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Aerospace

Numerical Simulation of 3D Transonic Flow over Onera M6 Wing

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Abstract— This paper presents performed numerical 3D transonic flow simulation over a Onera M6 wing. It is developed a suitable numerical model of the wing and it is created a three-dimensional mesh around the wing using the available techniques in ANSYS software. Also, it is obtained iterative convergence by using recommended solver settings. The performed numerical 3D transonic flow simulation over a wing can visualize 3D flow characteristics. The main goal is to determine whether the numerical flow simulations over the wing performed by computational tools provide appropriate approaches for calculations of the complex 3D transonic flow characteristics. The main value of the paper is that the obtained results with the realized numerical flow simulation are compared with the NASA experimental data using the source [1].
Keywords— Aerodynamics, ANSYS software, Computation Fluid Dynamic (CFD), Lift and Drag coefficients, Transonic flow, Wing

Comparative study of Analytical and Numerical Computational Fluid Dynamics (CFD) solution of Ramjet Inlet

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Abstract— The main objective is to compare the analytical and numerical results on CFD solution of ramjet inlet. The engine inlet is of primary importance for all air-breathing propulsion engines. Its major function is to collect the atmospheric air at free stream Mach numbers, slow it down and to compress it efficiently. The geometries used are planar with various ramp length at Mach number 3. Inlet Design I, II and III are chosen from geometry design based on oblique shock theory, ramjet inlet design and the oblique shock is produced at the edge of the ramp tip. They are designed with different ramp length in a way to produce a series of oblique shocks merging at the cowl tip of the engine and allow the oblique shock train i.e. the oblique shock is absorbed through the holes, then expands behind the length of the cone thus increasing the mass flow rate for adequate combustion. The goal of this paper is the comparison of total pressure

recovery for variable ramp length of the ramjet. The final results of analytical and numerical solution are compared by the efficiency of ramjet engine (total pressure losses). The design and analysis of inlet is done in 2-D with the help of ANSYS software.

Keywords— CFD Analysis, Inlet Modeling, Oblique Shock Waves, Ramps, Ramjet Inlet

Study Lift and Drag on NACA 23018 Airfoil and Stresses and Deformation of Semimonocoque Model Wing

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Abstract—This paper is studied lift and drag on NACA 23018 Airfoil and the stresses and deformations of semimonocoque model wing at maximum lift to drag ratio condition and stall speed condition by using CFD program which was ANSYS FLUENT 18.1. Firstly, the wing section is used as NACA 23018 airfoil. The flow fields of the airfoils are studied at different angle of attack 0, 2, 4, 6, 8, 10, 12, 14 degree to get the aerodynamic parameters such as lift coefficient, and drag coefficient, etc,. Secondly, the maximum lift to drag ratio condition and stall speed condition is checked to study the stresses and deformations in these two conditions. And then the stresses and the deformations are compared at maximum lift to drag ratio condition and stall speed condition.

Keywords— Angle of Attack, Computational Fluid Dynamic, Deformations, Maximum Lift to Drag ratio, Stall Speed, Stresses

Design and Construction of Hydro Turbine and Pumping System for Irrigation

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Abstract— Hydro turbine is a rotary engine that extracts energy from a fluid flow by transferring the potential energy to electrical energy. Depending on the head and water flow rate, the variation of velocity, pressure and momentum cause the runner blade to rotate. This research analyzes the usage of diffuser design to increase the velocity of flowing water in improving the hydro turbine performance.

The research is not only to produce electricity from flowing water but also to serve the irrigation by using pumping system to the farms. So the pumping system is also considered to do irrigation. The battery is also used to store the electricity power that is produced by hydro turbine. The energy to supply the pumping system can be gotten from the storage source of battery.

For the region where the flowing water velocity is only 3 ft/sec, the theoretical rotor tip speed can be increase to 7 ft/sec with the effect of diffuser. The theoretical electricity production of

designed hydro turbine is 165 Watt and the designed pumping system can transport the water to the head of 4-5 m with 1 inch pipe for irrigation.

Keywords— Diffuser, Hydro power, Hydro turbine, Pumping system and Irrigation, Renewable Energy

The Effect of Turbulence Models on Film Cooling Hole Effectiveness

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Abstract— This paper aims to mainly investigate the effect of turbulence models on effectiveness of turbine blade film cooling hole. Simple cylindrical hole is as a base-line, 3-D computational anti-vortex geometries are modeled in this research work. Numerical simulations have been performed at six different coolant-to-mainstream blowing ratios and used three different turbulence models; k-e, RNG k-e, SST models to obtain detailed film cooling effectiveness. The effects of blowing ratio and turbulence model on centerline effectiveness are performed in downstream flow field.

Keywords—Adiabatic cooling effectiveness, Anti-vortex, Blowing ratio, CFD analysis, Film cooling, Turbulence model

Analysis of Aerodynamics Performance
Over NACA 4412 stepped airfoil by using OpenFOAM CFD tool

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Abstract— The main objective of this research was to investigate the lift and drag characteristics of stepped airfoils and analyze with the conventional NACA 4412 to examine the possibility of using such airfoils on Unmanned Aerial Vehicles (UAV's). A step was introduced at mid-chord, with a depth of 50% of the airfoil thickness at mid-chord position extending till the trailing edge of the airfoil. Computational studies were conducted flow simulation constituting the activation of step of the airfoil with a goal of enhancing the aerodynamic performance. Three different cases for base and modified airfoil each for 9 extra cases of study had been performed in changing the Reynold number. The case study conducted as a part of the research employing a stepped airfoil configuration by comparing its aerodynamic characteristics with the conventional one. The primary objective of the case study was to identify and outline a step schedule for the flight envelope of the UAV's using a stepped airfoil configuration to obtain enhanced aerodynamics performance over conventional airfoil originally used and hence improve the flight performance characteristics like higher angle of attacks of the aircraft.

Keywords— Drag, Lift, Open FOAM, Passive flow control, Stepped airfoil

Modeling Discontinuities by Smoothed Particle Hydrodynamics Method

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Abstract— In this paper, smoothed particle hydrodynamics (SPH), truly meshfree, Lagrangian and based on conservation laws, is applied in 1 dimensional shock tube and 2 dimensional shock tube. In this study, the new formulation SPH is applied in simulating of supersonic compressible flows with sharp discontinuities. Moreover, to handle and capture shock waves and any discontinuities in fluid dynamics, the new developed SPH, is applied with treatment of some numerical aspects to improve the boundary deficiency problem, and to restore the kernel consistency in the discontinuous regions.

Keywords— Discontinuity, Mesh free method, Numerical method, Shock wave, Smoothed Particle Hydrodynamics

Development of Microcontroller Based GPS Navigated Autonomous Land Vehicle (ALV) System

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Abstract— This paper focuses on the research of the navigation system of an autonomous land vehicle (ALV) in real-world environments. The author is motivated to research this system because ALV is capable of operating in a wide variety of situations and solving a number of difficult technical challenges. In this system, there are three units such as sensor unit, microcontroller and motor driver unit. The microcontroller unit, arduino Mega, is the brain of the system and sensor unit is the heart of the system. Arduino gets position data from Global Positioning System (GPS) and compass, and processes, finally, output signal is sent to motor driver to drive vehicle towards target waypoint. If this vehicle finds obstacles in path, sonar senses the distance between obstacles and vehicle, and, microcontroller manipulates to avoid this obstacles. Finally, the track of autonomous land vehicle is logged in SD card by using SD card module and this logged data can be reviewed on Google earth. As a result of verification process, GPS navigated autonomous land vehicle (ALV) moves to the target waypoint between 0.52 meter minimum deviation error and 0.71 meter maximum deviation error.

Keywords— Autonomous Vehicle, Global Positioning System (GPS), Microcontroller, Navigation, Obstacle Avoidance

Analysis of Ethanol-Blended Fuels Combustion in Aircraft Gas Turbine Engines

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Abstract— Because of the potential shortage of fossil fuels, fuels from biomasses will be very important in future. Ethanol is one of the most promising biofuels. In Myanmar, ethanol can be easily produced from agricultural production and forestry. In this paper, the study of ethanol-blended fuels combustion in aircraft gas turbine engines is presented. As results, adiabatic flame temperatures and combustor exit velocity with different equivalence ratios are investigated. The formation of pollutants such as CO2, CO, H2, H2O, N2 and NOx has also been investigated to cover gas turbine applications. The data have been compared with those calculated for gasoline combustion.

Keywords — Adiabatic Flame Temperature, Combustor Exit Velocity, Ethanol-Blended Fuels, Gas Turbine Engines

Combustion Simulation in The Chamber of Small Liquid Rocket Engine with Doublet Injectors and Shower Head Injectors

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Abstract—— Combustion plays an essential role in the generation of power. The heat discharge, maximum temperature and emissions are highly depending upon the propellant mixture ratio, type of propellant used. In this study combustion parameters in combustion chamber and effect of injectors position that are 45^0 inclined doublet and shower head in small liquid rocket engine and Fuel and oxidizer injectors are changed in position for eight designs. Combustion temperature, pressure and velocity of the Kerosene and Oxygen are studied on the maximum temperature in combustion chamber that effective increasing the thrust of engine. Ansys fluent software is used for analyzing eight designs the combustion process. It is observed that the maximum temperature in combustion chamber and the best design is selected.

Keywords— Ansys fluent, Combustion, Kerosene and Oxygen Injectors, Pressure, Temperature, Velocity

Technology

Modeling and Implementation of Digital Clock Based on Electronic Design Tool

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Abstract— This paper presents the implementation of a digital clock using VHSIC Hardware Description Language (VHDL) and EDA tool (Quartus II). The used of the VHDL design entry method, in which the desired circuits such as counters, generator, and decoder are specified in the HDL language. In the proposed designed to implement an accurate digital clock, a basic clock frequency is required. The required clock frequency is obtained from the educational and development board using a 24MHz signal. The designed blocks have been implemented with VHDL code and synthesized in Quartus II software using version 9.0 web-package. The outputs display are compiled and demonstrated on the FPGA development board.

Keywords— Counters, EDA, Frequency, FPGA, generators, VHDL

Ball and Beam Control System with PID Controller

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Abstract— This paper presents the experiment of a dynamic ball and beam system. In this project, a ball is controlled to reach a desired distance by using PID controller. The disturbance such as a push from a finger is rejected. This system consists of a ball, a beam, a dc servo motor, an ultrasonic sensor and a PID controller, arduino microcontroller. The difference between current position and desired position is controlled by PID algorithm which is built in arduino. Arduino sends the signal to the DC servomotor to change the ball position. DC servomotor rotates and then the beam moves up and down to meet the set point of the ball. Matlab software program is used to plot real time response by interfacing arduino to PC. The system characteristics are determined with different values of controller parameters on this plot in order to obtain the best performance of this control system.

Keywords— Arduino, Ball and beam, DC servo motor, Matlab, PID controller

Design and Construction of Microcontroller Based Domestic Water Heating System

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Abstract—This paper presents details of the development of a prototype water temperature control system in household used for bathroom. The process consists of a small and fast

responding plant which can be controlled in the temperature range between 15°C and 60°C. In this paper, PIC 16F877A microcontroller is used to control the water temperature and K-type thermocouple sensor is used as a temperature sensor. The sensor output voltage produces few milli voltage ranges. Therefore, thermocouple signal conditioning amplifier is needed to provide enough voltage range. Analog data can be converted to digital by using microcontroller. The purpose of microcontroller is to read the input data from the amplifier and to send this data into the liquid crystal display (LCD). When the power is applied to the heating element, the water becomes warm and it reaches to the required setting point. The LCD displays continuously the current temperature and the desired temperature ranges. When the current temperature reaches to the desired temperature point, the water heater power is OFF and the water temperature falls down. At this time, LCD displays the current temperature. After three seconds, the sensor is sensed again the water temperature until the power turn OFF. And then 12V relay is used to switch the water heater according the temperature setting value. Desired temperature range can be adjusted by using the switch mode (Up/Down key) in manual. This water control system is simple and easy to use in household for bathroom.

Keywords— PIC 16F877A microcontroller, K-type thermocouple sensor, Liquid Crystal Display (LCD), Signal conditioning amplifier, Water Heater, Switch mode

Design on PID Controller Using Operational Amplifiers for Speed Control DC Motor

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Abstract— The Proportional-Integral-Derivative (PID) controller design and choosing parameters according to system response are proposed using eight simple operational amplifiers in this paper. PID controller is used for speed control DC motor with the second order system. PID controller parameters (Kp, Ki, and Kd) are tuned for achieving desired performance. The aim of this system is achieved a minimum rise time, minimum overshoot, no oscillations and no steady state error. At first, operational amplifiers (741ICs) are used to design PID controller for unit step response. The parameters (Kp, Ki, and Kd) of PID controller are simulated by MATLAB program to desire the output responses. The second order DC motor is controlled by PID controller based on MATLAB program. The PID controller is also simulated by Proteus Software. The simulated results are approximately equal to the theoretical output results. Moreover, the system stable is shown by using root locus method. PID controller is suitable for DC motor with minimum rise time and minimum settling time.

Keywords— Op-amps, PID, (DC) motor, Step Responses

Design and Implementation of Signal Conditioning Circuitry using Operational Amplifier with Data Converters

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Abstract— This Signal conditioning circuit is an electronic circuit that converts signals provided by a sensor to useful electric signals. Signal conditioning circuits are widely used for manipulating analogue signal in such a way that it meets the requirements of the next stage for further digital processing. The use of op-amp allows signal conditioning circuits to be more compact and precise in this implementation. Signal conditioning circuits using operational amplifier with data converter that converts input analog signal from sensor (such as Temperature sensor, Light Dependent Resistor) to output digital signal are discussed and analyzed. It can sense light density from 100 LUX to 800 LUX and temperature range from 8°C and 85°C. PIC16F877A microcontroller is used to read the input temperature level and light sensitivity of the LDR via signal conditioning circuit. The control program of the PIC16F877A is written by PICBasic Pro language. The circuit simulation of signal conditioning circuit designs are created by protetus electronic software and multisim 10 electronic software.

Keywords— Analog-to-digital converter, Light sensor, Protetus electronic and Multisim software, Signal conditioning, Temperature sensor

Camera's Position Control in UAV Using Ziegler-Nichols Tuning Method

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Abstract— This paper describes analysis for camera's position control in UAV using Ziegler-Nichols tuning method. Devices mounted with gimbal in unstable environments are used to keep in stable position. If the camera is not used control algorithms, it loses the target path of object and fails to meet the desired objective. As a control device, two-axis gimbal of brushless DC (BLDC) motor has been applied for camera's position control in UAV. BLDC motor is more reliable to control than conventional DC motors. The specific control parameters of BLDC motor with gimbal have been designed. Transfer functions by using Laplace transform have been modelling for control approach. And then to be more stabilized responses, feedback system is used for camera's position control. Gyro has been used as a feedback element and to sense the desired direction. PID controller of camera's position control is used to improve the performance of the control system and to get the desired position control. In addition, results of comparison between P or PI and PID controller have been conducted by MATLAB software. To get the desired result, Ziegler-Nichols tuning method has been applied. Overshoot and steady state error have been eliminated and furthermore rise time and settling time are within the acceptable range due to Ziegler-Nichols tuning method.

Keywords— Brushless DC motor, Gimbal, Gyro, MATLAB, Transfer function, Ziegler-Nichols

Face Detection and Tracking System for Pan/Tilt Controlled Webcam by Using Open CV and Arduino

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Abstract— Computer Vision is very popular in modern electronics era. Face detection is a process being used in a variety of applications which identify human faces in real time. This paper describes the system of research on face detection and tracking system by using OpenCV. The system consists of Window PC, Webcam, Arduino and Servo. OpenCV with Microsoft Visual Studio and Arduino IDE are used as software tools. USB Webcam is connected to a computer's COM port and the main code based on OpenCV Image Processing algorithm captures the video stream, and then detect and analysis any face that walks around web cam. The main program computes the detected face's frame position and converts the position data to trace that face. Arduino receives these positions information and executes to servo drive directions. Two servos are used to pan and tilt movement of the camera angles in order to track face in real time. Various face tracking systems are applied in many security fields. This paper provides the technical background on face processing and useful sharing on difficulties of experimental research works.

Keywords—Arduino, Open CV software, Webcam, Window PC

Internet of Things (IoT) Based Solar Powered Smart Weather Monitoring System

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Abstract— This paper purpose wireless weather station adapted to modern needs or habits, typically by using web based information system. Today, Internet of Things (IoT) is popular developing environments that information over cloud server. This research work provides the telemetry sensor collected from local weather information: mainly temperature, relative humidity, heat index, battery condition, rain condition, wind speed and direction, which are referenced on desired local point condition. ESP 8266 Wifi device operated under commands of Arduino Mega 2560 microcontroller, performs active cloud connection with "ThingSpeak" that is the open IoT platform with MATLAB analytics. This project purposes for open field applications, therefore, the system is provided by solar powered battery system implemented by fully auto charging to extend battery life. The weather information uploaded to web page can easily access from worldwide and even access on Android mobile phone. Application Program Interface (API) is a key to access the weather monitoring on web produced from Thingspeak web server. The whole system features compact design, less maintenance and water proof system. Sensor can also calibrate to gain accurate measurement on local point for further usage of weather forecasting by storing long term data on cloud sever. Furthermore, smart weather station

can be used in any application fields like that meteorological departments, aviation and marine industries and even the agricultural industry where are covered by wireless internet network.

Keywords— Data acquisition, Data visualization, Internet of Things (IoT), Rain gauge, Real-Time monitoring, Wind speed sensor (Anemometer)

Microcontroller Based Closed Loop Automatic Heating System

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Abstract— This paper suggests microcontroller based closed loop heating system. In this paper, Arduino-based on-off controller is designed in the laboratory to control the temperature consists of hardware portion; five DS18B20 temperature sensors, Arduino Mega 2560 board, N-channel metal oxide semiconductor field effect transistor and 12V DC heater while the software part; processing integrated development environment and Arduino integrated development environment. Processing IDE is used for graphical user interface application while the Arduino software is used for Arduino. The user set the desired temperature on the personal computer. The temperature sensor senses the ambient temperature and display on personal computer which is then compared to desired temperature. When the ambient temperature is below the desired value, the heater is triggered on to increase temperature. When the ambient temperature is above the desired value, the heater is triggered off to decrease temperature.

Keywords—12V DC heater, Microcontroller, Sensors, Temperature

Spacecraft Power System Design Based on Ion-Thruster of Electric Propulsion

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Abstract—This paper presents, the calculating of the spacecraft power system design of the geo stationary communication satellite depending on the payload of electric- ion thruster. In the past few years, there have been a problem related with the chemical propulsion system in the space exploration. Therefore, the electric ion thruster has high fuel efficiency to travel further, faster and cheaper than any other propulsion system. Spacecraft power system design, include the pay load power and sub-system power consumption. The communication satellite power sub-system consists of thermal control, Attitude control, power, CDS, communications, propulsion and mechanisms. Battery sizing and solar panel sizing is calculated depending on the satellite total power requirement. According to the satellite power requirements, battery sizing and panel sizing are calculated in this paper. The paper reaches the conclusion that the proposed design is suitable on spacecraft fuel efficiency and technical facts.

Keywords—Communication, Electric ion thruster, Solar panel and battery, Satellite

Microcontroller Based Automatic Voltage Regulator

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Abstract— This research proposes the implementation of a microcontroller-based automatic voltage regulator to produce stable AC voltage. The output voltage range is from 210V AC to 230V AC. The capacity is 500VA. The input voltage is in the range of 140V AC to 230V AC. The basic building blocks for this design include an Arduino mega 2560, four numbers of 2 channel relay module, an AC voltage sensing unit, two AC voltage display unit, 6 indicating led and an autotransformer. This research intends to show the application of Arduino in power control filed.

Keywords— Arduino, AC voltage sensing, Autotransformer, AVR, Microcontroller

Astronomical Sunset Sunrise Streetlight Timer

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Abstract— This paper presents energy efficient lighting in modern street and outdoor lighting systems. In this project, to control the streetlight of SUNSET and SUNRISE, ARDUINO UNO microprocessor with Real Time Clock (RTC) and timelord library is used. The aim of project is the design to be the core streetlight system and works upon time zone and location. Astronomical Sunset Sunrise streetlight timer is made to mainly control electrical system with respect to day and night using Sunset Sunrise.

Keywords—ARDUNIO UNO microprocessor, Efficient lighting, Sunset, Sunrise, Street light timer, Time zone

Preparation of Diesel like Fuel from Waste Engine Oils

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Abstract—This research paper, our main focus is on finding alternative fuel resources and how to use them in a way that minimizes negative effects. Because of the limitations of petroleum products, the engine oils that have been wasted can be used in engine as fuel oil after they have been processed through purification. Production of diesel like fuel from waste engine oil is involves chemical, filtrations and blending process. So that it forms a mixture which bears a proportion of 20:80, and the empirical results have proven satisfactory and promising according

to the experimental data collected in the departmental laboratory. It could solve some of the energy problem with increasing the blending percentage of pre-treated waste engine oil or by using pre-treated waste engine oil as a diesel like fuel. Water the present conditions, it can be safety assumed that if the amount of re-purified fuel ranking up the recommended mixture increases, there is a possibility of coming up with an after nature to solve energy safety to some extent. A fuel production system mainly consists of a seven main parts: waste oil storage tank, a reactor, filters, a product tank, oil pump, control panel and thermostats. The characteristics, such as sulphur content, flash point, viscosity, density and research on cetane number which form parts of the blended mixture have gone through detailed chemical analysis.

Keywords— Alternative fuel, Bleaching treatment, Diesel like fuel, Filtrations, Waste engine oil

Testing the Physical and Mechanical Properties of Epoxy-Based Solid Rocket Propellant

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Abstract— This research paper studied a simple and cheap epoxy-based solid rocket propellant which consists of chemical compounds of potassium nitrate (KNO3) 70 %, epoxy (C16H24O4) 23 % and ferrous oxide (Fe2O3) 7 %. The ignition temperature of the epoxy-based solid propellant compositions depend on the percentage of the epoxy in the propellant grain. Three samples of propellant are prepared by varying the ratio of resin and hardener. Five kinds of tests are carried out. Among three samples, epoxy ratio of 3.25:0.75 was found to be used as a rocket propellant. Less hardener results in a mixture that is too elastic or soft. More hardener results in a mixture that is too hardened or brittle. Nearly all formulations tested burned well and with a consistent rate in the open air. A significant amount of residue remains after combustion.

Keywords— Combustion, Ignition temperature, Propellant compositions

Potable Drinking Water Treatment System for MAEU

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Abstract— This research paper, water has always played a prominent role in human civilization. When people were using the first step begin settling in one place and growing crops for sustenance, it was invariably near water sources like lakes, rivers or ground water springs. Water was needed for preparing food, drinking, cleaning, bathing, irrigating crops, and a variety of other tasks, so it was very important to have ready access to these sources. The water sources used for drinking water were not always cleaned. So water treatment processes are used to remove undesirable impurities for drinking purpose in order to improve smell, taste, clarity and disease causing pathogens. In this research paper, the raw water is taken from MAEU ground

water and suitable treatment processes are described for this source. To obtain the best drinking system for MAEU, laboratory experiments are carried out again and again. Activated-carbon filter, ion-exchange resin filter, sand and stone filters, pH meter and hardness tester are used in the experiments. These testing results have been mentioned in this research paper. Moreover, theoretical backgrounds of water treatment processes are widely discussed.

Keywords— Drinking water, Filter, Water, Water treatment, Water sources

Copper Adsorption onto Chitosan-Zeolite Composite Samples

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Abstract— Six types of Chitosan-Zeolite, CZ, Composite Samples (CZ0, CZ.2, CZ.4, CZ.6, CZ.8 and CZ1) are characterized by XRD and SEM. These samples are used to adsorb copper from the artificial wastewater. CZ.8 is the most effective in removing copper. The adsorption capacity 106 mg Cu/g CZ.8 is the best. The removal efficiency of copper using this sample CZ.8 is about 96 %. The adsorption isotherms of copper are approximated by the Langmuir equation and Freundlich equation, using sample CZ.8 as a new adsorbent. The regeneration of the adsorbent, CZ.8 loaded with copper, is performed with hydrochloric acid solution.

Keywords— Adsorption, Chitosan-zeolite composite samples, Isotherm, Regeneration

Experimental Studies on Reinforced Fiberglass Preparation

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Abstract— Reinforced fiberglass, a composite material made of fiber reinforcement and resin mixture is prepared in lab scale due to its light weight, corrosion, resistance, high strength, electrical resistance, mechanical resistance and heat resistance. These facts are primarily dependent upon the type and direction of their reinforcement, the resin, the molding method and fabrication technique used. In this experiment, epoxy resin is used. The fibers spinned at 900℃ by using motor (triple thread, Diameter ~ 3.455 x 10 -4 in) are chosen to use as reinforcement. The laminates are made by hand lay-up method with epoxy resin and are cured at room temperature. After curing, the procedure repeats for another four samples of reinforced fiberglass sheets by varying glass content. The prepared sample contains the glass content (23.8%, wt%) with tensile strength 14176 psi. Due to its good water resistance it is suitable for making tank.

Keywords— Curing, Fibers, Lay-up, Reinforced fiber-glass, Resin

Use of Dowex Ion Exchange Resin as Heterogeneous Catalyst in Preparation of Biodiesel

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Abstract— An attempt to make a laboratory scale study on the biodiesel preparation is conducted with a method of transesterification of soybean oil and methanol using Dowex ion exchange resin, as a heterogeneous catalyst. In this study, transesterification of soybean oil has been carried out with the stirring rate of 500 rpm at reaction temperature 60 ± 5˚C and atmospheric pressure. Initial free fatty acid and moisture content of refined soybean oil are 0.43 % and 0.085 %, respectively. Parameter studies on the three variables: molar ratio of methanol to oil, amount of catalyst and reaction time are done for the examination of the best yield for biodiesel preparation. The maximum biodiesel yield of 98 % is achieved from refined soybean oil after using methanol to oil molar ratio 10:1, the catalyst amount 35 wt % of oil and reaction time 3 hours. The prepared biodiesel from this study was analyzed and found that its properties met within the limits of ASTM specifications of biodiesel.

Keywords— Biodiesel, Dowex resin, Methanol, Soybean oil, Transesterification

Effect of Crystallization Time for the Synthesis Zeolite NaA

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Abstract— Synthetic zeolites are vastly and enormously used around the world as a catalyst, adsorbent and ion exchange in many fields such as petroleum industry, detergency, water treatment, pharmaceutical and cosmetics. The aim of this research is to produce zeolite NaA from rice husk ash as silica source by direct hydrothermal method for removal of heavy metal from wastewater. The rice husk ash as a silica source was prepared by both calcination and leaching treatment. Extracted silicate solution and alumina powder with expected gel composition: 3.1Na2O: Al2O3:2SiO2:128H2O crystallization with time at constant temperature was analyzed. The rice husk ash and the synthesized zeolite NaA were characterized with X-ray Diffraction (XRD) and X-ray Fluoresence Spectroscopy (XRF). The molar ratio of silica and alumina in synthesized zeolite is 2 when preparation of silica solution time is 10 hrs and the crystallization time is 1 hr.

Keywords— Crystallinity, NaA, Silica, Time, XRD, XRF, Zeolite

Steady on Preparation of Pulp from Rice Straw

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Abstract— This study is based on finding environment friendly economical process for manufacturing of paper sheets from the pulp. Rice Straw an agro residue based fibrous raw materials has been used for pulp manufacturing. The chemical properties of pulping process such as (Kappa number and Residual Alkali) were measured. In the present work, different holding time of cooking process were varied as cooking time 1hr and holding time (15min,30min,45min) , liquor to straw ratio of (8:1) , temperature at 170°C and 6%NaOH are cooked with digester. The experimental results show that the concentration of sodium hydroxide (6%NaOH), reaction temperature 170°C and cooking time 1hr and holding time 30min. This study will provide a process for manufacturing of pulp which can be used in paper sheet.

Keywords— Pulp, Rice Straw, Soda Pulping Process, Sodium Hydroxide, Sodium Carbonate

Preparation and Characterization of Coconut Husk Pellets for Solid Fuel

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Abstract— Coconut husk has abundant supplies of biomass resources, particularly agricultural residues and municipal solid waste that can be used as a feedstock for solid fuels production in order to achieve energy independence of energy importing countries. Coconut husk obtained from the fruit market was used as a raw material. The collected coconut husk was prepared for analysis to get the particle size of 0.5 mm in 1-2 cm length, respectively. The proximate analysis of prepared biomass taking consideration of moisture, ash, fixed carbon, volatile matter, calorific value, and thermal degradation behaviour of coconut husk was characterized respectively. The cast iron cylindrical mould consisting of a die and a piston was constructed to perform biomass pellet. The dimension of die was 7 mm in inside diameter and 53 mm height with a thickness of 12 mm. The dimension of piston was 6.5 mm diameter and 60 mm height. The stopping block under the die was constructed in the production of the pellet easily. The pelletizing of prepared coconut husk at the various temperature (200-260°C) for heating time (10-20 min) was constructed with constant weight percent of rice flour (RF) and various waste engine oil (WEO) weight percent (0%, 5%, 10%) in single pellet mould. The Response Surface Methodology (RSM) based on Box-Behnken design was used for this research. The properties of pellets were analyzed with calorific value, pellet density, moisture content, ash content, volatile matter, and fixed carbon. The gross calorific value was measured by the use of Bomb calorimeter. According to the findings, the highest calorific of coconut husk pellets at the parameters such as temperature

(230 ºC), time (20 min) and waste engine oil (9.29 %) was 23.29 MJ/kg. The predicted calorific value of coconut husk pellets based on the response surface methodology was 23.96MJ/kg. Error % of experimental calorific value in coconut husk solid fuel was 2.79 % of predicted calorific value.

Keywords— Calorific value, Coconut husk, Coconut husk pellets, Heating time, Mould, Pelletization

Design Implementation and Testing of Hydrogen Dry Cell Electrolyzer

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Abstract— The aim of this research is to improve engine performance and to reduce consumption by mixing fuel with HHO (Oxyhydrogen) gas from dry cell electrolyzer. The experimental series of this research was carried out on the design implementation of HHO gas producing dry cell electrolyzer and testing its performance and efficiency with various electrolyte solutions (4-15 gram NaOH per liter), different values of voltage (14-22V), various ampere changes and searched out the optimum condition of gas producing rate. Based on the result of testing, the optimum concentration of NaOH solution was 7g/L for HHO gas production. As a final examination, the old motor cycle engine performance tests were carried out to study the application of HHO gas electrolyzer with the help of pulse width modulation, PWM.

Keywords— Electrolyzer, Efficiency, HHO, Oxyhydrogen, Performance, PWM

Deflection Analysis of Thin-Walled Work Piece for Milling using Finite Difference Method

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Abstract— In this study, the thin-walled workpiece was modeled as rectangular thin plate. The workpieces and thin plates were applied to three different types of boundary conditions, such as, free-free-constraint-free (FFCF), free-free-constraint-constraint (FFCC) and free-constraint-constraint-constraint (FCCC). The deflections of thin-walled workpiece were estimated using the finite difference method (FDM) and Finite Element Method (MSC Patran/ Nastran). The computer program codes using Visual Basic for FDM were developed to find the deflections of different cutter location. The results from FDM were compared with those from FEM and the error percentage is less than 10%.

Keywords— Cutting force, Deflection, FDM, FEM, Thin Plates, Visual Basic

Effective Design Code Development for CAN Combustor

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Abstract—Combustor design is the most unreliable and challenging portion in the design process of gas turbine. To receive the proper performance, many experimental tests must be performed on a combustor in the industry. This above mentioned design phase is costly and time consuming. In this study, analytical formulae described by various researches are studied and also their parametric study on the design of CAN type combustor is discussed in this report. The various combustor components such as diffuser, swirler, combustor liner, combustor casing and different zones are systematically designed and matlab coding is provided for quick access of the design parameters. Manual calculations are somewhat tedious, so in order to save computing cost this attempt is made.

Keywords—CAN type combustor, Design process, Matlab coding, Temperature, Velocity, Zone holes

Reduction Heat Transfer Rate for CPU by Using Loop Heat Pipe

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Abstract — The research is to increase the reduction of heat transfer rate from Central Processing Unit (CPU) using loop heat pipe. The loop heat pipe in this research considered has a cylindrical, internally grooved evaporator, with an external diameter of 25mm and length of 40 mm. The total number of groove in the evaporator is 18, each with an average cross sectional area is 4 mm2 and a hydraulic diameter is 2 mm. The evaporator is equipped with a nickel sintered powder wick with an effective pore radius is 305 μm. The vapour temperature is analysed by changing the working fluids (water, ammonia and methanol). The vapour temperature of loop heat pipe is also analysed by using COMSOL Software.

Keywords— Cylindrical evaporator, COMSOL Software, Changing working fluids, Loop heat pipe, Sintered nickel wick structure, Vapour Temperature

A Comparison of Photocatalytic Performance of ZnONanorods Prepared Using Solution Precipitation Method and Thermal Decomposition Method

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Abstract— ZnO is one of the promising photocatalysts for waste water treatment under UV irradiation. In this study, ZnOnanorods were successfully synthesized by solution precipitation and thermal decomposition method. The specimens were analyzed by XRD, FESEM, EDX, UV-Vis spectroscope and room temperature PL. ZnOnanorods synthesized by solution precipitation were have smaller surface area, poorer crystal quality and photodegradation efficiency, whereas ZnOnanorods prepared by thermal decomposition method have a larger surface area and better crystal quality. As a result, these ZnOnanorods demonstrated a betterphotodegradation efficiency (97 %) in removal of RhB dye with a rate constant of 0.039 min─1. Although both methods produced ZnOnanorods, this result indicates that the synthesis temperature as well as the precursors used plays a crucial in the photocatalytic performance.

Keywords— Exposed surface area, Photo catalytic activity, Thermal decomposition, ZnOnanorods

Design of Two-Stage Centrifugal Blower with Radial Type Impeller

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Abstract— In this study, about the blower which is a machine to compress air or gas by centrifugal force is described. This also includes the general description of blower such as types of machines, and other components. Moreover, application and characteristics of centrifugal blower are expressed too. This study relates to radial type impeller design and casing design of two-stage centrifugal blower that can develop a pressure of 8.5 psi.ga and deliver 16000 ft3/min of air at the speed of 3600 rpm. The design impeller has 19.5 in of inlet diameter, 40 in of outlet diameter, 32° inlet vane angle and 90° of outlet vane angle. The number of vanes is 15. The inlet width and outlet width are 3.80 in and 2.81 in respectively. The base width of volute casing is 3.75 in and the volute tongue radius is 22 in the tongue angle of casing is 27°. The designed two-stage centrifugal blower can fulfill the requirements of furnace application especially for cement factories.

Keywords— Flow rate and pressure head, Radial type impeller, Speed, Two-stage centrifugal blower, Volute casing

Applied Science

Phytochemical Constituents, Mineral Compositions and Pharmacological Activities of leaves of Naringicrenulata (Roxb.)

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Abstract— In this research work, the leaves of Naringicrenulata (Roxb.), Myanmar name, Tha-na-kha were collected from Nwar-htoe-kyi Township, Mandalay Region. The preliminary detection of phytochemical compounds present in leaves sample was carried out by phytochemical tests. The elemental compositions of Naringicrenulata (Roxb.) were also determined by EDXRF (Energy Dispersive X-ray Fluoresence) spectroscopy. Pharmacological activities such as glucose lowering activity, antibacterial activity and acute toxicity of the leaves of Naringicrenulata (Roxb.) were studied. The iodometric titration method was employed to study the glucose lowering activity of leaves of Naringicrenulata (Roxb.). The antibacterial activity of the leaves sample was detected on six tested microorganisms such as Escherichia coli, Staphylococcus aureus, Shigellaboydii, Samonellatyphi, Pseudomonas aeruginosa, Bacillus cereus by ager well diffusion method. Moreover, the acute toxicity of ethanol extract of leaves sample was performed on the albino mice.

Keywords— Antibacterial, Glucose Lowering, Mineral, Phytochemical, Toxicity

Isolation of Caffeine from Tea Leaves (Camellia Sinensis (L.)Kuntze) and Study on Their Antioxidant Activity

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Abstract— Tea leaves (Camellia sinensis (L.) Kuntze) are one of the effective herbal medicinal leaves. Tea leaves are one of the popular leaves consumed by most people and enriched in nutrients and taste. The fresh leaves of Camellia sinensis (L.) Kuntze were collected from Pin Ta Le village, Pin Laung Township, Southern Shan State. The phytochemical constituents in the leaves sample were tested. The phytochemicals present in the sample were alkaloid, flavonoid, glycoside, lipophilic group, terpene, phenolic compound, polyphenol, carbohydrate, protein, saponin, amino acid, reducing sugar and tannin. Caffeine was isolated from dichloromethane extract of the tea leaves by using solvent system, n-hexane: ethyl acetate: acetic acid (1:1:1 v/v) respectively. The yield of caffeine in tea leaves was 1.21% on the basic of tea leaves powder. The chemical natures of the respective isolated compound of caffeine were identified by TLC, UV and FTIR Spectroscopic Methods. The antioxidant activity of ethanol extract of the leaves of Camellia sinensis (L.) Kuntze was also measured by DPPH (2,2-diphenyl-1-picry-hydrazyl) free radical scavenging assay using ascorbic acid as the standard. The IC50 value was found to

be 0.76 µg/mL for 95% ethanol extract of tea leaves and IC50 value of standard ascorbic acid was 1.17 µg/mL.

Keywords— Antioxidant Activity, Ascorbic acid, Caffeine, Phytochemical, Tea leaves

Investigation on Nutritional Values of Wild Plum Fruits (Ziziphus jujube L.)

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Abstract- In this research work, Ziziphus jujube L fruits were collected from Campus of Myanmar Aerospace Engineering University Meiktila , Mandalay Region. The preliminary detection of phytochemical compounds present in fruits sample was carried out by phytochemical tests. The tests gave positive for alkaloid, flavonoid, glycoside, phenolic, polyphenol, reducing sugar, saponin, amino acid, tannin, carbohydrate and terpene. Moreover , the elemental compositions of Ziziphus jujube L fruits were also determined by EDXRF (Energy Dispersive X-ray Fluoresence) spectroscopy. Calcium, potassium, chlorine, silicon, phosphorous, manganese, aluminum, sulfur and iron were present in Ziziphu jujube L Fruits by EDXRS analysis. The water content of fruits sample was determined by oven method. From the experiment, the water content was found to be 42.20-42.25%. In addition, the contents of vitamin C and sugar in fruits were also measured by redox titration method. The content of vitamin C in fruits sample was 14.38-14.52mg/100g and the sugar content was 5.6-5.8 mg/100g.

Keywords- Fruits, Phytochemical, Phenolic, Terpene, Vitamin C

Determination of Nutritional Values and Antimicrobial Activities of Noni Fruits

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Abstract— In this research work, Noni fruits, Morindacitrifolia L., family. Rubiaceae, were collected from campus of Myanmar Aerospace Engineering University, Meiktila, Mandalay Region. The preliminary detection of phytochemical compounds present in fruits sample was carried out by phytochemical tests. The elemental compositions of Noni fruits were also determined by EDXRF (Energy Dispersive X-ray Fluoresence) spectroscopy. The water content of fruits sample was measured by oven method. The contents of vitamin C and sugar in Noni fruits were also determined by redox titration method. The antibacterial activities of the Noni fruits was detected on six tested microorganisms such as Escherichia coli, Staphylococcus aureus, Shigellaboydii, Samonellatyphi, Pseudomonas aeruginosa, Bacillus cereus by agar well diffusion method.

Keywords— Bacillus cereus, Escherichia coli, Pseudomonas aeruginosa, Staphylococcus aureus, Shigellaboydii, Samonellatyphi

Assessment of Water Quality from Water Supply in Meiktila University

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Abstract— In this research work, the water samples were collected in rainy season and cold season from three different sites of water supply in Meiktila University. The determination of some physicochemical properties(colour ,temperature, pH, total dissolved solids, total hardness, alkalinity), toxic metal contents and bacteriological quality of collected water samples were carried out. Then the result obtained physicochemical properties, toxic metal contents and bacteriological quality of collected water samples in rainy season and cold season were compared with the standard for drinking water proposed by WHO standard.

Keywords— Bacteriological quality, Physicochemical properties, Toxic metal

Investigation of Elemental Concentration in Indian Trumpet

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Abstract— Conservation and sustainable use of the habitats of medicinal plants are imperative for ensuring continued availability of genuine herbs used to address the health needs of the majority of the world's population. Indian trumpet has been one kind of medicinal plants and investigated by using the Energy Dispersive X-ray Fluorescence (EDXRF) detection technique to observe elemental concentration. In Indian trumpet leaves, potassium was the largest concentrated element, and calcium, sulphur and phosphorous were the second largest elements. Iron, copper, strontium, zinc, rubidium and manganese were trace elements. In Indian trumpet fruits, potassium was also the largest concentrated element, and calcium, phosphorous, sulphur and iron were the second largest elements. Copper, manganese, rubidium, zinc and strontium were found as trace elements. In Indian trumpet barks, potassium and calcium were the largest concentrated elements, and sulphur was the second largest element. Other elements such as iron, strontium, copper, rubidium, manganese, and zinc were trace elements. The uses of Indian trumpet and its elements were discussed.

Keywords— Concentration, EDX-7000, Energy Dispersive X-ray Fluorescence, FP balance, Folk remedies, Indian Trumpet

Elemental Concentration in Morinda

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Abstract— Morindacitrifolia (Ye - Yo) has been used widely as a complementary and alternative therapy in many countries owing to its potent antioxidant activity and proven health benefits. It was investigated by using the Energy Dispersive X-ray Fluorescence (EDXRF) detection technique. In Morinda leaves, calcium was the largest concentrated element, and potassium and sulphur were the second largest elements. Manganese, iron, strontium, copper, silver, zinc and bromine were trace elements. In Morinda fruit, potassium was also the largest concentrated element, and phosphorous, calcium and sulphur were the second largest elements. Iron, manganese, copper, titanium, zinc and strontium were found as trace elements. In Morinda bark, potassium and calcium were the largest concentrated elements, and Sulphur and iron were the second largest elements. Other elements such as manganese, titanium, copper, silver and zinc were trace elements. The uses of Morinda and its elements were discussed.

Keywords— Balance, Concentration, Energy Dispersive X-ray Fluorescence, EDX-7000, Morinda, Pharmacologically active

Calculation of Binding Energy of Two-Body System Using Yukawa Potential

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Abstract—The binding energy of two-nucleon system is calculated by using Lippmann-Schwinger equation. The Lippmann-Schwinger equation for deuteron bound state is solved in momentum space employing the technique of partial wave decomposition. We have also performed the mathematical formulation of potential matrix elements using Yukawa potential and it is solved numerically with Gauss-Legendre integration method. To find the eigen value of ground state energy of deuteron bound system we have used the iterative method. Our calculated binding energy of deuteron is 2.23135 MeV.

Keywords—Lippmann-Schwinger equation, Two-nucleon system, Yukawa potential

Interpretation of Physical Universe by BBN and Collapsing Shells Model

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Abstract— Big Bang Nucleosynthesis (BBN) describes the production of the lightest nuclides via a dynamic interplay among the four fundamental forces during the first seconds of cosmic time. The physical processes in the early state of the Universe are investigated from the point of singularity and from the Big Bang Nucleosynthesis (BBN). In the Standard Models of cosmology and of nuclear and particle physics, BBN is an effectively parameter free theory. In this paper, we derived the result of density profile from the collapsing shells model introduced by Dwivedi. As an alternative approach, the density profile from the big bang nucleosynthesis has been calculated using the observational data of primordial abundance of light nuclei in our finite Universe. In the dark matter part, the possibilities of massive particles are also expressed by Standard Model particle content and interactions, with three light neutrino species, with negligible effects due to dark matter and dark energy.

Keywords— Abundances of light elements, Big bang nucleosynthesis, Dark matter, Density, Early Universe, Extensions of the Standard Model

Determination of Natural Radioactivity and Hazard in Soil Samples in and around Gold Mining Area in Yamaethin Township

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Abstract— The activity concentrations of natural radionuclides 238U, 232Th and 40K in soil samples from the ModiTaung gold mine in Yamaethin Township, Mandalay Division were measured by gamma spectrometry using Sodium Iodide (NaI) detector. Sodium Iodide detector (NaI) was used to measure the activity concentrations of these radionuclides in three soil samples from the control area. Radiological hazard assessments due to these natural radionuclides were carried out. The calculated average activity concentrations of 238U, 232Th and 40K determined in the mining sites were 50.277 ± 1.249, 43.703 ± 0.566 and 170.459± 0.338 Bqkg-1, respectively. The mean annual effective dose in the mining site was 70.773μSvy-1 which is about 1% higher than to the world average. The mean radium equivalent activity concentration, the mean external and internal hazard indices in the study area were less than the world averages. Therefore, ModiTaung gold mining area in Yamaethin Township poses no radiological hazard to the general public.

Keywords— Activity concentration, Gold mining, NaI detector, Radiological, Radionuclide, Soil

Investigation of Radon Level in Some Caves of Sagaing Hill

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Abstract— Radon is a colorless and odorless radioactive gas which is emitted from soil, rock, and water, and produces decay products in air. It occurs naturally in radioactive element in the 238U decay series which is found in high concentrations in certain geological formations such as caves. When accumulates in closed surroundings or in unventilated places 222Rn concentrations may reach critical values. In fact, a high concentration of radon gas is recognized as causing lung cancer and bronchial tissue damage. In this research work, radon concentration in some caves of Sagaing hill was determined by using the solid state nuclear track detection (SSNTD) technique. LR 115 Type II plastic track detector was used as alpha track detector. By measuring the alpha tracks, alpha track densities, the radon concentration and annual effective doses of the radon were measured. It was found that the calculated values of radon concentration in the cave samples varied from 8.6064 0.3959 Bqm-3 to 35.7027 0.2372 Bqm-3. The average annual effective dose is 0.1480 0.0068 mSvy-1 to 0.6141 0.0212 mSvy-1 which is lower than the International Commission on Radiological Protection (ICRP) recommended dose, 5 mSvy-1. Keywords—Caves, Dose, Rock, Radon, Soil, Track detector

Data Security Using User Authorization Mechanism in Client-Server Database System

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Abstract- Nowadays, the security is one of the main challenges that people are facing all over the world in every aspect of their lives. The system is to provide the implementation of client/server database system using user authentication and authorization technique. Authentication is used by a server when the server needs to know exactly which user is accessing their data and information in what role or level. A role defines the authority to do a specific task. The user can read, write, edit and delete and other special task related to database according to their role and level. Users can believe the system and rely on it only if the various resources and information system are protected against destruction and unauthorized access. Data security is enormously important to any business with any network component. Most database security protects data bring lost or damaged, which may have serious ramifications for the business both in terms of finances and reputation. Database security helps in keeping sensitive information safe, spreading to all end users, saving the physical damage to the data server doesn't result in the loss of data, and prevent data loss through updating errors. The system uses the Role Based Access Control (RBAC) mechanism to protect the information from the use of unauthorized Create, Read, Update and Delete (CRUD) expressions.

Keywords- Access-Control, Authentication, Database, RBAC

Enhancing Data Security by Analysing DES and RC5

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Abstract— Security challenges are evolved by the explosive growth of digital communications as email and Internet, and also millions of electronic transactions need protection, by the rapid growth of commerce. Thus, this made security a vital issue for every consumer. In order to attain the security of information, unauthorized access to information must be prevented, privacy must be protected, and the authenticity of electronic documents must be established. These processes are imperative for the success of secure communication. Cryptographic algorithms are capable of protecting valuable and sensitive data, by encrypting data to secured form (encipherment) and by decrypting data to its original form (decipherment).There are many algorithms for security system designers, facing with a difficult choice. Among these algorithms, two symmetric key cryptosystems (DES and RC5) are chose to analyse their performance and security in this paper. The goal of this paper is to point out the more efficient algorithm between DES and RC5.
Keywords—Cryptography, Cryptanalysis, Data Security, DES, RC5, Symmetric Algorithm

Advantages and Disadvantages of Bisection, Newton Raphson and Secant Methods of Root-Finding Problems

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Abstract— This paper presents three numerical techniques of root-finding problems of nonlinear equations. In this method, the problems are initial conditions. The iteration methods produce the solutions in terms of convergent series with easily computable components. Some examples are given and comparisons are made with Bisection method, Newton Raphson method and Secant method. The advantages and disadvantages of some iteration methods observed are described in details. The comparison shows that the methods are very effective and better outcomes can be attained in calculating nonlinear equations.
Keywords—Bisection method, Convergence, Iterations, Newton-Raphson method and Secant method

Comparison of Quadratic Lagrange Interpolation and Newton's Divided Difference Interpolation Methods

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Abstract— In this paper, a comparative study between quadratic interpolation method and Newton divided difference interpolation method is presented for the normal distribution function. Quadratic interpolation and Newton's divided difference interpolation are popular interpolation techniques. In order to reduce the numerical computations associated to the repeated application of the existing interpolation formula in computing a large number of interpolated values, a formula has been driven from interpolation formula. Interpolation is the process of calculating the unknown value from known given values. The main concept behind it is to find an analytic function that passes through given points to interpolate. The formula is suitable in the situation where the values of the argument are at unequal interval. Matlab programming is applied to calculate exact values.

Keywords— Approximation, Error, Matlab, Newton's divided difference formula and Quadratic Lagrange interpolation

Social Science

Assessment Reviews on Teaching of Microprocessor

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Abstract – It needs to review on each assessment for teaching and learning process with the aims of determining the effectiveness in outcome results and observing the hierarchy of learning domains for under–graduated students of Avionics. Learning behaviors with respect to effective teaching on assembly programming in microprocessor course have been practiced in this paper. Also assessment reviews of knowledge and skill levels, overall pass rate and correlation between course learning outcomes (CLO) and program outcomes (PO) have been evaluated with the achievement of outcome results based on 39 numbers of students. The analysis of the outcome achievements based on individual mark has been described. In addition to, grade analysis based on how much capacity the student can rate have been conducted in the form of bell shape curve.

Keywords–Assessment review, Grade analysis, Knowledge and skill level, Microprocessor course

Tactics for Enhancing the Presentation Skill of Engineering Students

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Abstract— Speaking and writing are the most frequently used forms of communication, comprising more than 50 percent of the total of all modes of communication. The ability to communicate is related closely to success in a wide range of occupations. In business, industry, commerce, and almost every other field of human endeavours, employees as well as employers are communicating more and more – exchanging ideas, proposing plans, reporting new developments, summarizing studies, urging actions, and appealing decisions. Furthermore, public speaking is a vital skill for leadership in virtually every field. This skill is needed for the engineering students to share (or) present their projects, subject matter concerned with their fields, knowledge and among various other functions. The aim of this paper is to highlight useful points in public speaking/presentation. To achieve this aim, the needs survey is done through questionnaires for the students. Depending on the needs which have been identified in the needs survey, methods of the presentation and structure of the speech are outlined in this paper. Moreover, for effective presentation, identification of the audience, use of visual aids and choice of language are discussed in this report. It is hoped that this paper helps develop presentation skills of engineering students in public speaking.

Keywords— Effective, Presentation, Non-verbal, Verbal, Visual aids

Effective Strategies for Teaching and Learning Vocabulary for English Foreign Learners

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Abstract-This research paper is an attempt to develop the effective strategies for teaching and learning vocabulary in the classroom. To master a foreign language like English, all four skills are important and interrelated .However, learning vocabulary is a challenge partly that learners will face during the process of second language learning. Vocabulary has been recognized as a core component of language proficiency and provides much of the basis for how well learners speak, listen, read and write. Without an extensive vocabulary and strategies for acquiring new vocabulary, learners often achieve less than their potential and may be discouraged from making use of language learning opportunities. To be effective learning in second language, learners need to be educated with vocabulary learning. Thus, it is hoped that this paper will fulfill the needs of the learners on teaching words in context and out of context as well as incidental and intentional vocabulary learning. Vocabulary Learning Strategies (VLSs) such as determination, cognitive, memory, metacognitive and social strategies are popular in the academic field and the learners are keen in using them.

Keywords- Effective strategies, Incidental, Intentional, vocabulary teaching, VLSs

The Effectiveness of Applying the Communicative Approach in the Classroom

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Abstract— Language is not the only form of communication among human beings. English Language Teaching has become very important because of the global status of English and people all over the world are learning this language. Nowadays teachers can choose their text books and other supplementary materials; they can also choose methods or activities they want to use in their lessons. It is a big advantage but also a big challenge to find an approach suitable for all learners. The goal of the language learning process is to enhance the students' ability to communicate in the target language. Students learn English to communicate with each other, to express their ideas correctly, and to adjust themselves easily in every kind of social situation. The aims of this paper are to adopt the communicative approach in the classroom for more realistic and genuine communication, to state the role of teacher and communicative activities, and to give some advice on how to promote language class communicative competence and develop the students' ability of integrated skills.

Keywords—Communicative approach, Communicative competence, Integrated skills, The role of teacher

မြန်မာဘာသာစကားတွင်တိုးပွားလာသောစကားလုံးသစ်များ

ဒေါက်တာခင်ဥမ္မာအောင်
မြန်မာစာဌာန
မြန်မာနိုင်ငံလေကြောင်းနှင့် အာကာသပညာတက္ကသိုလ်
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မြန်မာဘာသာစကားသည် ရှင်သန်လျက်ရှိသည့် ဘာသာစကားဖြစ်သည့်အလျောက် စကားလုံးအသစ်များ၊ အဓိပ္ပာယ်အသစ်များ ဖြစ်ပေါ်ပြောင်းလဲလျက်ရှိသည်။ စကားလုံးအသစ် ဖြစ်ပေါ်ပြောင်းလဲမှုကို လူမှုဘာသာဗေဒ ဘာသာစကားပြောင်းလဲမှု ကဏ္ဍတစ်ရပ်အဖြစ် လေ့လာ သည်။ ယခုစာတမ်းတွင် ပြင်ပပြောင်းလဲမှုနှင့်အတွင်း ပြောင်းလဲမှု ဟူသည့်ပုံစံနှစ်ရပ်ဖြင့် လေ့လာထားသည်။

ပြင်ပပြောင်းလဲမှုတွင် ဘာသာစကားထိတွေ့မှု ကြောင့်လည်းကောင်း၊ အတွင်းပြောင်းလဲမှုတွင် အသစ်တီ ထွင်ခြင်း၊ ပေါင်းစပ်ခြင်း၊ အတိုကောက် အသုံးပြုခြင်း၊ အနက်ချဲ့ထွင်ခြင်းတို့ကြောင့် လည်းကောင်း၊ မြန်မာဘာ သာစကားတွင် စကားလုံးအသစ်များပြောင်းလဲ ဖြစ်ပေါ် လာသည်။

သော့ချက်ဝေါဟာရများ- ဘာသာစကားပြောင်းလဲမှု၊ ဘာသာ စကားထိတွေ့မှု၊ ပြင်ပပြောင်းလဲမှု အတွင်းပြောင်းလဲမှု၊ အသံလှုယ်ချေးငှားခြင်း၊ ဘာသာပြန်မွေးစားခြင်း၊ အသစ်တီထွင်ခြင်း၊ ပေါင်းစပ်ခြင်း၊ အနက်ချဲ့ထွင်ခြင်း၊ အတိုကောက်အသုံး ပြုခြင်း ။

Design of a Double-Sided Axial Flux Permanent Magnet Generator with Internal Stator for Small-Wind Turbine

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Abstract— This paper presents the design and construction of a double-sided rotor, an internal stator continuous magnetic flow generator for direct-drive wind turbines with horizontal axis wind turbines (HAWT) and vertical axis wind turbines (VAWT).The Axial Flow Generator is an extensive generator without core at the stator winding. The aim of the study was to improve the efficiency and production of wind energy by studying the electrical and structural properties of AFPM generators. The stator and rotor core are made of easily accessible materials such as plywood. In this project, a 9.5 mm thick rectangular magnet is used to obtain enough flow by means of stimulate. The project describes the actual limitations of the manufacturing process as well as the setup and testing of experimental tests. The generator delivers a maximum power of 1kW at 375 rpm with a maximum efficiency of 90%. Repair the required output with a digital controller and charge the 24V battery. The inverter converts direct current into alternating current to take advantage of nationwide electrification.

Keywords- Axial flux permanent magnet generator, Direct driven, Design, Manufacturing process, Wind turbines

Development of an Apparatus for Thermogravimetry

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Abstract—This research paper presents the concept, design and construction of the device to thermogravimetric measurements and the results of tests carried out on wood pellets. The purpose of this paper is to study the characteristics and thermal degradation behavior of wood pellet for biofuel production via gasification technology. The elemental properties of the feedstock were characterized by an elemental analyzer while thermal properties were investigated using thermogravimetric analyzer (TGA). The gasification processes were being carried out at room temperature up to 900°C in the presence of nitrogen and air as gasification agent, gas flowing at 500 ml/min. The investigated parameters are particle sizes and heating rate. The particle size used in the range of 425 to 500 um. The heating rates applied was 10°C/min. Sample weight varied from 0.5 to 1 gram, and stainless steel tray was used for the test. The

further part of the paper contains the results of the tests carried out on wood pellet in the form of a thermogravimetric curves. These studies are conducted by looking at opportunities to improve the energy efficiency of the gasification process of biomass.
Keywords — Characterization, Gasification, Thermogravimetric analysis (TGA), Wood pellet