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REVIEW ON THE EFFECTIVENESS OF AGILE UNIFIED PROCESS IN SOFTWARE DEVELOPMENT WITH VAGUE SYSTEM REQUIREMENTS

Lisana
Universitas Surabaya (UBAYA), Raya Kalirungkut, Surabaya, Indonesia
E-Mail: lisana@ubaya.ac.id

ABSTRACT

Agile Unified Process (AUP) has been known as a suitable methodology for small-to-medium software development projects. This methodology focuses on the rapid iterations, small and frequent releases, capable of handling changing requirements from user, and involving user in the software development process. However, little is known that AUP can be effectively used for vague and incomplete system requirements. This study reveals how AUP is the most suitable software development methodology for such system requirements. An owner of a local gold jewelry store wishes to develop a new computerized system, but he does not know the system requirements for the software to be built. The purpose of the software is to help the owner in monitoring and controlling the main business processes in the jewelry store. In the beginning of the software development, it is very hard for the owner to mention what he really needs. However, since the owner is actively involved during the software development, he can slowly refine the system requirements with the help from the development team. AUP Phases can be accurately followed and proved to be very useful and suitable for the vague system requirements. Rapid iterations, small and frequent releases of the software modules lead to the completion of the software project on time. The resulting software is successfully tested with live transactions.

Keywords: agile unified process (AUP), software development methodology, RUP.

INTRODUCTION

Software development methodology is a framework that is used to structure, plan, and control the process of developing a computer-based information system. This is the most important element in the software development. It depicts the necessary phases in software development from preliminary development, analysis, to post-development software testing and evaluation.

Software development methodologies like Waterfall and Rational Unified Process (RUP) are called traditional software development methodologies and can be classified into the heavyweight methodologies [1]. These two methodologies are based on sequential series of steps from requirements specifications, design, implementation, testing and deployment. Traditional software development methodologies should define and document a stable set of user's requirements at the beginning of a project. The success of a project depends on knowing all requirements before the development begin. It means that changes during the development process can cause problems [2].

Current software development is expanding and becoming more complex. Somehow, users can not provide all requirements in sufficient details for implementation to occur at the beginning of a project. Users may also have some problems in deciding the features to be included in the project. Changing requirements from the user is making it even more difficult. In the other side, many software companies tend to produce valuable software in shortest time period with minimal costs, and within unstable, changing environments. Traditional software development methodology cannot handle this anymore.

Thus, new software development methodologies are introduced, as agile methodologies, mainly to solve those problems. Agile methodologies are based on the idea of incremental and iterative development, in which the phases within the development life cycle are revisited over and over again [2]. Those iterations improve software by using customer feedback to converge on solutions. Agile methodologies prefer software development over documentation. Their philosophy is to deliver many working versions of the software in short iterations, then update the software according to customers' feedback. This will overcome the problems mentioned earlier, by welcoming changes, satisfying user requirements, faster development, and at the end, users will get the software they really need.

AGILE UNIFIED PROCESS METHODOLOGY

One of Agile methodologies is Agile Unified Process (AUP). This methodology is a combination between the Rational Unified Process (RUP) and Agile Method (AM) [3]. AUP is also a simplified version of the Rational Unified Process (RUP) [4]. The AUP's Model discipline is a combination of the RUP's Business Modeling, Requirements, and Analysis and Design disciplines. Moreover, the RUP's Configuration and Change Management discipline is changed to the AUP's Configuration Management discipline. Figure-1 shows the lifecycle of the AUP.

AUP consists of four major phases and seven disciplines [4]. The AUP's phases are:

1. Inception

The objective is to identify the initial scope of the project, a potential architecture, and to obtain initial project funding and stakeholder acceptance.

2. Elaboration

The objective is to define the architecture of the system.

3. Construction

The objective is to construct the system that meets the stakeholders' needs.

4. Transition.

The objective is to validate and integrate the system with the using environment

All AUP's disciplines are performed in an iterative manner, defining the activities which development team members perform to build, validate, and deliver working software which meets the needs of users. The AUP's disciplines are:

1. Model

The objective is to understand the bussines organization, to define the problem and what the user needs, to identify the best solution.

2. Implementation

The objective is to transform models into executable code and to perform a basic level of testing, particularly unit testing.

3. Test

The objective is to find defects, to validate the system works as designed and meet the user's requirements.

4. Deployment

The objective is to integrate the system into the using organization

5. Configuration Management

The objective is to manage access to project artifacts. This includes tracking artifact versions over time and then controlling and managing changes to them.

6. Project Management

The objective is to direct the activities that takes place on the project. This includes managing risks, directing people (assigning tasks, tracking progress, etc.), and coordinating with people and systems outside the scope of the project to be sure that it is delivered on time and within budget.

7. Environment

The objective is to supports the development process with processes, guidance, and tools.

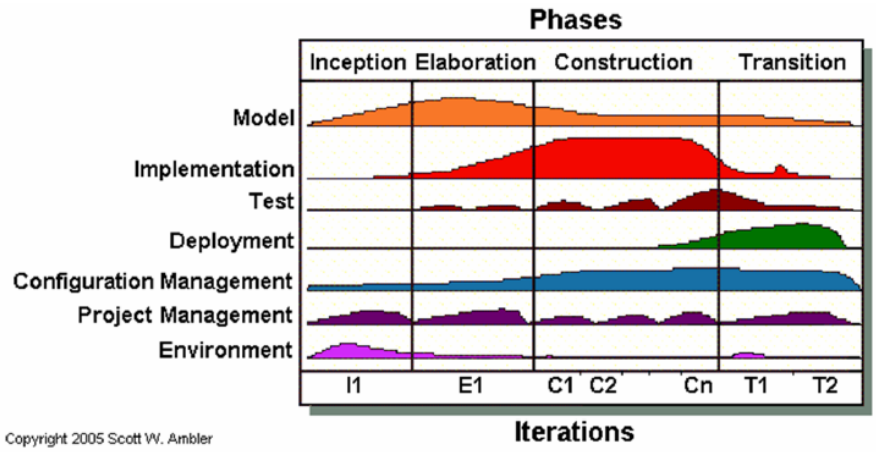

Figure-1. The lifecycle of the Agile Unified Process, source Ambler, 2005.

Ambler created AUP based on six principles [4]. First, most people are not willing to read detailed documentation, but they will need guidance and training from time to time. Second, the software project should be described simply in a few pages, not thousands. Third, AUP conforms to the value and principles of the Agile Alliance. Fourth, the software project must focus on high-value features. Fifth, project teams can use any tools freely which are best suited for the given job. The last one, the AUP product is easily tailored via any common HTML editing tool.

LITERATURE REVIEW

One of the largest banks in Greece had successfully implemented AUP as its development methodology in a small to medium-scale project called the Integrated Desktop (ID) [5]. The purpose of the ID project was to host private-banking applications that can be accessed via a single sign-on. AUP was adopted to

produce quick-win user results. The development team finally concluded that AUP provided a flexible and reasonably agile methodology. Moreover, the team also found out that to succeed in applying AUP, the organisation's culture and management must be receptive to both RUP and Agile Methods.

INT, a professional services and consulting firm located at Houston - Texas, always adopt AUP methodology for all software projects received from their clients. They had proved that implementing AUP can effectively reduce cost and risk [6]. The frequent released software will increase feedback from client so that the potential risks could be mitigated as early as possible. Moreover, the iterative development cycle provided high project visibility and control and also allowing customer to give some feedback quickly to changing system requirements.

Both AUP's implementations in software projects above have shown that AUP is suitable for small to medium IT project by utilizing its iterative software development cycle and frequent product releases. However, there is little evidence that AUP can cope with vaque and incomplete initial system requirements. There is a need to prove that AUP with its frequent product releases can reduce costs in a software development with frequent changes in system requirements.

THE IMPLEMENTATION OF AGILE UNIFIED PROCESS

In this paper, Agile Unified Process (AUP) methodology was implemented in the development of a management information system at a gold jewelry store. The two main reasons why AUP was adopted. First, the new system was categorized into a small to medium-scale project. Second, the user (owner), with no IT knowledge, was unable to state clearly at the beginning about what they needs. There were some vaque requirements of the new system. Thus there would be high probability that the owner would keep changing the requirements during the project lifecyle.

The main objective of the new system was to help the owner of a gold jewelry store to control and monitor his main business processes, such as selling items to customer, purchasing items from supplier, and returning items from customer. All processes were done manually (paper-based). This caused slow in performance and several problems. i.e.

- The process of Adding New Items took a lot of time and inefficient. The owner had to weight the new items one by one, wrote the details of each new item in a book, and manually created the item-tag for each item.
- The process of creating the sales invoice was time-consuming. The sales staff had to write the item details in the sales invoice. Moreover, they often made mistakes in calculating the sales invoice total to be paid by the customer
- The process of summarizing all sales transactions took a lot of time and sometimes inaccurate. At the end of the day, the owner had to summarize all sales transactions occured during that day. This process took a lot of time from tracking those records one by one. Not to mention if the owner found a mistake in the calculation.
- The process of calculation total profit or loss from all sales transactions during period of time took a lot of time and inaccurate.
- The process of calculation total purchase item from supplier during period of time took a lot of time and inaccurate.
- The process of calculation total sales handled by each staff during period of time took a lot of time and inaccurate.

Inception Phase

During this phase, the team had to set up a meeting with the owner to define the scope of the new system. The meetings were held twice.

The initial requirements were gathered and it was not necessary to state and define all the requirements at that time. As the results, the team defined the scope of the new system as follows:

- There are three type of users that can access the new system: owner, manager, and staff.
- There is a feature that can record and maintain all suppliers and staffs data.
- Record data of each new items bought from supplier and automatically generate a barcode that can be printed as the item's tag.
- Handle the process of item sales. The new system should be able to get the data from barcode scanner.
- There are some features of creating some reports that can be used to control and monitor the current system such as: profit and loss report, total purchase report, total sales report, and report of all items in the store (assets) grouped by type of jewelry (such as necklace, ring, earing etc).

From those demanding requirements, the team created the initial use case diagram. Figure-2 shows the initial use case diagram for the new system. Next step, the team tried to estimate the cost, plan the schedule and manage the risks.

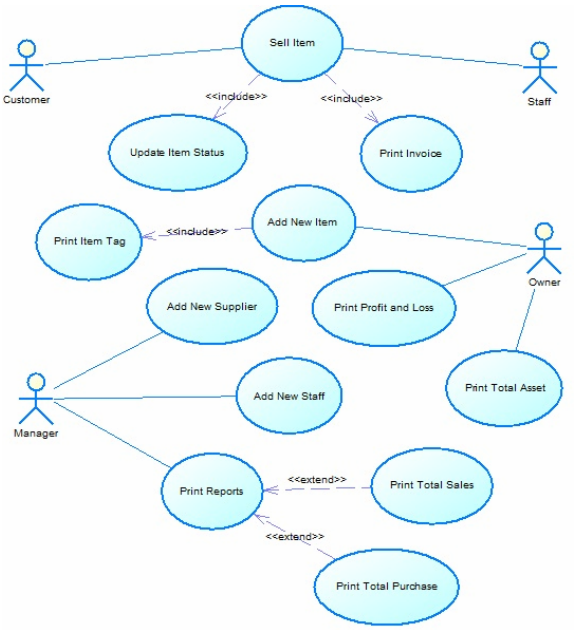

Figure-2. Initial use case diagram.

During this phase, the team found some difficulties as follows:

- It was quite hard to set up a meeting with the owner. This was because the owner is a successful businessman and he travels a lot to do some business.
- The team especially the manager should be able to maintain the owner commitment throughout all phases of software development.
- The team should prepare as early as possible the current human resources so they can adapt to the new innovative system.

Elaboration Phase

The objective of this phase was to make sure that the new system could fullfil all the user's requirements. In this phase, the team tried to assign estimates and created a development plan. The team's system analyst gathered all users' requirements. All features were examined and rough time estimation was generated. The owner then used the estimate to assign a priority to each features. It is not necessary to assign a priority to all features at that time. The owner also collaborated with the team to create a good development plan which describes how the deliverables will be.

Then, the team developed a working prototype which demontrated the architecture and user interface functionality for each features. The prototype was showed to the owner to get the feedback, comments, remarks, and suggestions on the user interface and business workflow and system functionality. This was used to produce the necessary results for second iteration. Next, the team made some changes. The team also conducted a user-acceptance-testing during which they received a second of minor correction requests. During this phase, the owner still could add some new requirements, modified or removed the existing requirements. The team together with the owner worked in developing the final version of documentation.

After looking at the demonstration of the working propotype, the owner requested two changes. First, the owner gave the formula for profit calculation. Second, the owner told the team to change format of the item code. Furthermore, after discussing with the team manager, the owner added some new features as follows:

- Record all prospective customer data.
- Integrate the new digital scale hardware with the proses of record data of each new items so the staff does not need to type the weight of the item manually.
- Create a report of sales transaction based on customer.
- Create a report of sales transaction based on staff.

The team then directly revised the existing initial use case. Figure-3 showed the modified use case diagram after second iteration.

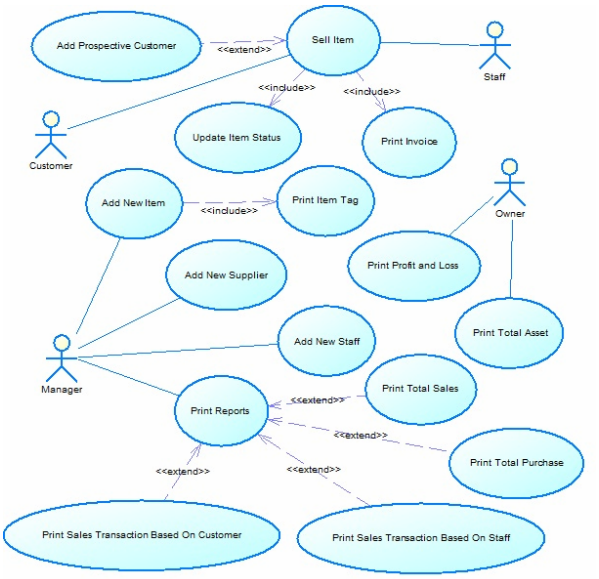

Figure-3. Modified use case diagram.

Construction Phase

Construction was the largest phase. In this phase, the team developed the new system in small increments called iterations. An interation consists a series of steps performed over a short. The steps included picking up the features to be implemented, refining bugs, designing the features, implementing the design (including testing and creating documentation), deploying an executable release of the software to obtain owner's feedback. The successful completion of each iterations ended with a user acceptance test.

During this phase, the team created the data model, a class diagram, as seen in Figure-4. The team had three four-week iterations, implementing between four to

five use-cases at a time. The application was developed using Microsoft Visual Basic and MySQL.

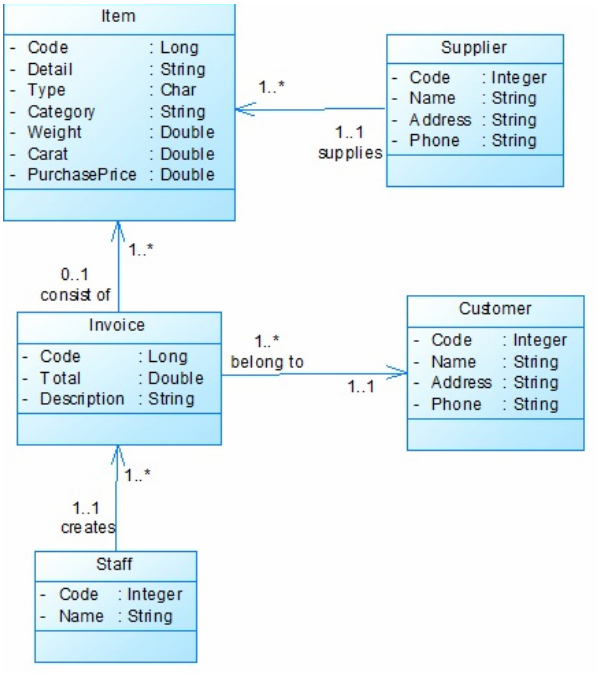

Figure-4. Class diagram.

In the first iteration (first executable), the team implemented 40 percent of all features in the new system, including the most difficult ones. The interation continued with the second. By adding more features, the new system will become expandable and getting perfect. This phase finished in 60 working days. Figure-5 shows a screen of add new item as a part of the result of the new system.

Transition Phase

Transition phase includes system testing, user testing, system rework and system deployment. Although some testing had been done during the earlier phases (elaboration and construction phases), the real users (owner, manager, and staffs) still had to check whether the new system can run properly in the real environment. In this phase, the team gradually deployed the new system. The owner was encouraged to conduct the acceptance test to make sure that the new system had met all the users' requirements. Otherwise the owner could send some feedback so the team could make further refinements.

In this phase, firstly, the team had to set-up the laptop with all supported devices, such as barcode printer, barcode scanner, and digital scale hardware. After the hardware had been properly set up, the team then deployed the new system and conducted testing to make sure that all features can work perfectly. The team also conducted some training to the manager and staffs. This phase ended when the real users (owner, manager and staffs) were satisfied with the new system. Furthermore, all supported documents, including user manual, were also handed on to the owner.

The transition phase was relatively standard, with the only problem of converting the manual transaction data into the new database.

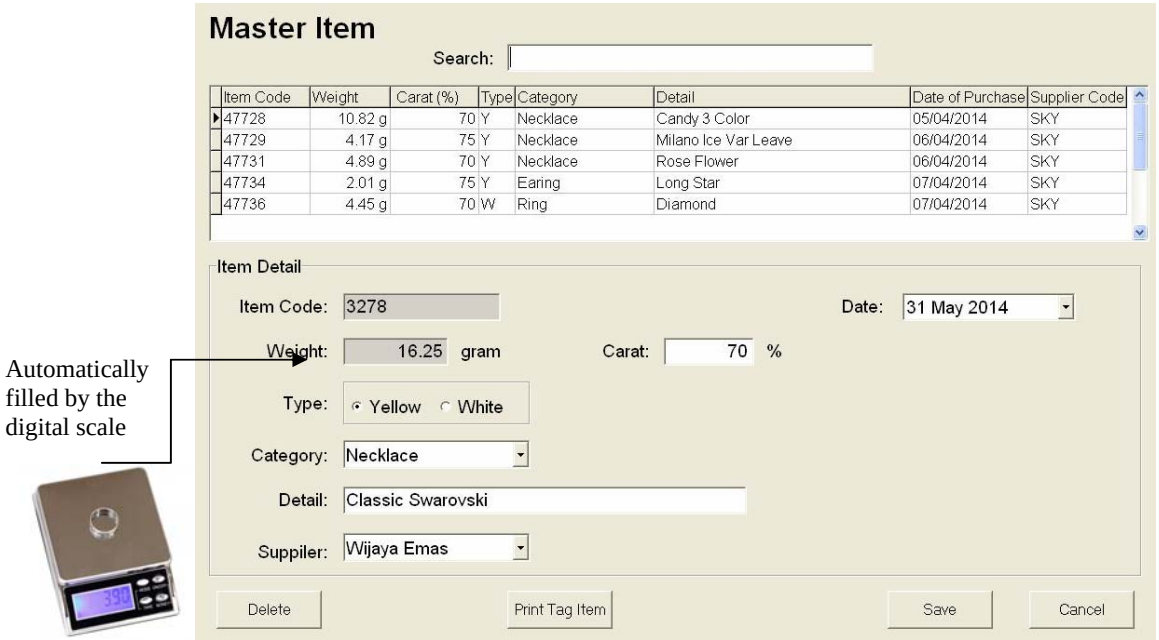

Figure-5. Screen of add new item.

THE HIGHLIGHTED RESULTS

For the team, this project was the first experience in developing a system using Agile Unified Process (AUP) methodology. In the earlier phase of applying the AUP methodology, the team was a little bit confused because they work without complete documentation like they were used to in the waterfall methodology. However, a few days later they could adapt and felt comfortable with.

The management information system at the gold jewelry store was considered to be a small to medium-scale project with initial twelve use cases. However, during the elaboration phase, the owner changed the some requirements and added four new features. Based on that feedback the team could easily modify the existing use case diagram by adding three new use cases and directly built the first version of the executable software.

In the construction phase, the team produced three software iterations. At the first iteration, team implemented five use cases. This first executable software could be considered as the most difficult ones including Add New Item Process and Selling Item Process. After showing the first software, the owner had discussion with the team and gave some feedback. The team then directly made some revision without any difficulty and developed the second version. During this phase, the team still could handle the requirement change effectively.

In the beginning, owner did not know exactly the real system requirements, but, with subsequent iteration, the owner slowly understood the software requirements to be developed. The finished software

The result had proved that AUP methodology is a simple, easy to understand, and easy to implement approach in developing a management information system at a gold jewelry store. The keys of success are the effective team work, frequent communication between team and the owner, and deep participation of the users (owner, manager and staff). These factors can accelerate creating the good model and finally high quality software can be produced. To mitigate risk of failure, software was deployed gradually. Moreover, by doing both system testing and user testing can detect error rates earlier and improve the quality of system design for better maintainability. This will reduce the cost of detecting and correcting errors. AUP methodology provides the owner with high system visibility and control, allows the owner to give constant feedback to make sure that the implementation of all features are inline with the owner's objectives, and allow the owner to change the initial requirements.

These results emphasize the advantages and strength of AUP as the methodology of choice for small-to-medium IT Projects, even with vague and incomplete system requirements.

CONCLUSIONS

The result showed that Agile Unified Process (AUP) methodology was effective in developing software for gold jewelry store, which the initial requirements were vague and incomplete. AUP break the system into small iterations in which requirements, design, development, and testing occur continuously. Owner was actively involved from the beginning of the software development. Thus, the team could produce very accurate software and all features can represent the owner's objectives. At the end, the users (owner, manager and all staffs) are happy and very satisfied with the newly implemented software.

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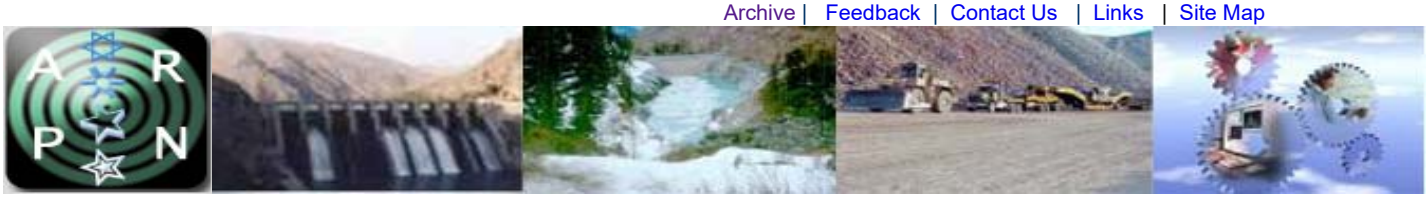

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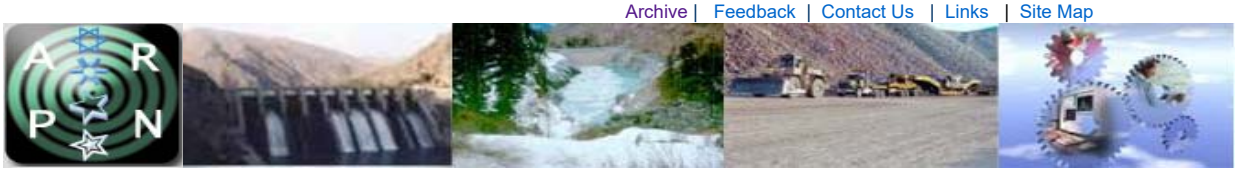

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Title: Analysis and implementation of operational security management on computer center at the university X

Author (s): Ibnu Gunawan, Agustinus Noertjahyana and Hartanto Rusli

Abstract: This paper presents how to asses an operational security management on computer center at the University X. In carrying out operations using information technology-based computer network, it is an organization needs to consider factors in information systems security. The Security of communication networks is absolutely necessary to be able to provide continuous service to its users. Most of the staff was involved in the making of this security policy, often feel confused in starting to work, due to not having enough experience or feeling that it will not require a policy because there was no incident related to a security policy. To resolve these problems, we need a tool to help the staff in making the security system design that is structured with implementation modules sourced from security policy and risk management module so that it can be monitored if an error occurs. In last section, this paper show how to testing by using the engine to perform the questionnaire calculations, making planning and operations. Occurs similarity between the results of risk management high risk states with a CISSP standard studied on a case study.

Full Text

Title: Design and construction of EGG shaped microstrip antenna with circular slot for ultra wideband frequency (UWB) applications

Author (s): Rudy Yuwono, Fitria Kumala Trisna, Erfan Achmad Dahlan, Endah BP and Aisah

Abstract: We proposed an egg shaped microstrip antenna with circular slot for Ultra Wideband Frequency (UWB) applications. The Antena was investigated by performing simulation and measurement. The antenna was fabricated on Phenolic White Paper materials - FR4 with dielectric constant (ε_r) = 4.5 and thicknes of 1.6 mm. From simulations and measurements, our antenna achieved UWB operating frequency of 1000 to 2700 MHz with a bandwidth of 1700 MHz. The highest gain value located at a frequency of 1.5 GHz of 5.25 dBi. The radiation pattern of antenna is bidirectional.

Full Text

Title: Design of dual band antenna for wireless MIMO communication systems

Author (s): M. M. Saad, J. M Yusoff, K.A. Abd Rashid, M. Senon, J.S. Hamidon, M. N. Husain, M. Z. A Abd Aziz and A. R. Othman

Abstract: This paper presents the design of dual band antenna by using C-shape slot technique. There are three design of different combination C-slot. The antenna is design at operating frequnecy of 2.4 GHz and 5.2 GHz ISM band. All antenna are design based on microstrip structure element and simulated by using Microwave CST Studio software. Then, the designed antenna was fabricated on FR4 board with dielectric constant of 4.7 and tangent loss of 0.019. All antenna can work at dual band frequency band with 90 % efficiency. The Three shape slot design has the widest bandwidth at both frequency band. Besides that, C shape slot technique can reduce the physical size of the antenna up to 50 %.

Full Text

Title: Design single stage LNA using L-matching network for WiMAX applications

Author (s): J Sam Hamidon, Mohd Nor Husain, Abdul Rani Othman, Kamil Pongot, Kamarul Ariffin Abd. Rashid, Muhammad Majdi Saad, Mohamad Tarmizy Ahmad and Misida Senon

Abstract: This paper presents a design single stage low noise amplifier(LNA) using L-matching technique for WiMAX applications. The amplifier use FHX76LP Low Noise SuperHEMT FET. The LNA designed used L-matching network consisting of lump reactive element at the input and the output terminal. The LNA produced gain of 18.34dB and noise Figure (NF) of 1.34dB. Furthermore, the input reflection (S_{11}) and output return loss(S_{22}) are -16.25dB and -7.52dB respectively. The bandwidth of the amplifier recorded is 1.24GHz. The input sensitivity is compliant with the IEEE 802.16 standards.

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Title: Fuzzy multi-criteria evaluation of research materials based on learning style

Author (s): Liyana Shuib, Adeleh Asemi Zavareh and Rukaini Abdullah

Abstract: Current Research Materials (RM), obtained through internet search, is not in accordance with students' Learning Styles (LS). This study aims to evaluate and rank RM based on students' LS. A fuzzy evaluation method is proposed to evaluate and rank research material based on learning style. This method is able to deal with multiple critical factors, in order to evaluate RM. The fuzzification scale of linguistic variables is designed based on the expression method of fuzzy variables by students with specific learning styles. The proposed method was used to rank 10 obtained RM, in a particular research topic, for various LS. The ranking results were compared with the order of RM in a current search engine. The results of this comparison illustrate the applicability and efficiency of the method to arrange RM based on LS.

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Title: Object removal using exemplar-based in painting

Author (s): Kartika Gunadi, Liliana and Filbert Sugianto Manunggal

Abstract: Technological development is so rapid, followed by the ease of taking pictures. The problem is the hole caused by undesired object being erased. To overcome the problem, filling the hole region within the image by using the novel based exemplar method. The main advantage of using this method is the usage of order filling that is dependent on the value of the isophote and the number of source region. The result shows that the size or the shape of the object selection, gradation, diffusion of color, and blur significantly affects the result of the in painting. Priority plays a significant role in picking the color in the source region. Clear gradient not affected by light diffusion, color gradation, or blur will make a "natural" in painting result.

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Title: Performance analysis for wireless g (IEEE 802.11G) and wireless N (IEEE 802.11N) in outdoor environment

Author (s): Suzi Iryanti Fadilah, Abdul Samad Shibghatullah, Zuraida Abal Abas, Mohd Helmy Abd Wahab and Wan Nur Wahidah Hashim

Abstract: This paper described an analysis the different capabilities and limitation of both IEEE technologies that has been utilized for data transmission directed to mobile device. In this work, we have compared an IEEE 802.11/g/n outdoor environment to know what technology is better. The comparison consider on coverage area (mobility), throughput and measuring the interferences. The work presented here is to help the researchers to select the best technology depending of their deploying case, and investigate the best variant for outdoor. The tool used is Iperf software which is to measure the data transmission performance of IEEE 802.11n and IEEE 802.11g.

Full Text

Title: A review of firefly algorithm

Author (s): Nadhirah Ali, Mohd Azlishah Othman, Mohd Nor Husain and Mohamad Harris Misran

Abstract: Firefly algorithm is one of the swarm intelligence that evolve fast for almost area of optimization and engineering problems. Stand alone firefly algorithm already has managed to solve problems. For problems that have multi dimensional and nonlinear problem, some modification or even hybridization with the other metaheuristic is advisable. This modification and hybridization is to aim for help for the computational constrain and it will become more flexible and more efficient.

Full Text

Title: Semantic analysis for online travel accommodation reviews

Author (s): Phichayasini Kitwatthanathawon, Thara Angskun and Jitimon Angskun

Abstract: Currently, most tourists use the Internet to retrieve information for supporting their decision in selecting the tourist places that conform to their preferences. The most common method is the decision based on reviews of experienced tourists. However, tourists must read enormous reviews in order to select their preferred tourist places. This article presents an analysis module for online travel accommodation reviews. The analysis module combines several techniques, such as ontology, natural language processing, and fuzzy logic. However, this article focuses on applying the natural language processing for semantic analysis to solve the accommodation feature extraction problems. The experimental results of the feature extraction process are achieved in 79.22% of overall accuracy, 100% of overall precision, and 76.05% of overall recall.

Full Text

Title: Clay soil stabilization with lime effect the value CBR and swelling

Author (s): Gati Sri Utami

Abstract: Subgrade was a very important part to support all construction loads on it. If the clay subgrade that had unfavorable properties, such as low CBR, the high swelling when applied to the construction of the road subgrade soil would produce a soil that is easily damaged. For that, if used in the construction of CBR value should be towering so that it can withstand a load on it. The swelling would reduce the volume of soil that is stable when it rains the soil is not swollen, otherwise when the dry season does not shrink too high. Ground improvement methods used in this study was stabilization of lime-soil, using a mixture of percentage 5%, 10% and 15% of the lime. Tests performed on the Atterberg limits, Compaction (Standard Proctor Test), C.B.R laboratory, and Swelling. The results of the study about a large percentage of the value of lime plasticity (liquid limit, plasticity index) decreased with the increasing compaction. The average CBR value is increased for the natural soil to percentage 5% and 10% of lime, while the percentage of 15% decreased. For the swelling, the percentage of 15% lime with 24 hours immersion showed 45.28% increase in swelling of the normal soil (i.e. 31.67% to 17.33%) So in general the best for clay soil stabilization is Pakuwon area where the addition of 10% lime CBR values obtained optimum and could reduce swelling value.

Full Text

Title: Investigation performance of solar water heater system using paraffin wax

Author (s): Razali Thaib, Hamdani, Irwansyah and Zaini

Abstract: Solar power system has been applied to heat water for night time home activity in rural areas. The system will provides hot water availability out the day. The system consist of a solar water heater and a heat storage unit filled by Phase Change Material (PCM). The solar water heater used for supplying hot water during the day. Storage unit stores the heat in PCM during the day and convert to be hot water during the night. Type of solar water is thermosyphone. The main component of solar water heater is a solar collector box, insulating material, circulation tubes and absorber plate. The heat storage that filled paraffin wax integrated with solar collector unit for absorbing solar heat. Paraffin wax that comercially available in the market used for heat storage material. The experimental investigation conducted in open field located at Faculty of Engineering, Syiah Kuala University. The water temperature, absorber plate temperature and solar intensity was measured and recorded every 10 minute. The experiment test started from 8.00 am up to 23.00 pm. The results show that temperature of hot water at 17.00 pm is 45 °C. Temperature optimum of solar water heating system that could be achieved up to 20.00 pm is 40 - 45 °C. The maximum temperature of hot water produced by collector solar water heater which is equipped parffin wax is 70 °C. The maximum efficiency of a collector solar water heater is 36.6 %. Based on experimental results, by adding of paraffin wax in the solar collector could able to increase efficiency of solar water heating systems.

Full Text

Title: Puzzlar, a prototype of an integrated Puzzle game using multiple marker augmented reality

Author (s): Marcella Christiana and Raymond Bahana

Abstract: Jigsaw puzzles are an old concept but many people still enjoy playing them. Living in an ever-evolving world, people and technology have become inseparable. One technology that is on the rise is Augmented Reality (AR), which combines the real world with virtual or computer-generated data. This research is based on developing a combination of jigsaw puzzles with AR (multiple marker-based) called Puzzlar, using FLARManager as an AR tool. The application also uses Adobe Flash (game design) and PHP. The uniqueness of the prototype program is in its use of 2D physical markers to represent 3D jigsaw puzzle pieces that are animated in the playing mode. In user acceptance testing (UAT), 70% of the testers were satisfied with the game play of Puzzlar. However, 30% of the testers thought that it could be improved.

Full Text

Title: Door-automation system using bluetooth-based android for mobile phone

Author (s): Lia Kamelia, Alfin Noorhassan S.R, Mada Sanjaya and W.S., Edi Mulyana

Abstract: Smart Home is the term commonly used to define a residence that uses a home controller to integrate the residence's various home automation systems. The most popular home controllers are those that are connected to a Windows based PC. In our research we presented a part of smart home technology which using Bluetooth in a mobile device, so it will more easy and efficient to use. It also based on Android and Arduino platform both of which are free open source software. In this paper, a system called door locks automation system using Bluetooth-based Android Smartphone is proposed and prototyped. First the hardware design and software development are described, then the design of a Bluetooth-based Smartphone application for lock/unlock the door are presented. The hardware design for door-lock system is the combination of android smart phone as the task master, Bluetooth module as command agent, Arduino microcontroller as controller center / data processing center, and solenoid as door lock output. All of the tests indicate that all goes according to the initial design of this research.

Full Text

Title: Review on the effectiveness of Agile Unified Process in software development with vague system requirements

Author (s): Lisana

Abstract: Agile Unified Process (AUP) has been known as a suitable methodology for small-to-medium software development projects. This methodology focuses on the rapid iterations, small and frequent releases, capable of handling changing requirements from user, and involving user in the software development process. However, little is known that AUP can be effectively used for vague and incomplete system requirements. This study reveals how AUP is the most suitable software development methodology for such system requirements. An owner of a local gold jewelry store wishes to develop a new computerized system, but he does not know the system requirements for the software to be built. The purpose of the software is to help the owner in monitoring and controlling the main business processes in the jewelry store. In the beginning of the software development, it is very hard for the owner to mention what he really needs. However, since the owner is actively involved during the software development, he can slowly refine the system requirements with the help from the development team. AUP Phases can be accurately followed and proved to be very useful and suitable for the vague system requirements. Rapid iterations, small and frequent releases of the software modules lead to the completion of the software project on time. The resulting software is successfully tested with live transactions.

Full Text

Title: An expert system of risk assessment on internal audit of Sharia financial industry in Indonesia

Author (s): Rakhma Oktavina, Retno Maharesi and Dwi Asih Haryanti

Abstract: To improve the level of performance of sharia financial industry, Bank of Indonesia as a regulator issued a regulation number 9/1/PBI/2007 about the Rating System for Commercial Banks Based on Sharia Principles, which the Sharia financial industry should make a self - risk assessment. The purpose of this research was to produce an expert system application to detect the presence of risks on the internal audit department of Sharia financial industry. The research was divided into four stages: (a) the determination of the context, (b) the risk identification, (c) the risk analysis and evaluation, (d) the design of expert systems. Analysis of the risk assessment to Sharia financial industry used the Composite Risk Index (CRI) technique. In this research, the context was to determine the probability of risk occurrence based on the scale of importance for each indicator from each Sharia financial industry that would make a risk assessment. Identification was carried out to all risk variables either inside or outside the organization. There were 10 assessment variables and 54 risk indicators, consisting of 17 types of risk indicators on internal audit process of Sharia financial industry. System and software design used ASP (active server pages), and in the client side (rule base) used java script language. The expert system named IPO-Srisk was designed to simplify the model operation of risk assessment on Sharia financial industry. The features on the main page consisted of "Home" and "Expert System". "Home" provided an explanation for expert systems application. "Expert System" covered "initialization" and "assessment". Initialization process was useful to determine the risk indicator used in Sharia financial industry and the variable groups. "Assessment" included scale determination of risk impact, scale of the risk occurrence-probability, risk level, and recommendation alternative for risk mitigation.

Full Text

Title: The risk mapping of energy availability of agro-industry in Indonesia in 2015-2019

Author (s): Rakhma Oktavina, Ratih Wulandari and Rossi Septy Wahyuni

Abstract: Energy management could be done by analyzing the market risk fortofolio regarded availability and use of energy. The purpose of this study was to analyze risks potential and the availability of energy needed in the agro- industry sector through risk mapping. The framework approach used the principles of risk assessment based on market portfolio risk for agro-industrial sector using VaR (Value at Risk) technique. The subjects of the study were the agro-industries consisting of forest and plantation products industry, marine and fisheries food industry, as well as beverages and tobacco industry. The main types of non-renewable energy sources included petroleum, gas, and coal. The main types of renewable energy sources consisted of hydropower, biomass, micro hydro, geothermal, solar power, and wind power. Primary data consisted of production and energy consumption data of 11 types of existing products in the agro-industry sector. Primary data were obtained by conducting in-depth interviews to industries. Field observations of the condition of the use of energy to produce a ton of products on various agro industries conducted in East Java and West Java as a case study. Secondary data consisted of energy availability data, obtained from the Ministry of Energy and Resources of the Republic of Indonesia. The phases included the risk assessment and risk mapping of energy availability of agro-industry in Indonesia. Risk assessment process used the method of Value at Risk (VaR). The results of the risk assessment were described by using risk maps within the agro-industrial sector. The survey conducted in the province

of West Java and East Java gave the information about the need of energy per ton for various types of agro-industries. In addition to the data obtained from the total production, it showed that the agro-industrial sectors which had the highest productions were plantation and forest product industries, i.e. pulp, paper and paper board industry. The second highest productions were crude palm oil and palm cooking oil. The results of the risk mapping indicated that the 6 industries were in quadrant I (tend to be high risk, tend to be high returns), in quadrant III (tend to be low risk, tend to be low returns), and in quadrant IV (tend to be low risk, tend to be high returns). The industries in quadrant I were sugar and paper industries. The industries in quadrant III were processing and preservation of meat, fish canning and other aquatic biota, cooking oil from palm oil, livestock/fish woof, food of chocolate and confectionery, as well as pulp and paper industry. The industries in quadrant IV were instant noodle, soft drink, and the oleo-chemical industry. Based on the results of risk mapping, it needed considerable attention to the energy availability for the sugar and paper industry because they had a fairly high risk (in quadrant I). It was advisable to develop new and renewable energy for the need of energy in these both industries.

Full Text

Title: Face recognition using *S*CAN-based local face descriptor

Author (s): Riko Arlando Saragih, Dodi Sudiana and Dadang Gunawan

Abstract: This paper describes *S*CAN descriptor as a local face descriptor to represent a face image. SCAN techniques that originally for image compression and data hiding were used to locally extract face image features to represent the face image. Simulations were conducted on the subset of cropped Yale Face Database B by either varying uniformly the face image pixels (intensities) or lowering their resolutions in the database subset. The simulation results show that SCAN descriptor has recognition rate that outperforms for both either two global face descriptors, i.e. Principal Component Analysis (PCA) and Linear Discriminant Analysis (LDA), or two local face descriptors, i.e. Local Binary Pattern (LBP) and Multi-Scale Local Binary Pattern (MLBP).

Full Text

Title: Layout design and simulation for analog neural network circuit using COMOS technology 0, 35 µm

Author (s): Robby Kurniawan Harahap, Brahmantyo Heruseto, Eri Prasetyo and Hamzah Afandi

Abstract: In this paper, a layout design for analog neural network designed using mentor graphics software based technology will ICFlow 0, 35. By using mentor graphics software ICFlow designing a layout of analog neural network component to a high speed camera and also perform simulations layout. Multiplier designing layouts, Op-amp layout, and Sigmoid layout. To generate the layout design rule check process performed (DRC) and Layout Versus Schematic (LVS). Resulting layout correctly according to the rules of technology.

Full Text

Title: Enhancement of sound insulation of floors using lightweight concrete based on nanostructured granular aggregate

Author (s): Ruslan Valerievich Lesovik, Larisa Nikolaevna Botsman, Victoria Nikolaevna Tarasenko and Alexey Nikolaevich Botsman

Abstract: Recently, on the territory of the Russian Federation, and in particular in the Belgorod region individual and private construction is well developed. Not enough attention is paid to problems of impact sound isolation for floor construction in free-standing residential buildings. Actually, solution of these problems concludes in balance between physical and mechanical properties, efficiency, environmental friendliness as well as resistance of heat transmission in builds. Application of concrete based on granular nanostructured aggregate as damping material for the constructing of a floating floor is proposed.

Full Text

Title: Review of microscopic model for traffic flow

Author (s): Rina Mardiati, Nanang Ismail and Adam Faroqi

Abstract: Today, the problem of cities urban transportation is becoming something we have to face in our daily life. In Indonesia, traffic congestion is increasingly serious. Several economic and social motivations can be related to the need to minimize the time spent in vehicles for transportation and consequently their related pollution problems. Due to these motivations, the literature on traffic phenomena is already vast and characterized by contributions covering modeling aspects, statement of problems, qualitative analysis, and particularly developed simulation generated by applications. This paper will provides a several literature review of microscopic model based on their utilities, including the critical review about the modeling approaches. Furthermore, some practical issues such as potential for future model improvement using existing and emerging data collection technologies is identified based on Indonesian traffic characteristics and will be presented as a contribution from this paper.

Full Text

Title: ZnO nanostructure hydrothermal synthesis: morphology control by O2 plasma conditioning

Author (s): Amirul Abd Rashid, Nor Hayati Saad, Daniel Bien Chia Sheng, Lee Wai Yee and Noriah Yusof

Abstract: This study investigates the effect of oxygen plasma conditioning to the final morphology of nanostructure prepared via facile hydrothermal synthesis. Two parameters; plasma temperature and flow rate of oxygen gas were varied while plasma time and power were kept constant. Scanning Electron Microscopy (SEM) analysis reveals that lower plasma temperature has bigger influence on diameter and length of the ZnO nanorods compared to high temperature setting. For both setting, lower oxygen flow rate will produce tighter distribution of diameter at ~ 10 nm and length of ~ 1.1 micron while higher oxygen flow rate produced nanorods with diameter of ~ 35 nm and ~ 2.2 micron in length. These results demonstrated that oxygen plasma process is one of the possible alternatives that can be used to manipulate the final morphology of ZnO nanostructure growth in facile hydrothermal growth method.

Full Text

Title: Ductility of the precast and monolith concrete on beam-column joints under cyclic loading

Author (s): Mardewi Jamal, Herman Parung, M. Wihardi Tjaronge and Victor Sampebulu

Abstract: The use of precast construction in recent years is increasing rapidly, and therefore has several advantages over conventional constructs which can provide high quality control, efficient in manufacturing of construction, can save time and costs and can reduce construction waste resulting from the use of formwork. One important part of the work is the work on the construction of precast beam-column connections, connection areas need to be designed such that it can meet the criteria of strength and ductility of the main building in case of earthquake loads. This study is an experimental study to investigate the ductility of precast concrete compared to monolith construction on the beam-column

joints structure subjected to cyclic loading. Test specimen consists of 2 beam-column joints, 1 precast construction (PC) and 1 monolith construction (MC) is made with a full-scale 1: 1. Column dimensions are 300 x 300 x 2600 mm and beam 200 x 250 x 1500 mm. connecting the precast concrete is a straight model, spliced using cement grout. Testing was conducted using displacement control, with the gradual type. The study reveals that PC has higher ductility compared with MC. Ductility of PC, μ = 4,379, while the MC, μ = 2,333.

Full Text

Title: Interactive map routes for public transportation in Surabaya running on smartphones and tablets

Author (s): Djoni H. Setiabudi and Lady Joanne Tjahyana

Abstract: The public transportation in Surabaya is quite varied, whether bus or minibus (called bemo). But that mass transportation is not interesting for Surabaya citizens to use. One problem is that the information about public transportation is not available completely. Department of Transportation of Surabaya already has a website, but not yet contain complete information on maps and public transportation routes. This study was conducted to address the lack of route information of public transportation in Surabaya by creating an online guide that can be accessed by passengers to get complete information on maps and travel routes for public transportation which is made interactive, simple, accessible and appropriate transport adapted to the conditions in the city of Surabaya. This research will develop the responsive websites that can be used on various types of smartphones and tablets using Android operating systems. Maps and routes are obtained from Department of Transportation of Surabaya. Survey was done by distributing questionnaires to determine the needs of the passengers of public transportation. Maps and route are developed using OpenStreetMap, Ajax, Javascript, XML, OpenLayer, PostgreSQL, PostGIS, Apache and PHP programming language. Passengers simply entering the destination of his journey could be the name of the street or landmarks and public places. The system will automatically choose the alternative route of bemo they should take, including the routes to reach the destination. The information includes the connecting route of bemo if the routes need to be connected by more than one route of bemo. Also the information regarding the price to be paid. From the test results, responsive website can adapt to a wide range of smartphones with a variety of screen sizes, from 3.5 inch to 5 inch smartphones and 7 inch tablets. However, there is a little difficulties for 3.5 inch smartphones to touch the button on the screen because the screen size is too small.

Full Text

Title: On-line monitoring system of water leakage detection in pipe networks with artificial intelligence

Author (s): A. Ejah Umraeni Salam, Muh. Tola, Mary Selintung and Farouk Maricar

Abstract: This research aims to detect the leakage of pipeline by computerized on-line system using pressure analysis, as a determinant of the leakage in a pipe. At the first stage, the data is obtained from pressure changed at each location of the leakage and taken from the EPANET, a hydraulic modelling system, as simulated data. The simulation data consist of input data, in the form of pressure at each junction, and the output data, in the form of magnitude and location of leakage. Furthermore, the data is processed using one of the Artificial Intelligence methods, The Radial Basis Function Neural Network (RBF-NN), which has two phases: the learning and testing phases. The test results of the method of Radial Basis Function Neural Network are proven to be able to detect the magnitude and the location of leakage with the 98 % accurate prediction result of the whole pipeline system. The next step is creating pressure monitoring equipment on-line to replace the pressure data from the EPANET to the real data, thus the pressure at each junction can be monitored in real time. And by applying the method of RBF-NN, magnitude and location of leakage can be known.

Full Text

Title: Local scour analysis study to hexagonal pillar by using shape curtain rectangular with wedge shape curve (RWWSC)

Author (s): Nenny, Muh. Saleh Pallu, M. Arsyad Thaha dan Farouk Maricar

Abstract: Threats to safety beneath the bridge structure often come on stream dynamics, especially the dynamics of the river bed around the foundation and pillar of the bridge. The degradation riverbed and local scour around bridge pillar foundations often a major factor structural failure under the bridge. The purpose of this study, provide a solution in the form of scouring around the zone damper models pillars of innovative technology and evaluate this further, analyzing the characteristics of the flow and scour around the pillars by using models as well as the influence of the placement of scour silencer silencer models to scour scour depth and distance that occur around pillars. This study uses tract of land with a cross section of the trapezium shape, observations made around the curtain is the flow velocity, depth of scour around the pillar, and deformation of the base around the pillars and curtains. This research is part of a dissertation by the title Scour Reducer Modeling By Using Shape Curtain Rectangular With Wedge Shape Curve (RWWSC) The Pillar Zone and expected results is an overview and analysis of the pattern of flow and scour around a pillar, especially with regard to agradasi and degradation.

Full Text

Title: Analysis of titanium alloys plastic properties under severe deformation conditions in machining

Author (s): Alexander I. Khaimovich and Andrey V. Balaykin

Abstract: In this paper we will cover a method of titanium alloys plastic properties analysis under severe deformation conditions during milling with registration of the cutting force components Fx, Fy, Fz in real time using a special stand. The resulting constitutive relations in the form the Johnson-Cook law for stresses and the dependence for the friction coefficient describing the titanium alloy VT9 plastic properties under simulate operating conditions.

Full Text

Title: Choice of production measuring instruments based on techno-economic analysis, taking into account the type I error and type II error

Author (s): Michael A. Bolotov, Elena A. Kapenkina, Nikolay V. Rusanov and Vadim A. Pechenin

Abstract: Measuring instruments are integral parts of production process. Their accuracy and cost parameters influence the quality and prime cost of the products made. One of the most important tasks is a reasonable choice of the measuring instruments' usage for re-equipment of the existing or equipment of newly engineered production facilities. Control of details with compound shape is performed with the usage of specialized equipment, analog instruments or modern measuring mens that are supported by computer means. As a rule, the cost and the accuracy of modern measuring instruments that are supported by computer means are higher than that of the general instruments. That's why the question emerges, whether big investments to the measuing instruments would recover. In this work the model of a resonable choice of production measuring instruments is suggested, which considers their accuracy and cost parameters. Measuring instruments' accuracy is considered by means of modeling error I and error II occurrences. As a selection criterion we use general expenditures for control, which account for control

performance and expenditures, connected with rejection of accepted parts or mistaken acceptance of unacceptable details as accepted ones. Production process' modeling is performed with the usage of the following models: "White noise", "Linear trend", "Fan process" and "Wiener process". In the course of modeling it was concluded that the usage of modern measuring instruments, characterized by high accuracy and high cost, is preferable.

Full Text

Title: Concept of combined gas-dynamic mechanical seal and discharge device of aircraft engine rotor support

Author (s): Sergei Falaleev and Alexandr Vinogradov

Abstract: The thrust bearing in aircraft engines and power plants takes in the axial force, which is transmitted through the power components on the engine attachment points to an aircraft. The magnitude of the axial force depends on the engine parameters. In modern engines with high values of thrust or power, the axial force magnitude will exceed the permissible value almost always. Therefore, the problem of thrust bearing unloading is an important scientific task. The discharge methods used in modern aircraft engines are associated with the extraction of the engine air flow, which reduces its effectiveness. The paper proposes the discharge device design for the thrust bearing of an engine rotor based on the gas-dynamic seal use. In this device, the seal will perform its basic function of oil chamber sealing and the additional function consisting in the thrust bearing discharge. The article also describes the discharge device construction and the methods of its operation are described. The gas-dynamic mechanical seal with spiral grooves is considered as the core element of the developed device. The paper presents the mathematical model of such a seal. Also, the results of the theoretical and experimental studies of the designed discharge device, confirming its performance.

Full Text

Title: Conversion of the blade geometrical data from points cloud to the parametric format for optimization problems

Author (s): L.S. Shabliy and I.B. Dmitrieva

Abstract: The issues of the blade geometry transformation are considered. The blade is traditionally defined as a set of points at several cross-sections, conversion to a parametric form is necessary for automated optimization problems solution. The method of the blade profile points harmonized displacement at its deformation within the optimization problem and the method of the profile parameters coherent change according to the blade profile height. The algorithm of the specified discretely analytic profile representation without the loss of accuracy is described.

Full Text

Title: Development of process optimization technology for laser cladding of GTE compressor blades

Author (s): Smelov V.G., Sotov A.V. and Kosirev S.A.

Abstract: The article describes the optimization technique for the process of titanium gas turbine engine compressor blades cladding. The essence of this technique is a multivariate iterative choice of technological parameters. The use of the given technique may significantly reduce the time of the production technological preparation of production, and also the share of experimental studies. The conduction of repair works concerning the laser cladding of compressor gas turbine engine blades became the experimental confirmation.

Full Text

Title: Mathematical model and numerical solution of the process of heating and melting of a traveling cylinder fed into a rocket chamber

Author (s): Aleksandr Ilyich Ryazanov

Abstract: The present work deals with analysis of a necessity to develop a metallization tool. Application of and fundamental requirements to the future product (portability, independence and easy operation) were determined. A small-size rocket chamber was taken as a basis for the metallizer design. A wire-shaped coating material is expected to be constantly fed inside the chamber. A mathematical model reflecting the behavior of the key process of the device namely the coating material heating and melting was elaborated. A two-phase Stefan problem with the established phase boundary was defined. A numerical solution of the problem was found by means of a finite volume method. The approaches used for software implementation of this method were described. There was developed an original program with the aid of which correctness of the problem statement as well as the solution stability within the wide range of initial conditions were ascertained. Accuracy and convergence of numerical approach were proved. This development effort will allow carrying out a modeling experiment, evaluating the metallizer performance at the design stage, determining the most efficient modes of its operation and assisting in designing of a gas-dynamic duct in the rocket chamber.

Full Text

Title: On transformation of hysteresis in damper rings made of "metal rubber" pressure-tested wire material under precessional loading conditions

Author (s): Yury Konstantinovich Ponomarev

Abstract: This work is aimed at demonstration of considerable transformation of hysteresis in structural damping systems with dry friction in case of vibrator movement pattern type change. A damper ring made of pressure-tested wire material "metal rubber" used for damping of pipelines, turbomachine rotors and engine components of air vehicles was chosen as a survey target for this work. There was elaborated a mathematical model of deformation of "metal rubber" material based on which a model of a damper ring being deformed by a vibrator (a rotor journal) along the ellipse trajectories with a possibility to change smoothly the correlation between the elliptical semi-axes from zero to one was developed. At that the trajectory form is being changed from a straight line to a circular curve and hysteresis in its projections onto the coordinate axes is being transformed from a pattern typical for any structural damping system with peaked vertices to an ellipse-like pattern peculiar to the viscous friction systems.

Full Text

Title: Optimization of working process parameters of gas turbine engines line on the basis of unified engine core

Author (s): V.S. Kuz'michev, V.N. Rybalko, A.Y. Tkachenko and I.N. Krupenich

Abstract: The selection of working process parameters of three-shaft turbofan is described. The possibility of creating a line of gas turbine engines of various thrust based on the selected engine core is studied as well as the effectiveness of unified engine core as a part of gas turbine power-plant with two-cascade core.

Full Text

Title: Meteorological parameters of Naradu glacier valley, India: An analysis

Author (s): Rajesh Kumar, S.S. Randhawa and Shruti Singh

Abstract: Keeping the importance of glaciers in mind it is necessary to measure different meteorological parameters as these factors play an important role in the survival of the glacier. An attempt has been taken to measure different meteorological parameters at the Naradu Glacier. The analysis is based on the records available for one year. Air temperature has been analysed on monthly and seasonal basis. Seasonal air temperature trend analysis shows negative trend in accumulation season while positive trend in ablation season. Both solar radiation and sunshine hour follow the seasonal trend i.e. highest in ablation season and lowest in accumulation season.

Full Text

Title: Structural composites for aircraft design

Author (s): Eugenio Pezzuti and Giampiero Donnici

Abstract: Composite structures such as CFRP offer significant weight reduction over the conventional aluminum alloys for aircraft. Weight reduction improves fuel efficiency of the aircraft by approximately 20% which results in cost savings and simultaneously reduces the operational environmental footprint. However, the new aluminum-lithium alloys offer significant improvements and are viable alternatives to CFRP. Aluminum lithium alloy 2195 with Friction Stir Welding is introduced as a successful alternative to CFRP primary structures. A "thick skin" monocoque design with integral stringers as crack stoppers is discussed. An old Macchi 205 WWII fighter plane has been redesigned both in CFRP and 2195-FSW for comparison. The final designs are comparable in weight, but 2195-FSW is more competitive based on mass production costs, reparability, and environmental impact. Macchi 205 airplane is used due to in-depth experience with the original aircraft geometry and loads. Knowledge gained here can be directly transferred to larger structures, from corporate jets to large transport category airplanes.

Full Text

Title: Approaches on future request prediction in web usage mining using datamining techniques

Author (s): B. Rosiline Jeetha

Abstract: Web Usage Mining is a kind of web mining which provides knowledge about user navigation behavior and gets the interesting patterns from web. Web usage mining refers to the mechanical invention and scrutiny of patterns in click stream and linked data treated as a consequence of user interactions with web resources on one or more web sites. Identify the need and interest of the user and it's useful for upgrade web sources. Web site developers they can update their web site according to their attention. This paper discusses the different types of methodologies which have been carried out in previous research work for discovering user behavior and predicting the future request.

Full Text

Title: Adaptive anomaly intrusion detection system using optimized Hoeffding tree

Author (s): S. Ranjitha Kumari and KrishnaKumari P

Abstract: Anomaly intrusion detection system is used to identify a new attack in the network by identifying the deviations in the network traffic patterns. Though it identifies new attacks efficiently, the false alarm rate is usually high in this system. As there may be attack in the network at any time and as the input traffic varies over time, we need a model which efficiently identifies the change in the network traffic and adapts quickly to generate an alarm. In this paper we have proposed an adaptive anomaly intrusion detection model using stream mining approach which identifies the changes in the network and adapts the underlying model immediately. We have used optimized Hoeffding Tree where the prediction phase is optimized using Particle Swarm Optimization algorithm to increase the accuracy rate and to reduce the false alarm rate. Also the node splitting in Optimized Hoeffding Tree is controlled using error rate to keep the misclassification error rate and false alarm rate within considerable range. The results of our model are compared with the results of static intrusion detection models using unsupervised machine learning techniques. The experimental result shows that our model performed better in accuracy and false positive rate compared to the static models. We have used NSL KDD data set for our experiment.

Full Text

Title: UB Logo-shaped ultra-wideband microstrip antenna

Author (s): Rudy Yuwono, Endah B Purnomowati and Muhammad H. Afdhalludin

Abstract: We proposed an UB Logo-Shaped microstrip antenna for Ultra Wideband Frequency (UWB) applications. The antenna is fabricated using FR-4 Epoxy material with dielectric constant (ε_r) of 4.4 with the thickness of the material is 1 mm. From simulations and measurements,t he antenna performances results VSWR less than 2 at frequency range 2.2 GHz to 10.8 GHz and has circular polarization in several frequencies range.

Full Text

Title: Survey on web structure mining

Author (s): B.L.Shivakumar and T. Mylsami

Abstract: In recent days the data generation is enormous in all the fields. Same as in Internet the data generation is high and there is no control over the data generation. To retrieve the exact data required by the online consumer is a tedious task. To achieve the same is done by data mining methods and its techniques. The data mining concept consist of web mining methods. The term web mining extracts the required information to user and to reach the necessary goal in the website. To attain the goal, use the concept of web mining. Web mining divides into web content, web structure and usage mining. Web structure mining plays very significant role in web mining process. The future algorithms for web structure mining such as Pagerank Algorithm, HITS, Weighted Pagerank Algorithm, Weighted page content rank Algorithm (WPCR) and soon. In this paper, identify their strengths and limitations of different algorithms used in web mining.

Full Text

Title: The heart auscultation: From sound to graphical

Author (s): Anas Mohd Noor and Mohd Faiz Shadi

Abstract: Heart sounds and murmurs have very small amplitude and frequency signals thus make it so difficult to hear without the correct tools. In clinical practice currently, physicians listen to the patient heart sound and murmurs by using the traditional technique as an example mechanical stethoscope which having low accuracy and sometimes could lead to the false diagnosis. Moreover, conventional method has no ability to record the sound measured. Worst still, this method highly depending on the physician's skills and experienced which this ability is decreased over time. The solution of this issue is highly important in early detection abnormality of heart sound. The stereo heart auscultation purposed in this research is to provide solutions rise from conventional technique. Furthermore, the sound signals produced from heart will be converted to the real-time graphically presented with time-frequency analysis, which provides more information about the heart conditions by sound produced. The system compromise hardware such as piezoelectric transducer, electronic circuit, data-acquisition device and also software for signal visualization or imaging. Database of heart sound and murmurs use to validate the developmental system replacing true patients. It has been demonstrated, in preliminary result, that heart sound classification according to on types of a heart valve problem such as aortic regurgitation, mitral regurgitation, tricuspid regurgitation, aortic stenosis and pulmonic stenosis could be differentiated using the development measurement system.

Full Text

Title: Organic deposit remediation using environmentally benign solvents: A review

Author (s): Okafor Henry Elochukwu, Ismail M. Saaid and Rasidah M. Pilus

Abstract: Asphaltene and paraffin wax remains the predominant organic deposit causing depositional problems in the production system. Different methods employed to remedy the problem most times has yielded different results. Chemical approach has proven quite effective due to its near hundred percent resolution of the problem. It is unfortunate that the frequently employed chemical solvents are not environmentally friendly. To this end, green solvent derived from natural and renewable sources are been utilized as an alternative to the conventional solvents for organic deposit remediation. This work critically reviewsgreen solvents: terpene, methyl ester, ethyl lactate and cardanol. These solvents have inherent properties that make them good potential for asphaltene and paraffin wax deposit remediation. A further combination of these green solvent with environmentally friendly surfactants greatly improves their performance to remedy organic deposits. Despite the natural abundance of raw materials for the production of these green solvents, its commercialization and utilization is not wide spread.

Full Text

Title: Comparative analysis of slim JIM antenna for HAM radio applications

Author (s): K. Ch. Sri Kavya, Sarat K Kotamraju and Sekuri Sukumar

Abstract: HAM radio applications demand antenna design with an aim of achieving maximum gain, which is affected by several factors. Impedance matching is one such factor which plays a vital role in such condition, as of improper impedance matching causes the formation of standing waves resulting in the reduction of gain. Generally wire antennas have an input impedance of 68Ω, which are detuned to 50Ω to have proper impedance matching with a co-axial cable; as a result it leads to decrease in gain. Slim Jim is a special wire antenna which has impedance selectivity of 50Ω, 100Ω, 200Ω and 400Ω. Due to the addition of a parallel element, the Slim Jim antenna has a considerable horizontal gain over the J-pole antenna. This paper provides a comparative analysis of four wire antennas mainly used by HAMs with the appropriate calculations using velocity factor and the results are discussed in detail.

Full Text

Title: Supervised image segmentation using LOT

Author (s): B. Suresh Kumar and B.L. Shivakumar

Abstract: The image segmentation is used to change or simplify the image representation for the Purpose of easy understanding or quicker analysis. Previously K-means classify images based on mean value of the groups formed with the help of centroids. FCM segments images based on the membership value and objective function used in it. Both of these methods work well for images with vast variations in its Pixel values but fails for pixels with slight variations. In order to overcome the disadvantages of various segmentation processes a new method of supervised segmentation is proposed using LOT (Linked Outlyingness Tree). The advantage of proposed method accuracy is more due to outlyingness Process and Process time is less.

Full Text

Title: Pressure and pressure derivative analysis for hydraulically-fractured shale formations using the concept of induced permeability field

Author (s): Karla María Bernal, Freddy Humberto Escobar and Alfredo Ghisays-Ruiz

Abstract: An appropriate characterization of such unconventional resources as shale formations requires the availability of practical and accurate tools. Wells drilled in shale formations have to be hydraulically fractured for commercial production since the permeability is very low to ultralow reaching values in the order of nanodarcies. If these formations are tested by keeping constant the flow rate, then, there is a need of providing a pressure-transient interpretation technique which in this research follows the TDS philosophy. Contrary to transient-rate analysis where a third flow regime is observed during the transition period between linear and pseudosteady state which allows for the model identification, in transient-pressure analysis that period does not exist so identification of the permeability model cannot be obtained. Therefore, the developed equations for permeability, half-fracture length, skin factor and reservoir length are used without considering the model. The equations were successfully tested with synthetic examples.

Full Text

Title: Comparative evaluation of the top heat loss coefficient of a triple glazing trapezoidal solar cooker

Author (s): M. Sidibé, S. Touré, D. Traoré, D. Fofana, M. A. Djoman, A. Gbané and W.F. Fassinou

Abstract: A solar cooker requires absorber temperatures that are definitely higher than 100°C. A proper estimate of the heat losses is important to evaluate the solar collector efficiency. The heat losses from the bottom and the lateral sides of the collector are easily estimated from the knowledge of the thermal insulating materials. As for the heat losses from the top, they represent a more important fraction of the energy balance. Hence, a proper estimate of the top loss coefficient U_L is relevant. In the present paper, some experimental data are used to evaluate U_L. This evaluation is performed by using the electrical analogy, but also by means of some empirical correlations. The values of U_L are plotted against time. The evaluations of U_L with the absorber temperature are also plotted. Some statistical parameters such as MBE and RMSE are calculated. The study shows that U_L is overestimated by the empirical correlations. In addition, for the triple glazing solar cooker studied here, the comparative study showed a better agreement between the top loss coefficient obtained from the electrical analogy and the prediction by the Malhotra et al., correlation.

Full Text

Title: Tapered step CPW-FED antenna for wideband applications

Author (s): B T P Madhav, Sarat K Kotamraju, P Manikanta, K Narendra, M R Kishore and G Kiran

Abstract: A novel CPW-FED tapered step grounded antenna is proposed for wideband applications. We observed that there is an enhancement in the bandwidth with the addition of tapered step ground in the geometry of monopole antenna. Antenna is prototyped on FR4 substrate (ε_r =4.4) with dimensions of 20X20X1.6 mm. It has been observed that circular aperture with tapered step grounded model is operating over wide range bandwidth from 5-18 GHz. Good agreement is attained between simulation and measured results. Parametric analysis with change in substrate material is also studied and presented in the current work.

Full Text

Title: An anisotropic cosmological model filled with perfect fluid in a modified Brans-dicke theory of gravitation

Author (s): G. M. Wali Ullah and Mohammed Ashraful Islam

Abstract: We present a new Cosmological solution for an anisotropic homogeneous Bianchi type-1 Cosmological model in modified Brans- Dicke theory with variable cosmological constant. We discussed the physical and geometrical properties of this model for radiation era in detail.

Full Text

Title: Numerical methodology to determine fluid flow pattern with corrosion in pipe bends using computational fluid dynamics software

Author (s): Muhammadu Masin Muhammadu, Kahar Osman and Esah Hamzah

Abstract: Flow-accelerated corrosion (FAC) is the most common failure in production and processing industries and nuclear power plants. The simulations were performed using Computational Fluid Dynamic (CFD) simulations of the flow in elbows of the Flow Accelerated Corrosion (FAC) test loop and using the FLUENT commercial software. The model geometry and mesh were created using the ANSYS FLUENT 14.0. The objective is to establish the relationship between the fluid flow patterns and corrosion behaviour within the pipe bend. The paper presented the results of the simulations of the flow in form of velocity vectors for two types of pipe bend, both mitred bend and smooth bend with three different Reynolds numbers 37387, 49850 and 62313 respectively. From the results obtained, it was observed that the mitre bend produces more wall shear stress, turbulent intensity and turbulent kinetic energy compared to the smooth bend and thus predicted to produce more corrosion However, with realizable k- é model, more significant differences are evident when compared with RNG k-è model and standard k-é turbulence model. The maximums in both turbulent intensity, wall shear stress as well as turbulent kinetic energy now appear on the outer radius, near the elbow exit. Also, the simulation is used to obtain the FAC rate of the various elbows. The result shows that the FAC rate of the outward bend of the elbow is two-orders than the inward bend of the elbows.

Full Text

Title: Use of a sound source localisation system for the experimental determination of vibration patterns of a square plate

Author (s): Jürgen Göken, Henning Arends and Hans Brink

Abstract: It is well known that there are only a few non-contact methods to localise sound and vibration sources. Keeping noise due to vibration on a low level is a very important matter, not only for passenger shipping companies but also for maritime classification societies like the Germanischer Lloyd (GL). Own measurements have shown that vibrations caused by ship´s structure occur primarily at the windows of a ship. The noise caused by these vibrating windows turned out to be a very significant sound source that can be disturbing for crew and - especially on passenger ships - for passengers. In order to visualise the sound field and to accomplish an accurate localisation of the vibration amplitudes occurring in an acrylic glass square pane which was excited into vibration a sound source localisation system (Microflown™ probe) including a USB camera was used. The experiment was performed at excitation frequencies of 20 Hz, 30 Hz and 50 Hz. Additionally, the influence of different mountings and shifting of the position of the device (lifting magnet) for initiation of vibrations were investigated. The received data were compared with Chladni figures that developed under the same experimental conditions.

Full Text

Title: A digital soil moisture meter using the 555 timer

Author (s): Sam B. Onoja, Jonathan A. Enokela and Grace O. Ebute

Abstract: A soil moisture meter is useful for the indication of the amount of water content of a given soil sample. This information is especially useful to people involved in the management of irrigation systems and to other professionals who need to measure soil water contents. This project focuses on the design and implementation of a digital soil moisture meter that uses the 555 integrated circuit timer as a major component of the design. The 555 timer was configured so that the probes connected to the soil indicate the resistance of the soil under test and hence the water content of the soil. The digital soil moisture meter was calibrated and the reading, which is displayed on a liquid crystal display panel, ranges from 0.01 to 9.96 ohms-centimeters for very dry soil to very wet soil. The blinking of a bank of light-emitting diodes connected to the meter visually indicates the moisture content of the soil being sampled. The meter was constructed and packaged so that it is very portable and can be used by farmers and other professionals on the field.

Full Text

Title: Analysis of susceptibility to suffusion

Author (s): N. Santhana Krishnan and T. R. Neelakantan

Abstract: In the modern world of science and technology, rapid growth has escalated the need for specific and appropriate techniques so that construction activities ensure comprehensive solutions to each and every problem faced by the construction industry. It is in this respect a study of suffusion has been taken up. A study of collapse of dams, erosion of embankments and damages to buildings due to earthquakes lead us to conclude that suffusion has played a major role in all the above setbacks. Suffusion occurs due to voids and uneven particles in soils leading to seepage force causing damages. This requires analysis of geometric criteria of the soil and hydraulics that causes suffusion. This project attempts at assessment of susceptibility to suffusion through geometric criteria. To have deeper insight and finer evaluation, five different soil samples were analyzed using different methodologies proposed by nine authors. While six methodologies have confirmed that all the samples are suffusive, three methodologies have shown variations and out of these three, Burenkova's methodology is widely used for assessment. Unfortunately this methodology was found to give unsafe results. Wan and Fell (2008) refined Burenkova method and even this refined method was found to give unsafe results. Therefore attempts have been made to refine Burenkova method. Taking up 101 gradations from other studies and 5 from current study, a broader analysis has been done and improved limits have been suggested. Different models have been proposed for widely-graded and gap-graded soils. New models have been proposed based on two ideas. The first idea is that the d_{90}/d_{60} value should increase as d_{90}/d_{15} value increases. Second idea is that at lower values of d_{90}/d_{15} the stable zone will be small and as the d_{90}/d_{15} increases stable zone also increases. Among the five models proposed for widely-graded soils, model 2 is found to be most appropriate and among four models proposed for gap-graded soils, model 1 is found to be most appropriate. Along with refinement of Burenkova's method, the authors also propose a new better method for finding susceptibility of soils to suffusion. The authors use division between D and d_5 for the same. D represents higher diameter at gap location for gap graded soils or higher diameter corresponding to highest value of division between two successive diameters with a difference of 10% (first division alone be for a difference of 5%, between d_{10} and d_5). d_5 is the representative of fine grains while D is the representative of voids. D/d_5 value less than 4 corresponds to stable soils while greater than 6 corresponds to unstable soils and between 4 to 6 indicates transition zone.

Full Text

Title: Learning by failures: The "Astura II" concept car design process

Author (s): Luca Piancastelli, Leonardo Frizziero and Giampiero Donnici

Abstract: Accessibility has always been a problem in sport car. Very low car floors, small doors, almost horizontal seating position with upward cramped legs are the negation of comfort. In marketing clips long legged girls show their knickers for the joy of the potential buyer. In the old times there were rumors that the four seats, automatic transmission Ferrari was made for the Drake himself, who was "obliged" to own and drive a Ferrari. Yet the only place where people with impaired legs are identical to all the others is the car. However the sports cars are usually denied to people with problems of motion. The Ercolani's idea was to overcome these problems by several concurrent solutions. The idea proved to be nice, while the design approach from sketch to 3D-CAD proved to be a complete failure. The final project fulfils many of the requirements, but with a completely different style. This project proved the substantial unfeasibility of the outside-in approach in the automotive field.

Full Text

Title: The extent of travel time increment due to pavement distress

Author (s): Akinmade Oluwatosin Daniel, Danladi Slim Matawal, Francis Aitsebaomo and Emeso. B.Ojo

Abstract: In planning and design process for all aspect of road network, traffic flow parameters estimation is crucial as such travel time which is the reciprocal of speed and is an indicator or a measure of the condition and maintenance of the road surface was established in the study using moving car observer method. A 1.2km stretch of the road which is Michael Opera Street of two lane spanning from Herbert Macaulay way to olusegun obasanjo way wuse zone 2 was used as test section. Before the rehabilitation of the road, a visual assessment of the road was carried and it was observed that cracks dominated in the pavement distress with about 62% followed by potholes and patches about 20%. The travel time was 3.06mins from A to B and from B to A it was 3.47mins having a flow of 713veh/hr and 700veh/hr with LOS B .However after rehabilitation the travel time reduced to 1.49mins and 1.56mins respectively and a flow of 1177veh/hr and 1014veh/hr was recorded respectively with LOS of C. This paper concludes that there was 51.3% and 55.04% reduction in travel time on both ways and the transportation policy of banning the mini buses from entering the wuse district made them move to this arterial to drop passengers a via berger junction and also the newly rehabilitated road attracted more traffic and we observed an increase in the motorization level after 8months of data collection, hence adverse condition, pavement distress reduces travel time.

Full Text

Title: The reduction of run-up and run-down with perforated block breakwater

Author (s): Tamrin S., Pallu H., Parung and A Thaha

Abstract: Man took a step to protect the seashore using seawall or revetment as one of the concerns towards the condition of the seashore, but many shore protectors like seawall and revetment had been found broken. Its erosion affects the feet of the construction. One of damages caused by that is the high run-up and run-down when the wave attacks at revetment wall. So it is necessary to find a method that can reduce the result of run-up and run-down at the building structure, create an enhancement of the structure that is safe from the wave attack with the height of the structure, and also increase the cost. Run-up and run-down can be reduced in so many ways, such as the increased height of the structure; the wall can be made from rough material or to reduce the wave energy that can be obtained by having the wall with perforated block. Perforated breakwater is an alternative to reduce the wave energy and the idea of making this seawall or revetment made from porous block will be a solution to handle run-up at the seashore to protect the building structure and the hole of the porous concrete block will reduce concrete use and could be a proliferating place for marine biota. The purpose of this research is to investigate the performance of a perforated breakwater which is made of concrete block in order to reduce the run-up and run-down. A research with 2D physical modeling is conducted in the Coastal Engineering Laboratory of Hasanuddin University. Three different types of perforated concrete block that have the different diameter and porosity which are simulated with the different height, period, and water depth (*H, T, and d)*. The parameter dimension of the models is using a geometric scale of 1:20. The result of the research shows that the parameter of the armor model which is represented by the model length (*B*), porosity (ζ), Irribaren number (*Ir*) and the wave steepness (*Hi/L*) is quite influential towards the reduction of *Ru* and *Rd*. As the model gets longer and the porosity values of the block gets bigger, then the bigger the reduction of *Ru* is. The relationship between *Ru* and *Rd* with *IrK* is presented in the form of a relationship of dimensionless parameter, where K is a function from ζ, *B/L,* and *Hi/L*. Therefore, the empirical equation

that has been derived could be used to plan a prototype system for the coastal protection with perforated concrete block.

Full Text

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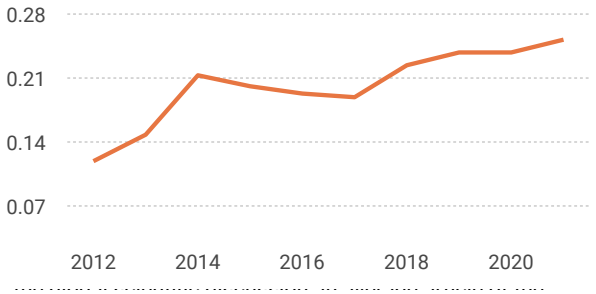

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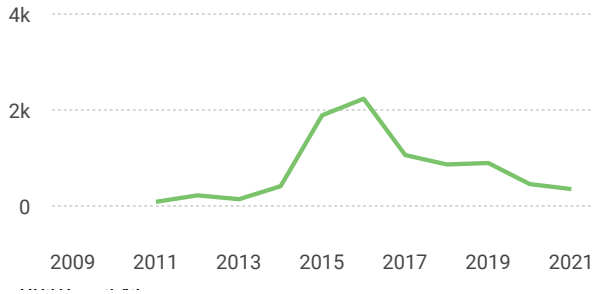

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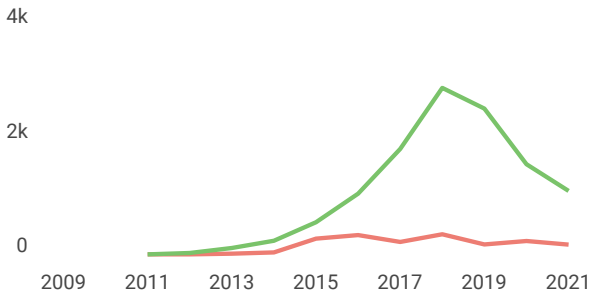

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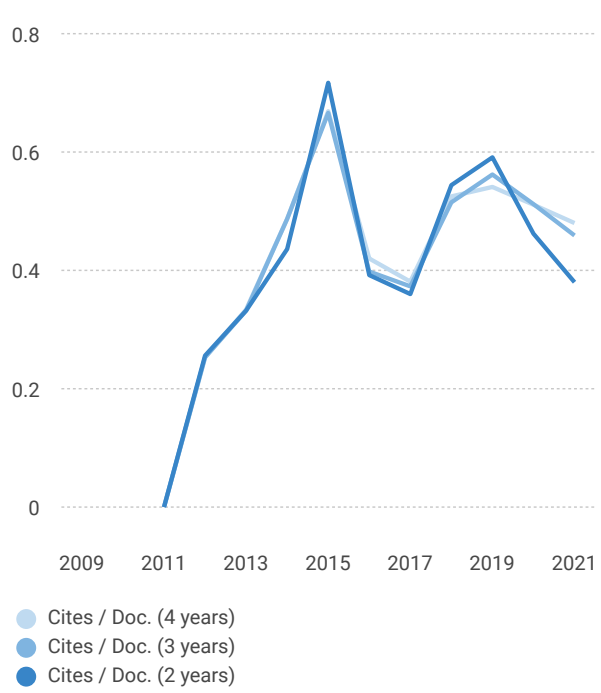

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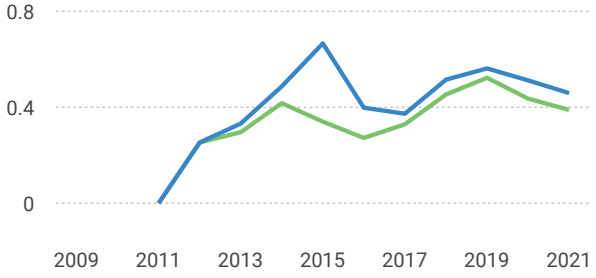

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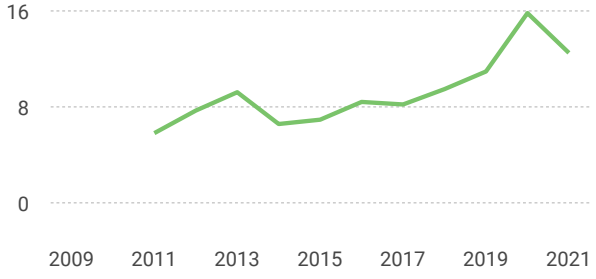

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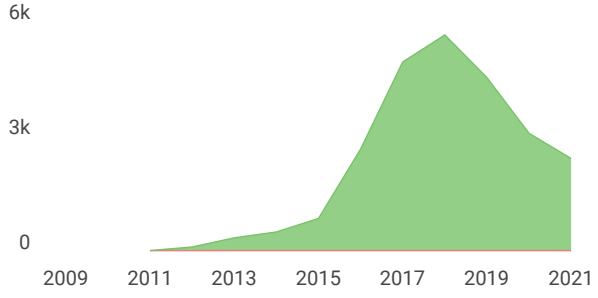

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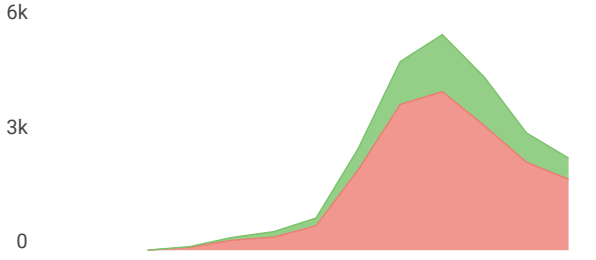

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