butadiene Styrene) and HIPS/HI (High Impact Poly Styrene) plastic materials. The test methods included: Printing of ABS and HI plastic specimens with the smallest diameter of 8.6 mm , sanding the surface on the smallest diameter specimen with a roughness of 600 Mesh and 120 Mesh, fatigue testing, analysis of fatigue test results, and plotting the S-N curve. The real results obtained are fatigue life at flexural stress of 34.2 MPa and engine speed of 1750 rpm for ABS polymer with a surface roughness of 120 Mesh at N of 152733 revolutions lower than that of ABS polymer without treatment at N of 1625915 revolutions on a smooth surface of 600 Mesh at N = 1824620 rounds (<26%). For HI with a roughness of 600 Mesh at a flexural stress of 34.2 MPa and engine speed of 1750 rpm, N value of 317084 revolutions was obtained which was lower than HI at 120 Mesh which obtained N of 424712 revolutions (<33%).

Keywords: Fatigue test, Fatigue life, ABS and HI, and Injection moulding of plastic fatigue test specimens.

Current development of waste glass as construction materials

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Abstract

The scientifically deconstructed Waste Glass (WGs) can be used as a partial substitute for sand. WGs are generally sent to landfills even though they are recyclable. WGs waste is essential as a non-biodegradable resource. To reduce the disposal of WGs in landfills, WG should be transformed into new valuable materials such as sand, a building material commonly used in mortar and concrete manufacture. This study aims to review the use of WGs as building construction materials. The result shows that WG could be a substitute for sand due to its beneficial pozzolanic properties. WGs below 20% can replace part of the cement and positively impact mechanical strength. In contrast, substitutes higher than 20% can cause a negative impact because the remaining amount of CaCO3 is not enough to react to produce C-S-H gel. Utilizing WG as a replacement for fine sand with more than 20% leads to adverse effects. This issue is due to the specific gravity of the glass below the particular gravity of fine natural sand. Waste glass has partially replaced cement and fine sand at specific proportions. This innovation can be valuable in building construction to protect the environment.

Keywords: Waste Glass, Materials, Sand, Mechanical Properties, Recycle.

The significant impact of the covid-19 pandemic on the Indonesian economic sector: digitizing msmes in Indonesia

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Abstract

E-commerce is a new digitalization business model in the COVID-19 Pandemic era. In conjunction with that issue, Indonesia has been paying more attention to the impact of COVID-19 pandemic on all sectors, especially business sector because of the implementation of large-scale social restrictions policy that shifts the marketing and public consumption pattern. The present study is written to provide an overview of the growth of e-commerce during pandemic in the Indonesia context. This study is designed using a qualitative approach by utilizing the literature review of relevant published articles, books, and other sources that discuss e-commerce in the COVID-19 Pandemic era. After that, we conducted a preliminary interview to further explore the factors that influence this phenomenon. Also, the writing report is presented in a descriptive form that combines the narration with tables and figures. This study's results are the COVID-19 pandemic has changed business activities and transactions from offline to online. Also, we found that there are more than a million new users of e-commerce during COVID-19 pandemic. Interestingly, Indonesia's internet traffic is experiencing annual growth of 73 per cent in the first quarter of 2020 and rising to 139 per cent in the second quarter of 2020. In conclusion, the development of e-commerce in Indonesia is faster than the other countries around the ASEAN region and shows rapid growth during COVID-19 pandemic. Due to the global pandemic issue, where the government implements social and distance restrictions, it encourages the business world to join e-commerce, especially for micro, small and medium enterprises (MSMEs).

Keywords: Covid-19, E-Commerce, Digitalization, MSMEs

ROOM 2

Export marketing performance based on argo value co-creation

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Abstract

This study analyzed and found empirical evidence of market orientation, argo value co-creation, network accessibility, and competitive advantage of export marketing performance. The implications for managerial and policy as a basis for solving export marketing performance problems in furniture SMEs that export with argo value co-creation. The market orientation, value co-creation, network acessibility, competitive advantage are used to measure export marketing performance. Based on the empirical study of the results of this study that market orientation has an effect on argo value co-creation. the value of co-creation has an influence on network accessibility, the argo value co-creation has an influence on the competitive advantage, network acessibility has an influence towards export marketing performance and competitive advantage has an effect on export marketing performance. This shows that market orientation, argo value co-creation, network acessability, competitive advantage give impact and become a very important role in improving export marketing performance. This research still has limitations for only examining five variables market orientation, argo value co – creation, network acessibility, competitive advantage and export marketing performance. This empirical research will support the theory that market orientation, argo value co-creation, network acessibility, competitive advantage have an important role in improving export marketing performance.

Keywords: export marketing performance, market orientation, argo value co-creation, SMEs

Augmented reality as a medium for the introduction of athletic equipments

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Abstract

Athletics is a combination of several types of sports which can be broadly grouped into running, throwing, jumping, and walking. There are many adult people that already know about this sport, however, not many teenagers or students that understand about tools that are used in this kind of sport. For the impact that the sport become lack of interest from the teenagers, and, moreover, the future of the sport could be tough. We proposed one of the solutions that introduce the equipments of athletics to beginner students through Augmented Reality. This technology combines real objects and virtual objects based on a marker on a media, which runs interactively in real time. There is also integration between objects in three-dimensional form, namely virtual objects that are integrated in the real world. This research uses Game Engine Unity and Vuforia which can display 3-dimensional objects, and using Android as the basis of the system. In this paper, we present four equipments of athletic sports. The aim of this research is to enhance students knowledge to recognize athletic sports equipment so that the motivation of teenagers and students get increases. The result of the research is an Augmented Reality-based athletics introduction equipment that has been tested for its performance using blackbox testing, and functional testing using various conditions of its marker.

Keywords: Athletic Equipment, Augmented Reality, Unity, Marker-Based

Mobile location based service application for android based agricultural machinery data collection

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Abstract

In order to design an appropriate agricultural mechanization development policy, it is necessary to collect data on agricultural tools and machinery quickly and accurately. The use of android-based information technology with integrated GPS features can be used as a data collection and monitoring tool for agricultural tools and machinery in the field. Applications developed using the System Development Life Cycle (SDLC) method. There are several stages in application development including requirements analysis, system design and implementation and testing. Then make a correction model for the recorded coordinates by GPS on a smartphone with a GPS handheld. The results showed that the machineries data collection application was successfully designed with the minimum specifications of Android 5.0 (API level 21) and Android 5.1 (API level 22). The R2 value of the correction model test results is 0.98443 for latitude coordinates and 0.98602 for longitude coordinates, while the MSE value for longitude coordinates is 0.0000059 and latitude coordinates is 0.000022. The results of application testing using the black box method show that all modules in the application can run smoothly. The designed application is able to record agricultural tools and machines up to the farmer group level, so as to provide a more detailed database. Information that can be presented through the data download feature in the application is the number, type, brand, type, location and ownership of agricultural tools and machines. In addition, there is a documentation feature to determine the condition of agricultural tools and machines located at the location of farmers or farmer groups.

Keywords: Agricultural mechanization development policy, GPS, Android

Design of iot-based crab larvae farming system

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Abstract

This study proposes an IoT technology in the cultivation of larval stage crab seeds that are low cost and environmentally friendly. By using sensors Salinity, pH, water temperature and cameras to be able to monitor and predict the number of larvae to assist in taking steps to prevent the risk of crop failure considering the cultivation of crab seeds is very high. The microcontroller uses the Arduino Uno and the ESP8266 wifi module to transmit data to the server which is displayed on the web application. Through this IoT technology, a crab breeder can control and see the larval growth process so as to increase the production of better crab seeds.

Keywords: Internet of Things, Precision Aquaculture, Smart Farming, Sensing.

Telegram chatbot prototype with convolutional neural network algorithm as broadcast media results of paddy leaf image classification

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Abstract

Telegram chat application is a chat application that can accommodate 200,000 members in 1 group conversation and was first released in 2013 with the iOS operating system platform. Telegram's ability to deliver information in real time has been widely applied in various fields, including agricultural information, server activity logs, internet of things and others. the reason for using the telegram chat application is because the telegram connection is very easy and free. In addition, previous studies related to image classification only stopped at model improvement without the delivery of information on the classification results to users or rice farmers. Therefore, in this study, the telegram chat application functions as a message receiver from a web server that is embedded with a rice leaf image classification model with a convolutional neural network (CNN) algorithm more specifically using the mobilenet architecture. The learning process from the dataset goes through the process of training, testing and validation to produce a model and then this classification model is the core of how the website works in classifying rice leaf imagery. The rice leaf image dataset was obtained from Kaggle public data of 5000 images grouped into 4 classes namely healthy, brownspot, hispa and leafblast. The results of the prototype in delivering information using the telegram chat application media produce a transmission speed from the web server to the user of 0.5 ms and the training process takes 10 hours and an accuracy of 75%.

Keywords: Telegram, CNN, Mobilenet, Paddy leaf.

Image segmentation using haar wavelet transform and artificial network for identification of ant nest pattern

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Abstract

Ant nest is a powerful medicinal plant to treat various diseases such as heart disease, tumors, cancer, hemorrhoids, tuberculosis, rheumatism, ulcers and prostate disorders. The many benefits generated cause the ant nest to have a selling value in the community, so it is not uncommon to trigger ant nest forgery. This study aims to identify the image of an ant nest by testing the accuracy of the backpropagation network and haar wavelet. Before the identification process with the backpropagation method is carried out, first the process of taking the characteristics of the ant nest is carried out which will later be used as test data input in the identification process. The output of the network will be compared with the target to get the error output. Then these errors are propagated again to increase the network weight to minimize errors. This research resulted in an ant nest identification application. The backpropagation ANN architecture for the training data used is 0.95 momentum, 0.01 target error with MSE criteria, the maximum number of training iterations (epochs) is set at 5000, the learning rate is 0.1 and the number of hidden layers is 20 by using wavelet haar feature extraction level 3 and the backpropagation momentum method can be used. used to identify ant nest images with 100% accuracy.

Keywords: Ant nest, Backpropagation, Image, Haar wavelet

Internet of things based on bridge slope detection

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Abstract

The slope of the bridge is affected by; stress, strain, deflection, temperature, and time-dependent properties such as creep and shrinkage in the structure resulting in changes in the slope of the bridge. This research creates a system that continuously sends data to a wireless system and detects conditions concerning changes that happen on a specific bridge when pitch varies from the typical state. The accelerometer will measure its acceleration directly when moving horizontally and placed on the Earth's surface to detect an acceleration of Earth's gravity at its vertical point for acceleration caused by horizontal movement. This research uses MQTT (Message Queuing Telemetry Transport) protocol with a simple and lightweight publish model and is designed for devices with limited capabilities and small bandwidth, high latency, or networks with low bandwidth. The results of this study prove that the system has succeeded in detecting changes in angle from 0o to 44.03o. The parameters measured in this study were the output of this system was 37.44 bps, QoS was 0% and the delay was 0.11 seconds. The results obtained prove this system has a very good performance.

Keywords: Wireless sensor, Bridge, MQTT, IoT.

Design and analysis of monitoring system analysis using biofloc of engineering pond water quality using internet of things-based artificial neural network

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Abstract

The use of biofloc technique pond water for freshwater fish farming may cause unstable water quality in freshwater fish culture ponds. It is because of the provision of feed and fish waste that causes the acidity (pH) changes in the pond water. Pond water with high acidity (pH) or alkaline cause the failure in fish farming. A good acidity (pH) for freshwater fish is 6.5 – 8. In addition to acidity (pH), another parameter that must be considered in the cultivation of freshwater fish using biofloc techniques is the normal intensive pond water temperature of 25 - 30°C. Abnormal water temperature conditions will result in the probability of survival of freshwater fish decreasing that affect the mortality rate of fish.Furthermore, monitoring of pond water in freshwater fish farming with biofloc techniques is still mostly done traditionally so it is not practical and the human error factor is quite high related to the level of accuracy of the measurement results. Therefore, the pH monitoring and water temperature is very important to be performed in freshwater fish farming with biofloc techniques. This study aimed to design a freshwater fish culture monitoring system technology with biofloc technique pond media management for pH and water temperature monitoring systems using an IoT-based on Artificial Neural Network (ANN) with engineering methods. This study used a pH sensor to measure the acidity of the water and a temperature sensor to measure the temperature in the water. Arduino UNO as a microcontroller was to send data that was processed using ANN to activate the water pump and display the results of measuring pH and water temperature in real time through the LCD and android application. The results of this study can be implemented as a pond water monitoring system design for freshwater fish farming using biofloc techniques and ANN analysis as data processing from sensors to result more precise estimates of pH and water temperature measurements.

Keywords: Pond water monitoring, Articial Neural Network, IoT

Performance analysis of the haar classification method in performing face detection based on opencv

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Abstract

Along with technology development , face detection becomes one of the most widely used tools in various fields. many of the apps used to detect and process faces in real time. The apps can identify the user age and gender and it can also apply some really cool filters. Various face detection methods are applied to create facial recognition applications to produce optimal face detection accuracy. One method that can be used for face detection is the haar classification method. This study aimed to validate face detection in the haar classification method. The results of this study found that the haar classification method can be used to make face detection applications because it has an increased validation accuracy value at epoch 1 of 0.2492 to 0.7803 in epoch 10.

Keywords: Validation Face Detection, Haar Cascade Classifier and OpenC

Dynamic panel regression with gmm estimation for analysis of gross regional domestic product in Sumatera, Java, and Kalimantan

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Abstract

Economic development aims to improve people's welfare. In improving the welfare of the community, economic growth is needed because economic growth is an indication of the success of economic development. One important indicator that is used to determine economic conditions in a certain period is that GDP is good at the current price and at constant prices. This study aims to do the modeling of Indonesian GDP using panel regression and dynamic panel data regression with GMM Arellano-Bond estimates. Dynamic panel regression is needed in analyzing economic problems because economic variables are basically dynamic variables, that is, these variables are not only influenced by other variables but also by those variables at the previous time. By using GMM estimation, it can produce unbiased, consistent and efficient parameters. The data used is panel data from 21 provinces in Indonesia which are included in the islands of Java, Sumatra, and Kalimantan in 2013-2017. The dependent variable is the GRDP. The independent variables are Government Expenditures, Foreign Investment, Domestic Investment, Human Development Index, Open Unemployment Rate, Number of Poor Population, and Average School Length. The Government Expenditures and the Number of Poor Population variables have a positive effect on GRDP with a value of 0.017724 and 64.107. In the dynamic panel model with the estimated GMM Arellano-Bond, the variables that influence GDP are the GRDP-1, Foreign Investment, Poor Population, and Average School Length. School Length Variables provide the greatest long-term elasticity compared to other variables, which is equal to 0.8292

Keywords : Dynamic Panel Regression, GMM Estimator, Arellano-Bond, Gross Regional Domestic Product

Selection Enterprise Architecture Framework For Muhammadiyah Higher Education using Multiple Criteria Decision Analysis (MCDA) Method

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Abstract

Muhammadiyah Higher Education or often referred to as PTM is a charity effort of Muhammadiyah in the field of Higher Education. Along with the many needs for Information Technology services at Muhammadiyah Higher Education, it is necessary to have an Enterprise Architecture blueprint so that Information Technology Services can have competitiveness. so they must adopt or choose the Enterprise Architecture Framework for EA in Muhammadiyah Higher Education. There are various frameworks that can be used for enterprise architecture development. There are several EA frameworks currently in use, including the TOGAF Framework, Zachman Framework, and Dodaf. Some of these frameworks are developed for very specific areas, while others have a broader range of functions. The purpose of this research is to obtain the type of enterprise architecture framework that is suitable for use for Muhammadiyah universities in general using the Analytical Hierarchy Process (AHP) method. the expected results of Muhammadiyah Higher Education have an Enterprise Architecture Framework that is suitable for developing a blueprint for Information Technology services, both academic and non-academic.

Keywords: Enterprise Architecture, Analytical Hierarchy Process (AHP). Framework , TOGAF, Dodaf, Zachman Framework, MCDA

K-means algorithm for cluster analysis on muhammad qasim official youtube channel

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Abstract

The phenomenon of Muhammad Qasim's dream is currently being discussed. One of the media used to make his dreams viral is through the YouTube channel. There are several channels owned. However, Muhammad Qasim has an official channel named Muhammad Qasim PK. This channel can be accessed at https://youtube.com/c/MuhammadQasimPK This channel was created in 2016. Until now, this channel has had 136 thousand subscribers and 144 videos. This study aims to group videos on the channel by clustering analysis using K-Means. The variables that will be used include: video duration, number of views, number of likes, number of comments, and video age. The data will be grouped into three clusters using the best k value. Based on the results of this clustering, it can be used to find out which videos are popular and less popular, videos that go viral quickly and videos that are less viral.

Key words : Clustering Analysis, K-Means, Youtube Channel

Design of digital assessment web development for students as prospective digital capability teachers

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Abstract

The development of digital technology in the increasingly advanced field of education has become a consideration as one of the teacher's strategies in developing the course of learning. There is an authentic assessment that can be carried out using an online system or what is called a digital assessment, which is varied and attractive and highly efficient, which can be done through an assessment soft platform that can be implemented in various subjects and can be used at various levels. Prospective teachers must have better abilities so that when they go into the field they will be able to carry out learning more optimally, so a digital assessment design is made for prospective teachers who are digitally capable, so that they can be used anywhere and anytime. This system was built using the UML (Unified Modeling Language) model design, using the PHP programming language, Bootstrap 5 as a front-end framework, Mysql as the system database, Notepad++ to implement the php programming language in making the system, including design or display, Apache as a web the server is the liaison between the server (system) and the user who uses a browser, and the testing method used is the Black Box Testing method. The results obtained from this study are a digital assessment design that can make it easier for students as prospective teachers who are digitally capable to make and do assessments anywhere and anytime.

Keywords: Digital assessment, Digital capability, Prospective teachers.

ROOM 3

Comparison performance of scintillation detectors for optimization gamma radioactivity counting results

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Abstract

It has been tested comparison performance of 4 (four) scintillation detector using Set UCS30 Model 6S6P1.5VDC2 Serial 11102301 NaI(Tl) detector, Set UCS30 Model 6S6P1.5VDC2 Serial 10062504 NaI(Tl) detector, ORTEC 905-4 NaI(Tl) detector, and Bicron 2M2/2 NaI(Tl) detector. Scintillation detector is a detector that can transform the radiation into a beam of light. The aim of the study is to obtain measurement data on the performance characteristics of the scintillation detector and compare the performance of several scintillation detectors, then to find out which scintillation detector has optimal performance for detecting gamma radiation. The test method is to compare some of the detectors performance such as resolution, efficiency of detectors and pulse shape. Based on the result test, it was obtained that the best resolution for low energy in the range of 30.85 keV to 662 keV is produced by the ORTEC 905-4 NaI(Tl) detector with the smallest resolution at the energy 662 keV of 5.65%. The best resolution for high energy in the range of 1112 keV to 1408 keV is produced by the Set UCS30 Serial 11102301 NaI(Tl) Detector, with the smallest resolution of 0.12% at the energy of 1274.5 keV. The best resolution for the energy of 356 keV and 1173 keV was produced by the Set UCS30 Serial 10062504 NaI(Tl) Detector with the resolution of 8.87% and 2%. The highest efficiency is produced by the Set UCS30 Serial 10062504 NaI(Tl) Detector with the value of 2.6858% at an energy of 81 keV. The best efficiency in the range of 344 keV to 1408 is produced by the ORTEC 905-4 NaI(Tl) Detector, with the highest efficiency of 2.0314% at 344 keV. In the energy spectrum test, the deviation of the displayed energy and the standard peak energy is calculated. The smallest deviation value is 0.04% with Set UCS30 Serial 11102301 NaI(Tl) Detector at 799 keV. The smallest average deviation value in the range of 122 keV to 1408 keV is obtained by the ORTEC 905-4 NaI(Tl) detector, with the value of 0.62%.

Keywords: performance comparison, scintillation detector, gamma counting

pH and water level control system to maintain the growth of chili plants inaquaponics

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Abstract

The cultivation of chili plants with an aquaponic system is one way to increase the yield of chili harvests, which are quite promising in Indonesia. However, in practice, this method is strongly influenced by the actions of farmers in maintaining pH and water levels manually. In this study, a system of controlling pH and water levels in aquaponics has been made in order to minimize the occurrence of human error in the growth process of chili plants. The method used is the on-off control of water pumps based on the inputs of pH and ultrasonic sensors commonly sold in the market. The accuracy of the two sensors reaches 97% with a reading error below 4%. The control system designed has a slow response with a ph control settling time is 420 seconds and water level control is 129 seconds. As well as a pH control rise time with a time of 292 seconds and a water level control rise time of 30 seconds.

Keywords: Aquaponics, on-off control, chili peppers, settling time, rise time,

Google drive as a construction project cost monitoring program based on the earn value method

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Abstract

A successful project can be determined by going on time, at the right cost, and at the right quality. However, this is still difficult in contractors with lower to middle qualifications, so lack of precise allocation of costs is a major problem. For this reason, an integrated program assistance is needed that can be used easily by construction project stakeholders anywhere and anytime, so that monitoring the use of costs on projects can be carried out properly. The earn value method is one of the techniques for monitoring the construction project process based on the concept of cost and time. The concept of calculating the earn value taken in this study is monitoring cost in form of Budget Cost for Work Performance (BCWP), Actual Cost for Work Performance (ACWP), and Cost Variance (CV). Data input can be done daily by Google form, Google Sheet for calculation, and performance recap can be viewed weekly in Google Drive. A project whose CV is positive means that the project is going well, if the CV is negative or over budget, this indicates a problem in the project or the project could go over budget or run out of money and this program will give a warning alert, which can be used for making a decision to the project.

Keywords: Monitoring, Construction project, Earn Value, Work performance, Google drive

Experimental study of temperature control in vehicle cabin

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Abstract

Overheat in the vehicle cabin is generally caused by the temperature pressure outside the cabin, which is more significant than inside the cabin. The outside temperature of the cabin during the hot sun ranges from 24-32 °C, causing the humidity in the cabin to be 75-95%, while the humidity of 41-75% is recommended. This study examines and compares the vehicle cabin temperature before and after the use of fans and automatic windows opening 1° and 1.5°. Data were collected when the vehicle (car) was parked outside, and the temperature was checked for seven days. Meanwhile, experiments and simulations were carried out on a laboratory scale. The Arduino algorithm in the automation system is connected to each network command line. The W1209 temperature sensor module activates the digital output of the L298 driver module, detects the temperature up to 36.68 °C, and simultaneously opens the window, and the fan lowers the temperature to 20.11 °C automatically. Passive Infra-Red (PIR) detects a pressure of 4,515 $kg.m/s^2$, the window glass closes automatically via a microcontroller command, and the alarm goes off. The simulation results show an integrated system according to the algorithm, lowering the temperature to 10.57 °C and increasing the humidity up to 41.12% in the vehicle cabin at 28.50 minutes.

Keywords: Vehicle Cabin, Automation, Sensor, Temperature Control System

Smart hats for avoiding roadblocks for the visually impaired with sound output

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Abstract

Loss of visual function requires training to develop other senses in the blind, especially the sense of hearing. Sound can provide information about objects ahead, right, left, and dead ends. To help blind people in their activities, an innovation was made in the form of a hat with sound output that can help the blind recognize objects in the form of objects around them. There is an ultrasonic sensor that can detect objects with a range of ± 100 cm, and there is a speaker as a sound output. Ultrasonic sensors are located on the right, front and left so that it can detect objects in the vicinity using these 3 sensors. After testing with a distance of 1 meter on the right, left and front, the accuracy value is 100%, while at a distance of 155cm, the sensor on the right cannot detect objects. The front and left sensors at a distance of 155cm can still detect objects with an accuracy value of 100%. For battery life when this tool is operated continuously it can last ± 6,147 hours, with a long battery charging time of ± 1.2 hours. With the results of making this tool, this tool can help blind people in detecting objects at a distance of 1 meter.

Keywords: Blind, Hat, Sound, Ultrasonic.

Optimization of location determination of distributed generation using hybrid flower pollination algorithm and β-hill climbing methods

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Abstract

This study aims to define the optimum location and size of distributed generation (DG) using the Hybrid Flower Pollination Algorithm (FPA) and β-Hill Climbing (BHC) or HyFPABHC methods with objectives to minimize power losses and increase the voltage profile of the system. The main purpose of hybridizing the Flower Pollination Algorithm (FPA) and β-Hill Climbing (BHC) methods is to improve the balance between exploration and exploitation through the search process. This research was conducted with the IEEE 33 bus distribution system. From optimization research it was found that the optimization of DG placement and capacity using the HyFPABHC Method with the number of DG as many as 3 units are proven to reduce active power losses by 141 kW or by 67% as well as increasing the profile the voltage on the system becomes 0.972 pu.This study also evaluated the effectiveness of the HyFPABHC method when placing DG by comparing the value of power losses using the FPA and BHC methods as a comparison method.

Keywords: Distributed Generation, Multi DG, Flower Pollination Algorithm, β-Hill Climbing

Modelling and simulation of biogas backup system on a PV/wind hybrid microgrid at the Slaughterhouse

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Abstract

This study designs a biogas power plant model as a backup system on a microgrid hybrid Photovoltaic (PV)/ Wind Turbine (WT) with a battery and load system at the Kendari slaughterhouse. The backup and core systems are the two components of the system design. The primary system consists of PV generators with a capacity of 9 kWp, and wind turbine generators with a capacity of 400 kW connected in parallel with the main battery with a capacity of 1600 kWh. The backup system consists of a biogas generator with a total of 1.175 kW and a backup battery of 160 kWh. The base load served at the Kendari slaughterhouse is 16 kW, and the peak load is 17 kW. The control is performed for the coordination system between the battery in the primary system and the battery system in the biogas.

Keywords: Microgrid hybrid system, hybrid PV/Wind/Biogas, Battery system, Biogas backup system, slaughterhouse load.

Risk mitigation of drug supply chain during pandemic in pharmaceutical units (case study: 'aisyiyah hospital kudus)

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Abstract

The COVID-19 pandemic that has swept across the world has had an impact on many industrial sectors. The hospital is one of the health service providers that always provides the maximum possible service to patients. 'Aisyiyah Hospital Kudus is one of the public hospitals in Kudus Regency with various services, one of which is pharmacy service, pharmaceutical services are key, where the drug supply chain plays an important role in the patient's drug needs. However, during the pandemic, there were risks that affected the drug supply chain, so a drug supply chain risk mitigation was needed in the pharmacy unit of the 'Aisyiyah Hospital Kudus. This study aims to identify the risks that exist in the drug supply chain at the pharmacy unit of the 'Aisyiyah Hospital Kudus, as well as to design preventive measures to reduce and prevent the causes of risk in the supply chain of drugs at the 'Aisyiyah Hospital Kudus. In this study using the fuzzy house of risk method which is a combination of fuzzy logic and house of risk. The results of this study obtained 7 priority risk agents whose preventive actions were carried out as many as 9, these preventive actions include: Improve financial management properly, Conduct in house training for employees, hospitals use other budgets first, implement a hospital disaster plan, improve communication with other pharmacy units on a national scale, hospitals look for other suppliers, improve communication and good relations with suppliers, improve communication both internally and externally, Recruiting new employees.

Keywords: COVID-19 Pandemic, 'Aisyiyah Hospital Kudus, Supply Chain, Fuzzy, House of Risk

Camera-based intelligent parking system using object detection algorithm (region-based convolutional neural networks)

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Abstract

As the number of vehicles increases day by day, finding an empty parking space to park a vehicle becomes difficult. Indiscriminate car parking can lead to wasted time and interfere with surrounding mobility, as a result the parking area cannot be utilized optimally. The existing parking management system using sensors to detect available parking spaces is less effective and efficient, for example a parking system with the use of ultrasonic sensors that must be placed in each parking box will require many sensors in large-scale implementation. The proposed intelligent parking system provides a structured solution by using a parking lot camera available in the campus or office area to observe the used parking area and using image processing to detect the available parking space from the camera in real time. From the results of image processing available parking spaces will be recommended to users through a front-end system based on the closest distance that helps drivers park their vehicles. The proposed system improves the overall effectiveness and efficiency of the current parking system and solves the problem that drivers spend a lot of time in finding suitable parking spaces in crowded campus or office parking areas. The architecture of the intelligent parking system includes three stages: the first stage of the system uses sensors to capture images of the parking area and sends them to the database server in real time; the second stage of the proposed method uses object detection algorithms (ie, Region-based Convolutional Neural Networks) to identify whether parking spaces in the building area are available or not and calculate their utility; the third stage a front-end system was developed for drivers to get real-time parking information by using a monitor placed at the entrance gate of a campus or office parking area.

Keywords: Intelligent, Parking, Camera, R-CNN

Proposed quality improvement of clutch disc products using statistical quality control and fault tree analysis methods at pt. Exedy manufacturing indonesia

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Abstract

PT. Exedy Manufacturing Indonesia is an automotive industry company that produces Clutch Assy Wheel 4 – Wheel 2 Clutch / Clutch, E. Spring, RLS Plate Motorcycle. Their average production capacity is 1,103 units clutch disc per day. The company has a product defect standard that cannot exceed 3%, but currently the average rate of product defects reaches 10%. There are three highest number of defective products, consist of 609 units of consumable blades, 533 units of small size, and 571 units of uneven surface. This means that the quality control carried out by the company is still not optimal and needs improvement. This study aims to determine the number and the causes of defects and quality improvement using statistical quality control (SQC) and fault tree analysis (FTA) methods. From the SQC, it shows that there are 4 data that exceed the upper control limit thus improvements need to be made. The results of the FTA method showed there are 10 basic events in determining the cut set, namely poor material quality, lack of experience, poor work procedures, fatigue, lack of skill, haste, air temperature, poor lighting, untidy area, shrinking machine performance. Then a proposal for improvement is made to improve the factors that influence the cause of the defect.

Keyword: Defect Control, Fault Tree Analysis, Quality Improvement, Statistical Quality Control,

Electrolytic tinning line maintenance design using fuzzy risk based maintenance method

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Abstract

Machines have an important role in maintaining production performance so that they are able to produce according to the initial plan. Failure of machine operation will impact hampered production, adding raw materials to increased production costs due to rework or additional production. This study aims to analyze the potential risk of failure of the electrolytic tinning line machine. This study uses the fuzzy risk-based maintenance method, which is used to overcome uncertainty in determining the priority of components of the risk-based maintenance method. The results of data processing using risk-based maintenance show that the pump has an RPN value of 192. Data processing uses fuzzy risk-based maintenance with a pump component with a value of 500, which is included in the high category. The potential for failure is caused by the full B14 pump so that it cannot blow down, causing the effect of a solution queue. Maintenance design using routine maintenance, predictive maintenance, and preventive maintenance is expected to increase the reliability of the B14 pump.

Keywords: Electrolytic Tinning Line; Fuzzy Risk Based Maintenance; Maintenance, Pump

Purification of stevia rebaudiana extract solution by adsorption using synthetic zeolite

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Abstract

Currently, many people are looking for natural sweeteners that are safe for consumption by diabetics. One of the natural sweeteners that are low in calories and not carcinogenic is the sweetener in stevia leaves. One of the methods for obtaining stevia sweetener from stevia leaves is extraction. However, the extracted solution obtained is usually black-brown in color due to the presence of tannin compounds in stevia leaves. The removal of tannin compounds in stevia solution can be done by adsorption using a selective adsorbent. This research studied the removal of tannin compounds from stevia solution by adsorption using synthetic zeolite. The adsorption process was carried out at an adsorbent-solution ratio of 1:10 (b/v), synthetic zeolite size 40 mesh, temperature variants 40, 50, 60∘C, and stirring speed variants 100, 180, 200 rpm. The tannin content in the sample was analyzed by UV-Vis spectrophotometer at a wavelength of 760 nm. The results showed that the highest decrease in tannin levels occurred at a temperature of 40∘C, stirring speed of 200 rpm, which was 42.8%. The adsorption of tannins from stevia extract solution on synthetic zeolites followed the Freundlich adsorption equilibrium model, namely $x/m = 0,327C^{1/2,226}$.

Keywords: Stevia, tannins, adsorption, synthetic zeolite, Freundlich model.

Lecturer facial recognition system to automatically open the room and attendance

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Abstract

The best learning is done by face-to-face learning, so better and simpler room management is needed. Each room uses a different key, so it will be difficult if there are more rooms. When the lecturer comes while the key bearer is not present, the lecture will be hampered. While on the other hand attendance is also needed to see the lecturer's performance. Therefore, it is necessary to simplify a system that uses lecturer data for attendance and to open the room door. For lecturer data that can be used is facial data or fingerprints, so that there is no direct contact, facial data is used. This study designed a facial recognition system to open the door of the room and the presence of lecturers.

Keywords: Lecturer, Facial, Door

Charcoal briquettes for interfacial solar desalination

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Abstract

Solar desalination is the process of reducing salt content of brine by utilizing solar heat to produce freshwater. Distillation is widely used as a traditional solar desalination method but it has low evaporation rate. In recent years, solar interfacial evaporation through thermal localization in the vapor-liquid interface has been proposed as a promising alternative to evaporation. In this study, charcoal briquette were investigated as an interfacial solar absorber to increase the steam generation. Experiments were performed in 4 single-slope basin type by using briquette thickness of 10, 15, and 20 mm for 8 hours under sunny daylight. Basin with no charcoal were also examined for comparison. The temperatures were measured at several points within the basin to identify the factors contributing to the seawater evaporation. It has been found that the briquette structure capable of concentrating thermal energy where it is needed for phase change and minimizes heat loss. Addition of charcoal achieve 20 - 30 % improvement of efficiency compared to basin with no charcoal. This performance obtained from several factors such as thermal storage material, latent heat, capillarity, and interconnected pores.

Keywords: Solar desalination, Distillation, Solar still, Interfacial evaporation, Charcoal

ROOM 4

Traffic density simulation and animation in yogyakarta giwangan traditional market

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Abstract

Giwangan Market, which has the status of a fruit and vegetable wholesale market, is a market that is the center for wholesale fruit and vegetables in Central Java and Yogyakarta. Based on information and the results of observations, there has been a change in function on the sides of the hangar which can lead to less interest in the number of suppliers that will enter the Giwangan market due to longer waiting times for loading and unloading places. Evaluation and structuring involve complex interactions between vehicles, traffic lanes, hangars, and parking lots. The study is carried out by observing the system, system modelling, system simulation, and system animation to evaluate the system. The results of the verification process were 2, loading places were 15 and unloading were 17, parking lots were 17 and the number of incoming vehicles was 168 according to the real system. The results of model validation have a sig value. (2-tailed) of 0.388, which is greater than 0.05, it is accepted and rejected, which means that there is no difference in the output of each loading and unloading process between real and model. The results of the current system simulation will be developed into a proposed draft of spatial planning scenarios in the Giwangan market, namely 3 scenarios based on discussions and observations in the field. Scenario 3 is the arrangement of the northern side of the hangar which is expanded to a slaughterhouse (RPH) that functions as a parking lot, so it is expected to be able to improve its function and service as an optimal wholesale center.

Keywords: Performance, Model, Density Simulation, Scenario, Animation

Lean ergonomic approach to minimize waste on inspection embroidered kamen balinese fabric

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Abstract

UD Bali Salvina is a manufacturing industry with embroidered Kamen Balinese products with make to order business processes that have on time production goals. However, UD. Bali Salvina could not achieve the target of completing the inspection of Kamen cloth evenly 12,8% product every day. It is essential to identify the cause of inspection target problems and make improvements in the process and work environment. The lean manufacturing and ergonomics approach is used to identify waste of ergo from the inspection process and analyze improvements to minimize the waste. From the Value Stream Mapping (VSM) identification, there is motion waste from repeated hand movements in the sliding the cloth activity with 126 seconds per cloth which is a non-value added activity. Workers have complaints of pain in the neck, back, and wrists from non-ergonomic work postures that can interfere with the inspection process from Nordic Body Map (NBM) result. Kamen inspection operator has a score of 6 from Rapid User Limb Assessment (RULA) result where the inspection process needs to be investigated and also changed. The proposed improvement obtained from the results of the lean manufacturing and ergonomics approach is the design of the kamen inspection table with ergonomic aspects. The kamen inspection table can expose the fabric, so the operator only has to look to find the thread to remove. Future VSM time results after an experiment using a table on kamen inspection have decreased by 25.8% from 479 seconds to 355 seconds per one cloth.

Keywords: Value Stream Mapping, Rapid User Limb Assessment, Fishbone Diagram, Nordic Body Map, Motion Waste.

Evaluation of operator performance in the service industry to improve company productivity

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Abstract

The productivity of the company is closely related to one of the resources, namely labor. Productivity can increase, if the performance of the workforce is good. However, what needs to be considered is the workload of each workforce. The workload should be adjusted according to the worker's rest period or frequency. If a worker has a heavy workload, then the worker must have sufficient rest periods or frequencies to be able to recover his energy, and vice versa. The purpose of this research is to measure the workload of workers (operators) in a service industry in order to increase the productivity of the company. The method used to measure the workload is the work sampling method. The work sampling method is considered suitable, because it has more accuracy. This is because the data collection was carried out directly to the respondent. Researchers conducted three measurements of workers (operators), namely measurement of work pulse, resting pulse measurement, and work pulse measurement. The results obtained from this study are worker 1 has a maximum pulse rate of 185, work pulse 76.73 and rest pulse 61.22. worker 2 has a maximum pulse of 188, a work pulse of 77.92 and a resting pulse of 67.5. Whereas in worker 3, he has a maximum pulse rate of 193, a work pulse of 82.9 and a resting pulse of 57.7. The percentage of productivity of the three workers was 68.06%. So, it can be concluded that three workers did not fatigue.

Keywords : Work Sampling, Productivity, Workload.

Pre design of liquid radioactive waste treatment unit by adsorption with zeolite adsorbent

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Abstract

Currently, Indonesia has been planning an Experimental Power Reactor (EPR) with a power of 10 MWth. The use of nuclear technology produces waste, among others in the form of liquid radioactive waste that requires processing. The existence of zeolite natural resources in Indonesia is quite abundant and the price is relatively cheap. Several studies have shown that zeolite can be used as an adsorbent for radioactive substances. This paper aims to obtain the pre-design of the liquid radioactive waste treatment unit and the treatment rate. The calculation basis used is secondary data in the form of the amount and characteristics of liquid radioactive waste from 10 MWth EPR. Data processing includes the determination of the process, equipment specifications, layout design and economic evaluation. The results show that the initial waste is 2775 m^3/year which has an activity of 9.02×10^4 Bq/L after being processed into 2794.27 m^3/year with an activity of 4.87×10^3 Bq/L. This processing unit requires 3 units of cone roof tanks, 1 unit of Filter Press, 2 units of vessel adsorber, and 7 units of centrifugal pumps with an area of 900 m^2. The Liquid Radioactive Waste treatment unit with zeolite meets the requirements for the level of clearance and waste quality standards but produces secondary waste in the form of cake and used zeolite with a volume of 5.45 m^3/year and 21.566 m^3/year, respectively. Based on the economic evaluation of the pre-design, it was found that the rate of the waste treatment was Rp.2,339.56/L.

Keywords: pre-design, liquid radioactive waste, zeolite, clearance level

Study user experience in designing an automatic answer assessment system with the design thinking method and user experience quisionare

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Abstract

The Automatic Scoring System is a website developed by PURINO AI ITERA to facilitate the implementation of online exams where the system can provide automatic scoring weight to each exam question. The development of an automated scoring system involves educators and learners who have different needs, characteristics, and points of view. The majority of educators need an exam website that is easy to understand, familiar and concise, but learners pay attention to the attractive visual design and aesthetic value of a system interface. Therefore, a study was carried out to map the needs, characteristics and points of view of each potential user of the automatic scoring system. Experience research and solution design are carried out based on *usability* with *design thinking* methods. This research produced *empathy maps* and *user personas* as a result of research and solution design through *low fidelity prototypes* as a basic reference in the user interface design process and code implementation. Testing conducted using the *user experience quisionare* (UEQ) method by 20 educators showed that the *low fidelity prototype* design reached a positive category with *an atractiveness* value of 2.60, *perspicuity* 2.41, *efficiency* 2.38, *dependability* 2.50, *stimulation* 2.57 and *novelty* 2.13 and the average duration of completionof an tasks for 10.88 s. As for the test results by 22 students obtained a positive category with *an atractiveness* value of 2.52, *perspicuity* 2.26, *efficiency* 2.58, *dependability* 2.31, *stimulation* 2.47 and *novelty* of 1.83 and the average duration of task completion for 16.28 second.

Keywords: Designing, Quisionare, Assesment

Analysis of infrastructure conditions on indonesia's national vital objects in tarakan city

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Abstract

Tarakan City is the main supporting city in North Kalimantan Province, because it has an important role that has strategic value. The value in question is having National Vital Objects, such as airports, ports, and several oil refineries. has an influence on the needs of many people, it is better to do research on supporting infrastructure to know its condition. This research was conducted in Tarakan City, North Kalimantan Province, where national vital objects are located. Respondents of this study consisted of stakeholders consisting of Civil Engineers, Airport Elements, Port Elements, and oil refinery company. The research will be conducted by distributing questionnaires to stakeholders and direct observation, which will then be processed using relevant methods. The expected result is the value of infrastructure feasibility to support operations so that it can operate optimally. From these results, it will also be continued by conducting further research by looking at the risks that come from natural disasters. this is done to provide the ability for infrastructure to have good resilience so that the performance of each national vital object can be more excellent.

Keywords: Civil Engineers, Disasters, Infrastructure, National Vital Objects.

Application of polyvinylidene fluoride (pvdf) membrane in improving high salinity brine treatment using membrane distillation crystallization (mdcr) method

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Abstract

The potential of Indonesia's natural resources as a maritime country in the form of a long coastline has not been able to support the production of salt that is sufficient for domestic consumption and industrial activities. Based on data from the Central Statistics Agency (BPS), the highest volume of salt imports since 2016 occurred in 2018, when 2.8 million tons were imported. Technological factors are one of the obstacles faced in producing salt in Indonesia. Membrane-assisted crystallization (MDCr) using Polyvinylidene Fluoride (PVDF) membranes offers a suitable solution for redesigning desalination processes through the treatment of brine streams for salt and water production. This research was conducted to obtain the results of the study that the Membrane Distillation Crystallization (MDCr) method assisted by the Polyvinylidene Fluoride (PVDF) membrane was able to improve the quality of salt crystal products according to SNI 3556:2016. The pre-treatment stage is combined in this process. This is done to prevent fouling on the membrane surface, so that it is expected to get high crystal purity. To determine the best conditions in the salt refining process, variable variables were set, namely temperature and feed flow rate. Changes in the feed temperature in the tank are 50°C, 60°C, and 70°C. The variable feed flow rate changed, namely 400 ml/minute, 600 ml/minute, 800 ml/minute, and 1000 ml/minute, and the fixed variable was the feed volume in the tank. An Argentometric titration analysis was carried out to determine the NaCl content, and the size of the crystal grains was observed using an optical microscope. The highest purity of salt crystals is 99.13% at an operating temperature of 60°C and a feed flow rate of 610 mL/min. The permeate flux over time did not decrease significantly, so it could support the improvement of a high-purity brine treatment.

Keywords: Brine Treatment, Membrane Distillation Crystallization (Mdcr), Membrane Desalination, Polyvinylidene Fluoride (Pvdf).

Gamma irradiation effect on phytochemical components, antioxidant activation, and antimicrobial activation of lemongrass extract (cymbopogon citratus) extract based on shelf life

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Abstract

Lemongrass (Cymbopogon citratus) is one of the plants commonly used as food ingredients, besides that, lemongrass has a high potential as a raw material for the cosmetic industry. The abundance of lemongrass with various potentials has not been used optimally with a relatively low selling price. Lemongrass is a food ingredients that can produce essential oils. Lemongrass essential oil has phytochemical components such as Citral, Myrcene, Geraniol, and Citronellal as well as flavonoids that act as antioxidants. Lemongrass is a spice that also has potential as a producer of antimicrobial components. The quality of herbs and spices such as lemongrass can be improved for its antimicrobial and antioxidant qualities by using gamma radiation. This study aims to determine the phytochemical content in lemongrass and the effect of radiation on these phytochemical components both as antioxidants and antimicrobials and to determine the antioxidant and antimicrobial activity of irradiated lemongrass extract based on shelf life. Lemongrass extract was irradiated with doses of 10 kGy, 25 kGy, 40 kGy, and 50 kGy and then analyzed for phytochemical components using the Gas Chromatography-Mass Spectrometer (GC-MS) instrument. The irradiated lemongrass extract was analyzed for its antioxidant activity and antimicrobial activity. The phytochemical components that were successfully analyzed in this study were Citral, Citronellal and Geranyl acetate. The most phytochemical components contained in the sample of lemongrass extract were at doses of 10 kGy and 25 kGy gamma radiation. The optimal antioxidant activity of lemongrass extract is found in lemongrass extract at a dose of 10 kGy, as evidenced by the IAA value (Antioxidant Activity Index) of lemongrass extract with a concentration of 5%, the result of activation at a dose of 10 kGy (2nd and 3rd weeks) is 3,455 and 6,514. The antimicrobial activity of the activated 10 kGy lemongrass extract has an optimal storage time of week 2, as evidenced by the MIC value of 0.25%. The same thing happened at the 25 kGy and 40 kGy activation doses. Antioxidant and antimicrobial activity of lemongrass extract is influenced by storage time as evidenced by the results of both tests.

Keywords : Lemongrass extract, irradiation, antioxidant phytochemical components, antimicrobial, storage time

Effection of gamma radiation to serratia marcescens bacteria on rice straw substrate fermentation

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Abstract

Rice straw is one of the agricultural wastes whose availability is very abundant in Indonesia. Rice straw has a cellulose content of 37.71%; hemicellulose 21.99%; and lignin. The use of rice straw today is centered on a mixture of animal feed, fertilizer, and the manufacture of straw paper. Rice straw is not finished if it will be processed by burning, but this burning can pollute the air and damage the quality of agricultural land. One of the potential alternative uses of rice straw is to produce cellulase by utilizing the metabolism of microorganisms. Cellulase is an enzyme that plays an important role in the bioconversion process of cellulose organic wastes into glucose. Cellulase enzymes can be obtained from various sources such as plants, insects and cellulolytic microorganisms. Serratia marcescens is one of the bacteria that can produce cellulase enzymes. The use of gamma irradiation to increase cellulase enzyme activity by microorganisms has been carried out using Trichoderma viride and Aspergillus niger fungi. Serratia marcescens is a type of bacterial microorganism that has the potential to produce cellulose enzymes and its activity is enhanced by using gamma irradiation. This study aims to determine the effect of irradiation with various doses on the activity of the cellulose enzyme from the bacterium Serratia marcescens. Serratia marcescens bacteria were cultivated on slanted agar then irradiated with low doses of 0 Gy, 125 Gy, 250 Gy, 375 Gy, 500 Gy and 625 Gy. The irradiated Serratia marcescens was then added to a variety of production medium in the form of straw extract concentration and incubated for 18 hours and 24 hours. The samples were analyzed for cell growth and cellulase activity. The result of this research is the growth of bacteria has developed with the influence of low dose irradiation, with the effective radiation dose for growth is 125 kGy. The radiation dose had no significant effect on stimulating bacteria to produce cellulase enzymes.

Keywords: Serratia marcescens, Rice Straw, Cellulase Enzymes, Gamma Irradiation, Microorganisms.

Preparing indonesia society 5.0: the new digital civil society

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Abstract

Society 5.0 initiated by Japan as a cosequence of widespread adoption of digital technology in society life related to Industry 4.0 will impact to not only Japan society but apparantely to any society as well, including but not limited to Indonesia. As we have no idea how close we are towards Society 5.0, therefore the best way to do is to prepare ourselves with the insight from Japan Society 5.0. This paper will foresee the Indonesia Society 5.0 from the building block of the so called the "Panca Gatra". This paper tries to foresee the impact, posititve or negative, of digital technology adoption in society to elements of the Panca Gatra. This new digital society will then be compared to previous and existing values of local ingenuity that form today civil society. This paper performs strengths and weaknesses assesment of existing civil society and society 5.0 on the basis of Panca Gatra. As a result the conclusion towards future Indonesia Society 5.0 will be made as well as suggestions to improve weaknesses.

Keywords: Society 5.0, Industry 4.0, Civil Society, Digital Transformation

Effect of blades number to performance of savonius drag-type water turbine on flow of water in pipe

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Abstract

Water is an abundant source of clean and renewable energy. Pico or nano hydro turbines produce electrical energy sources by utilizing the flow of water that rotates the shaft of the electric generator. This study aims to analyze the effect of differences in the number of blades on the rotor of a hydro Pico scale water turbine applied to the flow of water in a vertical pipe. The water level is kept constant at 2 meters. Horizontal axis drag-type Savonius turbine rotors with variations in the number of blades 4, 8, and 12 were used in the study. The main parameters used as a benchmark for the performance of a water turbine are rotor rotation, voltage, current and electrical power generated. The results showed that drag-type water turbines with 4 blades number produced the best performance. The maximum power generated is 7.4 Watts.

Keyword : Number of blades, Renewable energy, Savonius turbine

Design and build a coolant waste processing tool used by production machines

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Abstract

In this all technologically advanced era, the use of machines is inseparable from human life, one of which is the use of machines in education. Milling machines and lathes are commonly used at Politeknik Industri Logam Morowali. Coolant is one of the things that must be given attention to in the machining process of making workpieces. If the coolant is not replaced regularly, then the deposition of too much dirt will potentially disrupt the cooling duct system, causing the engine cooling flow to stop working. In this study, a tool was made to process used coolant so that it is safe to be thrown into the surrounding environment and can even be used again in the machining process. The method used to process the coolant was preliminary filtration using gauze, activated carbon, and quartz sand to filter grams of iron and liquid lumps contained in the coolant liquid. Then, it would have flowed into the reservoir, where it would be filtered again using zeolite media, fly ash granules, activated carbon, and quartz sand to re-separate leftover liquid lumps and to obtain clearer and smell free water. The results of tests in the laboratory show that the composition of hazardous waste in used coolants has been reduced with the following details: pH: 7, TDS: 1070 Mg/l, TSS: 453 Mg/l. From these results, it can be concluded that the tool works well to reduce the composition of hazardous waste.

Keywords: Waste, Coolant, Filtration

Wet turning performance on hardened steel based on surface finish using different cutting parameters

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Abstract

Hardened steel is widely used for products with high requirements, including the dimensional accuracy and surface finish. The machining process that is commonly used to the produce is the cylindrical grinding process which is considered less environmentally friendly due to the use of a lot of cutting fluids. For this reason, the turning process of hardened steel is observed to be for the alternative as a substitute for the grinding process. The study purpose was to assess the wet turning performance of hardened steel based on the surface finish and tool wear using different cutting parameters. Several experiments in the wet turning were conducted on AISI-O1 hardened steel (± 58 HRC) using several combinations of the cutting parameters and specified machining conditions. Observation on the machining responses were carried out to assess the machining performance. The results show that the minimum feed rate at all cutting speeds used is capable of producing minimal surface roughness and is categorized as N6 (Ra 0.6 − 1.2 μm;) according to ISO standards and is identical to grinding grades. Minimum cutting speed (275 mm/min) provides the best surface finish (Ra 0.625 − 0.802 μm). The flank wear that occurs increases in line with the increase in cutting parameters, especially the feed rate, which is in the range of 0.042 − 0.194 mm.

Keywords: Surface finish, Wet turning, Cutting parameters, Hardened steel.

Influence of friction stir welding parameters on metallurgical of aa6061-t651 aluminum alloys

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Abstract

This study aims to determine the effect of variations in process parameters on the aluminum microstructure of FSW AA6061-T651 using a butt joint with a hexagonal pin geometric tool. Aluminum alloy AA6061-T651 has a melting point of 600oC and is widely used for the manufacture of trains, ships, aircraft, and others. Friction Stir Welding (FSW) is the latest innovation in solid-state welding suitable for low melting point aluminum. The FSW process uses the Taguchi Orthogonal Array experimental design method to study all FSW parameters and minimize the experiments carried out. In this study, the process parameters used were tool rotation speed 765, 1208, 1907, 3022 (rpm), welding speed 24, 43, 65, 90 (mm/min), tool tilt angle 2, 2.5, 3, 3.5 (degrees .), and a concave shoulder angle of 2, 5, 8, 11 (degrees). Microstructural testing in this study used the ASTM e407-07 standard. The results of this study indicate that the weld metal has an equiaxed structure and has -Al, -AlFeSi, and Mg2Si phases. The results of FSW with a tool inclination of 2 degrees found in specimens 1, 6, 11, and 16 have the best microstructural results because they have more Mg2Si phases, thereby changing their mechanical properties for the better. The results of microstructure testing on specimen 5 have the worst microstructural results because they have the lowest hardness values. The results of the microstructure test on the test object 15 had the best microstructure results because it had the highest hardness value.

Keywords: Friction Stir Welding, AA6061-T651, Microstructure Testing

ROOM 5

Development of an experimental module based on a radiation detection system in an internet reactor laboratory using the kartini reactor

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Abstract

The Kartini reactor facility has developed the Internet Reactor Laboratory (IRL), a reactor physics practicum learning facility for real-time distance learning through websites and video conferencing. During its implementation, IRL is demanded to develop new experimental modules related to radiation detection systems by universities as the user. Thus, three new experimental modules have been developed: the Nuclear Detector Counting Technique, Introduction of Neutron Activation Analysis, and Fuel Burn-up Measurement. The developments are carried out through preparation, hardware, and software facilities, including the characterization of the radiation detection system, making experimental module protocols, including the upload process on the website, IRL trials, and evaluations. The three experimental modules were successfully tested in IRL activities with user partners. The implementation of IRL for the three latest modules uses the website at http://irlkartini.brin.go.id, which has been developed, and the zoom application as a video conferencing platform. The Nuclear Detector Counting Technique module has successfully provided an understanding of the basic principles of radiation counting, including the counter system's characterization. Furthermore, the Introduction of Neutron Activation Analysis module has provided an understanding of the working principle of neutron activation analysis using the Kartini Reactor and determining the qualitative data of a sample. Meanwhile, the Fuel Burn-up Measurement module has succeeded in providing an understanding of determining the fuel burnup fraction of U-235 by measuring the activity of Cs-137 formed along the fuel element. The results of the development of the three new experimental modules have completed the modules offered in the Kartini reactor IRL and provided users with basic knowledge and application of radiation detection techniques.

Keywords: IRL, Kartini Reactor, Experiment Modul, Radiation Detection

Improving welfare of the smallholders farmers ecosystem with the "pasar kebo" application.

Iqbal Faza

Abstract

This research aims to develop and create a simple of user-friendly marketplace platform called "Pasar Kebo" for the farming (livestock) ecosystem in Kudus Regency as well as testing the effectiveness of the product. With this platform, it is hoped to create an integrated farming ecosystem, thereby creating an efficient supply chain management system. This will make it easier for smallholder farmers to obtain livestock production facilities to sell their livestock products in the market. So this will certainly improve the welfare of the livestock ecosystem members. For the government, this platform can be useful to provide accurate data in the mapping and monitoring of animal production, as well as a basis for the implementation of appropriate policies in the livestock sector. Data collection was accomplished through direct interviews with several Kudus breeders as well as observations at the Office of Agriculture in the Kudus Regency livestock sector.This research is longitudinal, so it will be carried out in stages, and each stage uses a different method. For this step, we tried to develop a prototype. For the next stage, it will be developed until this breeding ecosystem market platform is really perfectly realized.

Keywords : Livestock ecosystem, marketplace platform, welfare.

Application of learning vector quantization algorithm for pattern recognition

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Abstract

Pattern recognition is something that often happens today, one of which is the introduction of the shape of the bottle. The problem faced is that the translation of this form is quite confusing because to get the results of the recognition one way that can be done is to correlate pixel by pixel and it takes a very long time. In addition, it is possible that this bottle shape recognition faces image problems. In this situation, a technique or method is needed to accurately identify shapes and patterns. This study aims to study and recognize the shape of the bottle and the percentage value of the similarity of the bottle using one of the algorithms contained in the Artificial Neural Network method, namely the Learning Vector Quantization Algorithm. From this research, it is proven that the Learning Vector Quantization Algorithm can recognize the shape of the bottle quickly and precisely.

Keywords*: Pattern recognition, Pixel, Artificial neural network, Learning vector quantization algorithm

Application of rotating biological contactor (rbc) technology with kasongan earthenware waste filter media on wastewater treatment

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Abstract

The problem of pollution by wastewater in Indonesia, both domestic wastewater and industrial wastewater, is still a serious problem. Every business or activity that produces domestic wastewater is required to treat the wastewater produced (Daya, 2020). Wastewater from big cities and medium cities, including in Yogyakarta City, still needs the right method to handle it. RBC (Rotating Biological Contactor) is one of the biological processing technologies. Management with this RBC utilizes microorganisms by using biofilms as a place to grow and attach these microorganisms to be able to reduce organic parameters such as BOD, COD, TSS, pH, ammonia levels, oil & fat (LHK Regulation number 68 of 2016) concerning domestic wastewater quality standards. Rotating Biological Contactor abbreviated as RBC is an adaptation of the wastewater treatment process with attached growth. Earthenware used to purify water is earthenware that has the ability to absorb water, consisting of a group of soft earthenware (both white and red). Items that absorb water from the soft earthenware group, consisting of kaolin, clay, and kwarsa materials (Hasnani, 2013). The purpose of this study is to design the Application of Rotating Biological Contactor (RBC) Technology with Kasongan Pottery Waste Filter Media to treat Wastewater. Measuring the parameters of BOD, COD, TSS, pH, ammonia, oil & fat levels and Making Prototype Applications of Rotating Biological Contactor (RBC) Technology with Kasongan Pottery Waste Filter Media to treat wastewater and make tools that can be used by the community to treat wastewater in groups. The Research Method is Quasi-experimental research. Quasi-experimental research is an experimental activity (experiment) that aims to obtain information that is an estimate of the information that can be obtained with an actual experiment under circumstances that is impossible to control or manipulate all variables. The stage is to design the design of the RBC Technology Application tool with the fiteration media of kasongan earthenware waste, assembling the tool and testing the function of the tool by treating wastewater. Testing data for the parameters of BOD, COD, TSS, pH, ammonia levels, oil & fat wastewater that the sample is taken from wastewater before being processed as a Pre test and flowing through a series of RBC tools to be carried out further wastewater treatment as a post test. The output of this study entitled Application of RBC Technology with kasongan earthenware waste filter media is a prototype stored in the Appropriate Technology Laboratory, for teaching materials to learn practical learning of the Liquid Waste Treatment course. Indexed national journals and textbooks that can be used for students of the D-III Sanitation Study Program in semester III and IV students in semester V and VI for the Applied Undergraduate Study Program. In the final stage, the additional research output is the Application of RBC Technology with casongan earthenware waste filter media on wastewater treatment with the

result that it can reduce the parameters of COD 48.22%, BOD 45.27%, Ammonia 50.54%, TSS 62.51%, oil fat content 62.32% and pH from 7.13 to 7.04.

Keyword: Wastewater, Pollution,Treatment, Healthyer.

The introduction of shadow puppet figures using augmented reality

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Abstract

One of the value of education culture and character of national anthem which is like the country. Love of country purposes can be realized with a fuller knowledge and study the art and cultural there is. Puppet having values of life are extremely high and needs to be preserved. Through a study to produce application the introduction of figures shadow puppet use augmented reality as one of the media to ease the introduction of figures puppet to school tuition and the community the city of semarang.The application will feature an object of puppet characters especially pandawa shadow puppets and punakawan in 3d. The development of a system used is the method waterfall as a method general known and many widely used, not only in scope academics but also in the industry.

Keywords: Augmented Reality, Puppet, Vuforia, waterfall

Critical path method in contractor service company management information systems using incremental model

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Abstract

Good control is needed in managing a project, starting from controlling the human resources to systematic scheduling. CV. XYZ Surabaya is a contractor service company, that does not yet have an information system that can be used as a control tool in project management. Critical Path Method (CPM) is one method that can be used to schedule projects. This study aims to design a project management information system by implementing CPM. The system design is done using the Incremental Model. The results of this study are in the form of a prototype system that fits the needs of CV. XYZ Surabaya, includes system flow, Contextual Data Model (CDM), and User Interface (UI).

Keywords: CPM, sistem informasi, incremental

Smart mashup da'wah: transforming da'wah in the age of society 5.0

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Abstract

Da'wah is an invitation or call to the community or people to be able to do good deeds (Amal makruf) and also leave bad deeds (nahi mungkar) as stated in the Al-Qur'an Surah Ali 'Imran Verse 104. Da'wah, which is limited by space and time in the traditional era, is a motivation for da'wah actors to provide solutions to these limitations. In this modern era, traditional da'wah media has undergone a change in netnography that is able to collaborate with the rapid advancement of information technology. The era of society 5.0 is the initiator of various collaborations of da'wah media to become a medium for delivering modern da'wah. The Internet of Things (IoT) approach is a solution to the limitations of space and time to deal with changes in the da'wah pattern of the Society 5.0 era. Therefore, the concept of a smart mashup of da'wah with online media-based websites is proposed to make it easier for da'wah actors and congregations to get da'wah information in the form of news or articles, and to be able to help the people's economy with the MSME market place feature and consultation features with experts without the limitations of space and time.

Keywords*:* Smart Da'wah, MashUp Da'wah, Da'wah Digital, Society 5.0, Internet of Things(IoT)

Evaluation of weight initializers for deep learning based violence detection in video surveillance

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Abstract

In video surveillance systems, violence detection in video help operators or securities to monitor public places. Long Short-Term Memory (LSTM) as the architecture of Convolution neural networks (CNN) becomes the existing approach in violence detection. In CNN, many parameters need to initialized to achieve high performance, among others, layer weight. This study aims to evaluate weight initializers, which is provided by Keras library. There are 9 weight initializers, such as RandomNormal, RandomUniform, TruncatedNormal, Zeros, Ones, GlorotNormal, GlorotUniform, HeNormal, and HeUniform. The experiment was conducted on three benchmark datasets, such as Hockey, Crowd, and Airtlab datasets. InceptionV3 model was used to extract the learned features of each frame. The learned features were then fed to LSTM to classify the video clip into violence or non-violence. The system has been implemented using Jupiter Notebook. The results show that RandomNormal, HeNormal, and GlorotNormal can be the best option for those datasets. The classification achieves the best accuracies of 94.3%, 93.6%, and 85.71% for Hockey, Crowd, and Airtlab, respectively.

Keywords: Convolution neural network, Long Short-Term Memory, Video surveillance, Violence detection, Weight initializer.

Implementation wearnotch sensor for martial arts motion capture monitoring

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Abstract

Martial arts have learned and developed a lot in this archipelago, both from foreign martial arts to local styles. Pencak Silat is a martial arts system that was favored by the ancestors as the culture of the Indonesian nation. Indonesia is a country that is the center of traditional martial arts so that culture needs to be preserved, fostered, and developed. For the martial arts branch, Indonesia always competes for the gold medal. The existence of internal and external factors that affect the achievement of athletes. External factors that can affect one of them are facilities. The achievement decrease was due to the lack of martial arts motion resources and the absence of media that could record athletes' motion. Therefore, a system is needed to monitor athletes and be able to work during training. The system can record the athletes' performance before, Motion Capture sensor that can be implemented in every motion. The results of the sensor recording will be stored in the database. This system applies the Internet of Things (IoT) concept, using Raspberry Pi, Arduino Microcontroller, gyro-based motion-capture sensors that named wearnotch. This sensor capture the movement of athletes. The sensors communicate with the system using GSM Connection and MQTT as edge computing which act as a broker from sensors to databases, while MySql as accumulation play a role in athlete's motions that have been recorded by sensors. An application for martial arts athletes with motion capture is an application that can help monitor and run the athlete's performance during training. This application is also equipped with 3d animated videos of athletes' movements and multivariate data downloaded for evaluation of athlete performance.

Keywords : Motion Capture, Martial Arts, Wearnotch, Sensor

Aerial imagery segmentation of natural disaster-affected areas using deep convolutional networks for disaster assessment

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Abstract

After a natural disaster, aerial imagery from an unmanned aerial vehicle (UAV) is an invaluable resource for impact assessment and disaster management. Traditionally, the current disaster impact assessment process is highly dependent on humans, requires large resources, and is very slow. Manual interpretation with ordinary vision is highly challenging for humans, especially given the sheer volume of aerial images that need to be processed quickly. In this study, we propose a technique to reduce human intervention by using deep convolutional networks for aerial imagery semantic segmentation, with a focus on disaster-affected areas. For object detection and part identification in high-quality post-disaster aerial imagery from UAVs, semantic segmentation is used. For the best outcomes, four networks were trained, validated, and tested on annotated aerial images to segment important objects: Pyramid Scene Parsing Network (PSPNet), U-Net, Tiramisu, and CapsNet. The segmentation results are then integrated into the Fuzzy C-means clustering algorithm to automatically assess areas affected by natural disasters with four categories: areas not affected, lightly affected, moderately affected, and heavily affected. The experimental results demonstrate that in post-disaster aerial images, the semantic segmentation network model can detect and identify a variety of objects with irregular shapes and sizes as well as a variety of important objects affected by natural disasters.

Keywords: Semantic segmentation, Aerial imagery, Deep convolutional networks, Fuzzy c-means clustering, Disaster impact assessment

Management information system guidance and counseling services in madrasah aliyah, palangka raya city

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Abstract

Guidance and counseling services are mandatory services for students in every education unit, not least at Madrasah Aliyah (Islamic-based schools equivalent to high schools) in Palangka Raya City, Central Kalimantan Province. the process of managing data on guidance and counseling services (classical guidance and individual counseling) is carried out using manual recording in journal books containing student data, types of services, problem identification and follow-up results. The problem that then arises is the lack of data accuracy about how often classical guidance and individual counseling services are carried out by Counseling Guidance Teachers for the type and field of service. Without the accuracy of the data, it is feared that it will produce weak conclusions and do not have good quality information. For this reason, a data management application for guidance and counseling services was developed with the aim that the Madrasah Aliyah Counseling Guidance Teachers in Palangka Raya City were able to manage data on guidance and counseling services properly. This application was developed with an agile software development approach using the extreme programming (XP) method and based on object-oriented programming. The result of this research is an application that is able to manage data on classical guidance services and individual counseling well and is able to provide information that is responsive to the data inputted by the Counseling Guidance Teacher. The results of unit testing and acceptance testing provide good test results and can be accepted by system users (Counseling Guidance Teachers).

Keywords: Management Information System, Information System, Guidance, Counseling

Social networks in forming sentiment analysis climate change cases through a fuzzy clustering approach

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Abstract

Significant changes in climate, air temperature, and rainfall ranging from decades to millions of years are called climate change. Climate change occurs due to the increasing concentration of carbon dioxide and other gases in the atmosphere which causes the greenhouse gas effect. People's views on climate change are expressed on social media, one of which is Twitter as a medium to convey their opinions. The purpose of this study is to analyze sentiment on opinions related to climate change circulating on Twitter and analyze the social network (SNA) formed to find out which actors have the most role in disseminating information about climate change. In sentiment analysis using fuzzy clustering method and Social Network Analysis. The results of sentiment analysis showed almost all negative opinions, especially reactions to extreme weather. The use of SNA based on Twitter better understands the structure of the relationship between actors and the most influential actors.

Keywords ; Social networks, Fuzzy clustering approach, twitter

Educational data minning (edm) as an effort to determine the characteristics of scholarship recipients

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Abstrak

Educational Data Mining is a branch of science related to the development of a method for studying data sourced from educational data so that it can be used to understand the characteristics of students or students. In this discussion, Educational Data mining will be used to determine the characteristics of scholarship recipients, making it easier for managers to supervise and direct students to be more successful in their studies. The data that will be used is sourced from a database owned by the Student Affairs Bureau. Scholarship recipient students are individuals who are chosen and should have more abilities than students in general, but in fact in all cases that these recipient students are not better than expected. and suitable for the purpose of providing scholarships and student achievement can be better.

Keyword: Educational Data Mining, Characteristics

ROOM 6

The development of business intelligence dashboard to measure the kpi of study program (case study: lam infokom instrument)

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Abstract

Study programs as part of educational institutions have a significant role in ensuring the quality of their graduates conforms to the standards set by universities. Assessment of study program performance by external parties is currently managed by an independent accreditation agency (LAM), whereas for study programs in the field of informatics and computers it is handled by LAM Infokom. To assist in measuring the performance of the study program (KPI), it is necessary to develop a dashboard system that can show performance based on current achievements. One technology that can be used is business intelligence (BI). This study aims to develop a BI dashboard to measure the performance of study programs based on the main indicators of LAM Infokom criteria 9 (tridharma outcomes and achievements). The data source used is LKPS data for the D3 Informatics Engineering study program at the Bandung State Polytechnic for the 2020/2021 academic year. In its implementation, the data warehouse is built using data integration tools (ETL) using SQL Server Integration Service (SSIS), while the dashboard visualization is developed using MS Power BI tools. The stages of business intelligence are carried out through 3 main stages, namely: data acquisition, data access (storage), and data analysis and visualization. The evaluation results show that the developed BI dashboard can assist the study program management unit (UPPS) in measuring KPIs to show the study program's achievements on LAM Infokom's performance data so that it can be used as evaluation material for future plans and follow-up.

Internet of thing system irrigation acclimatization design using fuzzy logic

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Abstract

The Internet of Things (IoT) agricultural irrigation system is designed to maintain a stable humidity condition of the growing media over time. The logic function is used to get better efficiency by adjusting the amount of water that must be poured into the plants to get a certain humidity. The weather conditions during the transition that changed to extremes have not been able to be responded to by the existing intelligent systems because they should be treated differently. This research aims to identify the performance of fuzzy logic in IoT agricultural irrigation systems in realizing the ideal humidity of growing media as a response to extreme weather conditions that occur. The results of testing the performance of fuzzy logic in managing planting media obtained data that fuzzy logic succeeded in adjusting the duration of spraying carried out by the pump in response to several scenarios of environmental conditions that were simulated. This research still needs to be tested directly in the field by involving the air pressure variable which will be different for land locations with different heights.

Keywords: Fuzzy, Iinternet of Things, Irrigation, Agriculture, Hhumidity.

Attendance information system using fingerprint based on the internet of things

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Abstract

Fingerprint is one of the biometrics that can be used to record employee attendance. The fingerprint scanner device is a device used to retrieve information on the date and time of employee attendance through fingerprint analysis. The development of the Attendance Information System involves four parts, namely a fingerprint scanner device, Automatic Data Master Server (ADMS), database server, and the Attendance Information System. With the internet of things, the fingerprint scanner device can communicate with ADMS via an internet connection directly. The ADMS manages attendance data from fingerprint scanner device and saves it into database server as real time. Furthermore, the attendance data is processed by the Attendance Information System until it becomes the required report.

Keywords: Attendance, Information system, Fingerprint, Internet of things

Detection of corn plant diseases based on image classification using cnn: a review

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Abstract

This study discusses the topic of image classification research, CNN, and corn disease in a Systematic Literature Review (SLR) study. This is to study related to the deepening of disease image classification, especially corn plants, the use of the CNN algorithm and also various types of diseases that attack corn plants. The most common diseases that attack corn include: Common Rust (leaf rust), Gray Leaf Spot (gray leaf spot), Blight (leaf blight). To recognize these various diseases, it requires digital image technology with algorithms that can perform classification well. The diagnosis of plant diseases, especially corn, is the same as the diagnosis of plants in general. Because corn is most quickly recognized by disease through leaves, many researchers suggest to do image detection through corn leaves. The method used is SLR to study the most commonly found algorithms and the comparison of the studies themselves. CNN is very dependent on the parameters arranged in each convolution layer so that it needs to be improved. The results of this study indicate that the direction of future research to develop hyperparameter tuning in CNN and also the implementation of the system from the results of processing algorithms has not been found in the previous article.

Keywords*: Classification; CNN; Hyperparameter Tuning; Systematic Literature Review (SLR)

Security Performance of Advanced Encryption Standard 128 for Long-Range Communication System

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Abstract.

Despite having outstanding security characteristics, the Advanced Encryption Standard (AES) algorithm has lately become vulnerable due to the rise of cryptanalysts. Improving this algorithm's security is crucial due to the widespread commercial use of AES. This research creates a security system on a Long-Range (LoRa) communication system utilizing the AES 128 algorithm to achieve faster processing times in the encryption and decryption process of messages using MATLAB to enhance security performance. The AES-128 block encryption in this inquiry demonstrates that the messages were transmitted in layers with an average processing time of 0.74 milliseconds (ms) for each function. The duration for encryption and decryption is 5.89 ms.

Keyword : Security, Comunication, Algorithm, Long-Range

Defining key features and dimension of smart-dry model: bibliometric and expert judgment analysis

Puji Rahayu, Inna Sabili Karima

Abstract

For more than a year the COVID-19 pandemic has affected all of our activities. Covid-19 has had a profound impact on various sectors. The economic sector is one of them. This is because there are restrictions on activities that impact the economy, especially Small, Micro and Medium Enterprises or MSMEs. MSMEs have an essential role in the recovery of the national economy which continues to decline due to the COVID-19 pandemic. Laundry Business is one of the Small, Micro, and Medium Enterprises engaged in washing and ironing services. The existence of washing and ironing services has become part of the needs of human life. The development of the kilogram laundry business has made the competition in this sector even more challenging. To keep this business from being deserted by customers, each laundry service provider has its own characteristics and ways of promotion. **Purpose**: This study builds a SMART-DRY system model to empower housewives who are members of the Local Woman Organization, especially in the tourism and creative economy areas which need additional income from home. The **research methods** are the stage of Bibliometric Analysis for literature study and Expert Judgement analysis of user needs (para stakeholders) which became the components and elements for the conceptual development of the Smart-Dry model. **Finding**: Key feature and dimension in building the SMARTDRY model

Keywords: Laundry Information System, Model SMART-DRY, Bibliometric, Expert Judgment

Analysis of factors affecting user satisfaction with employee self-service applications: case study of pt.waskita karya (persero) tbk

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Abstract

Waskita Employee Self-Service Technology (WEST) is a supporting application for the Human Capital Management Division (HCM) in human resource management to become more transparent and process faster. In addition to the WEST application, which has benefits in improving the work performance of the HCM Division, the rental costs are not small. There is a target for the strategic plan for the HCM division in 2020-2024 related to WEST application development and operational efficiency cost in application implementation. Therefore, developing WEST application optimally based on user expectations is necessary. The level of user satisfaction is an essential factor in developing an application, whether the application gets acceptance or rejection by application users. Therefore, studying the factors influencing user satisfaction with WEST application is necessary. The goal is that all employees are satisfied and that using the budget is also more efficient. The research method was used quantitatively by distributing questionnaires to 1,754 permanent employees of PT Waskita Karya (Persero) Tbk online using Google Forms. A total of 654 respondent data were collected, then the data were analyzed using the CB-SEM method with software AMOS version 22 and SPSS version 22. The analysis results show that user satisfaction factors are system quality, information quality, top management support, and social influence. The results of this study can be input and evaluated for Waskita in developing a more optimal WEST application and can be a reference for further research on factors that affect application user satisfaction.

Keywords*: Employee Service Technology, Human Resources Information System, User Satisfaction, CB-SEM Analysis

Automatic watering system based on iot-based plant soil moisture on lime plants

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Universitas Dian Nuswantoro[1]

Abstract

Soil moisture in plants has a major effect on plant growth and fertility. To maintain soil moisture, farmers water regularly. However, watering plants cannot be monitored according to the humidity conditions of the plants at that time. So the amount of water that needs to be watered is not in accordance with the needs of the plant. The system is designed based on IoT which allows the system to be connected to more than one device. The connected system consists of a soil moisture sensor, a microcontroller, a plant sprinkler and an LCD screen. Sensors placed on the soil will detect soil moisture conditions based on the water content in it. Data from the sensor will be sent to the microcontroller. The system will process the input data from the sensor to determine the amount of water that will be splashed by the sprinkler. The system uses a fuzzy logic algorithm approach to determine the amount of water according to soil moisture and the optimal level of moisture needed by plants. After the input is processed by the system, the data is processed using a fuzzy logic algorithm using three addresses, namely soil moisture data, temperature data and water size data. The output of the system is in the form of a decision on the size of the water that will be flowed to the plants and the output is a graph displayed on the LCD and through the thinkspeak server.

Keywords: Watering, Iot, Fuzzy logic.

Understanding user acceptance of digital payment system: extending utaut2 model among indonesian consumers

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Abstract

Digital payments have become a worldwide payment phenomenon that can be used to save time, effort, and money. As a result, evaluating digital payment systems is critical to ensuring successful implementation and positive impact for user. This paper investigated the determinant of user acceptance of digital payment among Indonesians. More specifically, this study extended UTAUT2 to examine the relationship between performance expectancy, effort expectancy, social influence, facilitating conditions, price value, awareness and behavioral intention to use digital payment system. A total of 152 respondents invited to fill the questionnaires distributed through survey. The result showed that performance expectancy, effort expectancy social influence, facilitating conditions and price value have significant influence on behavioral intention. Interestingly, awareness does not affect the behavioral intention to use digital payment system. This study provides findings that can help companies to improve the adoption of digital payment system.

Keywords: Digital payment, Acceptance, Determinant, UTAUT2

Determinant of e-health adoption based on extended tpb: case in indonesia

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Abstract

This study examined the factors that influence e-Health adoption in the context of Indonesian consumers. The original theory of planned behavior (TPB) was expanded with several constructs such as perceived risk and compatibility in order to investigate comprehensively the intention to use e-Health. A self-administered survey was conducted resulting 137 valid responses regarding the criteria that respondents had used any e-health applications. The result revealed that subjective norm, attitude, perceived control and compatibility have significant impact on intention to use e-Health. Moreover, the attitude was found to be the strongest predictor compared other constructs in this study. The implications of these findings are discussed further.

Keywords: e-Health, Adoption, TPB, Indonesia

Ct-scan brain tumor prediction with content based image retrieval method

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Abstract

Content Based Image Retrieval method will be explored to detect brain tumor using CT-Scan images. Tumor considered one of several disease spasm into human brain, since brain as a very important in human organs when it's effected other organs will be reactive and caused dead. Children, teenagers, and adults cold be prompted tumor disease, but productive ages considered very frequently. Lately, medical sciences develop so rapidly, diagnose technique and medicine have given hope for many patients able to cure. The most problems in diagnose brain tumor recently considered time consuming, inconsistently, accuracy, and costly. Therefor this paper attempt to find an alternative way to solve the current problem in tumor diagnose by using an Artificial Intelligent particularly in area of Computer Vision and specifically using region growing segmentation. More than 500 images was used in the works, and they collecting from Kaggle. The accuracy brain image retrieval reach up to 93% by applying CBIR method.

Keywords: CBIR, CT-Scan, barian tumor, Kaggle, Artificial intelligent

Challenges, trends and future directions of financial technology in indonesia: a systematic literature review

Abstract

The development of the digitalization system provides new challenges for all industrial and manufacturing circles. These developments did not escape at the touch point in the economic field. The digital economy has begun to penetrate all activities from upstream to downstream. The rapid development of the digital economy has received a good response from economists and technology activists. However, this Fintech research is still an early stage for the development of future research in similar fields, especially in Indonesia. The development of Fintech in Indonesia is not inferior to the development of competitors in the world-class 1 country in the Fintech field, namely China. Fintech in Indonesia itself offers several services, including (1) Crowdfunding, (2) Microfinancing, (3) P2P Lending Services, (4) Market Comparison, and (5) Digital Payment System. The various types of Fintech services in Indonesia provide an opportunity for authors to examine more closely the challenges, trends, and development issues in Indonesia. This study aims to: (1) find out the state of the art of financial technology research, especially in Indonesia, (2) identify research gaps in the fintech field in Indonesia, and (3) identify the challenges, trends, and directions of fintech development in Indonesia. The results of the recommendations in this study include the theoretical components of appropriate financial technology based on the analysis of research standards in Indonesia. By using a systematic approach to the literature review, thematic analysis, meta-analysis, and observation in order to validate the quality of the literature. The results of this study will present information related to Fintech research, especially in Indonesia, which is more focused on the perspective of Information Systems, including the formulation of the concept of the direction of its development in Indonesia.

Keywords: Fintech, state of the Art, literature review, Thematic analysis, meta-analysis, observation