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CU PARTICIPAREA ȘI SUSȚINEREA



ASOCIAȚIA INGINERILOR DOBROGENI OVIDIUS



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BOOK OF ABSTRACTS

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SECTIONS 1 – 4

MECHANICAL ENGINEERING

INDUSTRIAL ENGINEERING AND MANAGEMENT

MARITIME AND NAVAL ENGINEERING

DEBUTANT ENGINEERS RESEARCHER

PARAMETRIZAREA BRĂȚULUI DE CONTROL - DACIA DUSTER

THE PARAMETERIZATION OF THE CONTROL ARM – DACIA DUSTER

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Abstract Control arms, sometimes called “A arms,” are the core of your front suspension system. In simple terms, control arms are the link that connects your front wheels to your car. One end connects to the wheel assembly and the other end connects to the framework of your car. So we decided that we can parameterize this important car part using the iPart feature in the CAD software Inventor. An iPart is a table driven master part that configures standard parts to different sizes and states. We also decided to focus on a rather popular car in our country- the Dacia Duster , possibly the best value SUV you can buy.

Keywords: *Control arm – Dacia Duster – iParts – CAD – Inventor – Mechanical Engineering*

REPROIECTAREA UNUI VAGON TRAMVAI MODEL 1912 ÎN VEDEREA REALIZĂRII UNEI MACHETE PENTRU IMPRIMARE 3D

REDESIGN OF A 1912 MODEL TRAMWAY WAGON FOR THE CONSTRUCTION OF A 3D PRINTED MODEL

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Abstract With the occasion of the 125th anniversary of urban transport in Galați (September 22th, 2020), we set out to convince local authority to initiate a fabrication project of a tramway wagon model 1912, on an existing platform, which will circulate for tourism purposes.

Redesign a tramway wagon, part by part, necessary for 3D printing. Every piece of the tram needs to have a solid bottom so the material doesn't melt and drain due to the high temperatures, keeping the initial form desired. The pieces are designed on a scale of 1:100 using Autodesk Inventor and was scaled at 1:200 from PrusaSlicer before printing it due to the limited space on the table (25 x 21 x 21 cm), we used a Prusa I3 MK3 printer for this model. For the tram we used PLA, different colors, being more facile to print with.

We are currently working on another 1:100 model of the tramway wagon which is made out of metal using different and more conventionally technology.

Keywords: *urban transport, 3D printing*

PREZENTAREA UNEI AFACERI DE TIP FOOD-TRUCK

PRESENTATION OF A FOOD-TRUCK BUSINESS

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Abstract Datorită faptului că oamenii sunt din ce în ce mai prinși în rutina zilnică, nu mai au timp să se bucure în mod corespunzător de o masă gustoasă. Plecând de la acest fapt, dorim să vă prezentăm ideea noastră de afaceri care va aduce cu siguranță un zâmbet pe fața oamenilor din localitatea noastră. Ideea noastră constă în pregătirea în stil italian și servirea pastelor în regim ambulant. De la ideea de afaceri până la implementarea ei sunt câțiva pași de urmat. Pași pe care îi vom prezenta cât mai detaliat posibil. În urma unor studii de caz și a unui studiu de piață vom prezenta punctele tari, punctele slabe, pragul de rentabilitate și planul financiar al acestui tip de afacere. În același timp, vom lua în considerare provocările aduse de situația actuală de pandemie, în care restricțiile sunt prezente.

Keywords: *food-truck , plan de afaceri , marketing, paste*

TEHNICI ȘI TEHNOLOGII DE CONTROL LA DISTANȚĂ A PROCESELOR DE LA BORDUL NAVEI

REMOTE CONTROL TECHNOLOGIES AND TECHNOLOGIES OF PROCESSES ABOARD THE SHIP

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Abstract Unmanned transport systems are already last hour on certain "legs" of transport. As well as in the maritime field, submarine vehicles operating autonomously for research purposes that have already been put into practice for several years. These ships provide a potential holistic solution to meet the requirements for shipping. The work in the present case presents, in summary, developed technologies for navigation and self-piloting systems, with a view to autonomous governance of ships. Therefore autonomous ships will be controlled by artificial intelligence (IOT-internet of things, IOS-internet of ship, Big Data). The work highlights new challenges for the autonomous navigation system for ships, through which it is possible to control the ship in any operating situation.

Keywords: *Autonomous ships, artificial intelligence, autopilot, OT, IOS.*

**ANALIZA STABILITĂȚII NAVEI AUTONOME DE STINS INCENDIUL ÎN TIMPUL
INTERVENȚIILOR PE MARE**

**ANALYSIS OF THE STABILITY OF THE AUTONOMOUS SHIP TO EXTINGUISH THE
FIRE DURING INTERVENTIONS AT SEA**

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Abstract This paper illustrates the importance of fire-extinguishing vessels, which aim at the prevention and effectiveness of the installations present on board them in case of emergencies. These ships are efficient because of their architectural projects and propulsion system, being able to travel long distances in a very short time. Also in this study there is an essential chapter for these types of ships, namely stability which is a complex subject based on several factors. For the performance of these ships, an autonomous rescue facility has been developed to help evacuate water from damaged ships. At the end of the work will be presented the equipment used in the process of extinguishing fires on board the ship.

Keywords: *fireboat, stability, propulsion system, autonomous rescue, equipment.*

**ANALIZA PERFORMANȚELOR SISTEMELOR DE STINS INCENDIUL CU APĂ
PULVERIZATĂ**

**THE PERFORMANCE ANALYSIS OF FIRE FIGHTING SYSTEM WITH SPRAY
WATER**

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Abstract This paper is informative and presents an performance analysis of fire fighting system with spay water. In this we find what constitutes a fire fighting system with spray water, a comparative study, but also the conclusions we reached after the preparation of this work.

Keywords: *foc , incendiu, sprinkler, instalație*

IMPACTUL REVOLUȚIEI INDUSTRIALE 4.0 ÎN CONSTRUCȚIILE NAVALE

THE IMPACT OF INDUSTRY 4.0 IN SHIPBUILDING

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Abstract The evolution of digital technologies and the Industry 4.0 brings significant improvements to the shipbuilding industry. These technologies are constantly developing. With their implementation, there will be significant changes in the efficiency, efficacy and profit of the shipyard. This paper will be focusing on those innovations brought by the Industry 4.0 in the shipbuilding industry.

Keywords: *Industry 4.0, shipbuilding, new technologies.*

ANALIZA REZISTENȚEI GLOBALE ȘI LOCALE A CORPULUI NAVEI PE MODELE 3D-FEM EXTINSE PE ZONA COMPARTIMENTELOR DE MARFĂ PENTRU O NAVĂ DE MĂRFURI GENERALE AVÂND PEREȚII TRANSVERSALI CU DUBLU ÎNVELIȘ

GLOBAL AND LOCAL STRENGTH ANALYSIS ON 3D-FEM MODELS EXTENDED OVER THE CARGO COMPARTMENTS AREA FOR A GENERAL CARGO SHIP WITH DOUBLE TRANSVERSAL BULKHEAD

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Abstract The study is focused on the sensitivity analysis for global and local strength assessment of head equivalent design wave loads acting to the ship hull. For the study, the balance ship-EDW and the post-processing of the 3D-FEM model is obtained using specific users' subroutines in FEMAP/NX Nastran. The 3D-FEM model is extended over three cargo holds amidship, with fine mesh shell elements for structural details and model characteristics acc. to midship section design plan. For the surrounding water (still water, sagging and hogging wave condition), ballast tanks water and cargo hold compartments loads have been developed using user procedures and functions implemented in the finite element program. The study results are pointing out the limit wave height and the maximum values of von Mises stress for the several scenario cases.

Keywords: *global and local strength, head equivalent design wave, 3D-FEM model, FEMAP/NX Nastran.*

CONCEPT BIOMIMETIC PENTRU O DRONĂ DE ADÂNCIME

BIOMIMETIC CONCEPT FOR A DEEP DRONE

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Abstract Due to development, we are at just the tip of an iceberg that is entitled biomimicry. This new science is based at our power to observe the nature and implement what we see in our product, like this we can create new and well develop new gadgets. I choose to take a look at the leather back sea turtle and learn how to create a strong and in the same time a highly efficient hydrodynamic structure. Being the biggest of her species is offering me a wide structure where I can think and develop what the actual ROV's are lacking. Using the work of the nature, this drone can achieve more applications than just a normal ROV. In this way the future of developing nature base structure is closer and safer.

Keywords: *development, biomimicry, new, efficient, ROV, turtle*

CONTRIBUȚII PRIVIND STUDIUL COMPARATIV A FLOTABILITĂȚII NAVELOR TIP PORTCONTAINER

CONTRIBUTIONS REGARDING THE COMPARATIVE STUDY OF THE BUOYANCY OF CONTAINER VESSELS

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Abstract The construction of a ship involves primarily the design activity, defined by the existence of the ship's objectives, the limits and restrictions imposed on the ship, creativity and the iterative cycle of design. The designer must be aware of the restrictions imposed on the ship and try, from the initial data provided by the ship-owner, to carry out the project from the point of view of the creativity. This activity often involves a circular process of corrections until the final goal is achieved. One of the iterative activities of designing a ship is defined by its nautical qualities (buoyancy, stability, unsinkability and weldability), so the interaction between the ship and the environment (floating on water)

The paper proposes a comparison of the nautical quality of buoyancy. For this, two container ships of different sizes were used. For both vessels, straight hull calculations were performed in order to determine the differences between the hull volume and the hull center coordinates for straight floats between the base plane and the full – load float plane.

The authors have developed a calculation methodology using Excel programs, so that following the various changes that occur in the project they can be easily achieved by changing the input data (ship characteristics, dimensions, half widths)

The results show that the dimensions of the ship lead to major differences in terms of analytical calculations of straight hulls between the geometric elements that define the surfaces of straight floats, the geometric elements that define the surface of the theoretical dome but also the elements that define the hull of the ship, for a large dimension port container of 4546TEU compared with a small port container of 1805TEU.

Keywords: *body plan, port container, buoyancy, straight hull diagram.*

ANALIZA CU ELEMENT FINIT A SISTEMULUI DE FRÂNARE CU BANDĂ
FINITE ELEMENT ANALYSIS OF THE BELT BRAKING SYSTEM

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Abstract Inventor allows the creation of product prototypes that accurately simulate weight, stress, friction forces, deformation propagation, and more in a simulated 3D environment. Everything from basic models to detailed mechanical engineering models can be created and tested using the integrated motion simulator and stress analysis assembly tools. In the present paper, the finite element analysis of a model of the belt braking system is performed, realized through the editing and three-dimensional modeling programs AutoCAD, respectively Inventor. The application aims to determine the maximum values of the equivalent voltage VonMises.

Keywords: *AutoCAD, Inventor, 3D, analysis.*

ANALIZA SISTEMULUI COMBINAT DE PROPULSIE ȘI GUVERNARE SPECIFIC
NAVELOR DE DESERVIRE PORTUARĂ

ANALYSIS OF THE COMBINED PROPULSION AND STEERING SYSTEM SPECIFIC
TO PORT SERVICES VESSELS

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Abstract Ships developed rapidly and generated major changes in the shipbuilding industry. Steel was used as a building material and then propellers appeared in the propulsion of ships. In time, the builders focused on their automation. In this paper I had analysed the combined propulsion and steering sistem, a sensitive and current topic, and its advatantages and specific characteristics for a good operation at the optimal parameters.

Keywords: *ship, industry, steel, propellers, propulsion, automation, steering, parameters.*

**ANALIZA CONCEPTUALĂ ȘI LOGISTICĂ A METODEI DE ASAMBLARE
MODULIZATĂ A NAVEI**

**CONCEPTUAL AND LOGISTICAL ANALYSIS OF THE METHOD OF MODULATED
ASSEMBLY OF THE SHIP**

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Abstract: In this paper, I have presented the study of conceptual and logistical analysis of the method of modulated assembly of the ship. In our country, ships are repaired and built on shipyards. Given the scale of shipbuilding, our shipyards have developed accordingly. Shipbuilding, especially the construction of warships, is an extremely complex process due to the large number of structural members, systems and equipment that need to be installed and interconnected in terribly confined space and strict environmental tolerances. Despite the detailed planning and execution of all activities, the general program largely depends on the facilities of the shipyard and the philosophy / methodology of construction. The global trend is to use state-of-the-art IT solutions, competing engineering, large shipyard infrastructure to process highly pre-equipped mega blocks, weather-independent constructions and, finally, complete digital shipbuilding. However, the Indian shipbuilding industry has survived the cost of cheap labor for shipbuilding for too long, thus limiting itself to conventional shipbuilding methods that require labor intensity and do not really take off with modern techniques. shipbuilding. Therefore, the need for the hour is to break down capacity barriers and conventional shipbuilding methods and to adopt contemporary practices.

Keywords: *ship, equipment, modulated assembly.*

**ANALIZA STABILIZATOARELOR PASIVE UTILIZATE PENTRU AMORTIZAREA
OSCILAȚIILOR TRANSVERSALE ALE NAVEI**

**ANALYSIS OF PASSIVE STABILIZERS USED TO DAMPEN THE TRANSVERSE
OSCILLATIONS OF THE SHIP**

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Abstract Bilge keels are very common features on ships. They are typically located in pairs, port and starboard and consist of flat plates projecting out from the hull at the point where the bilge turns up to the side wall of the ship. They can be very effective, reducing roll amplitudes by up to 35%. A study of the roll damping of a two-dimensional FPSO model produced by bilge keels is presented in this paper. Using the results from a number of simulations, the roll damping coefficient resulting from locating the bilge keels at different positions will be calculated, which will provide a useful design tool for optimising the roll damping of vessels with bilge keels.

Keywords: *bilge keels, transverse oscillations, passive stabilizers, roll damping coefficient.*

STUDIUL PRIVIND PROIECTAREA NAVALĂ ASISTATĂ CU AJUTORUL BAZELOR DE DATE ORIENTATE PE OBIECT

STUDY ON ASSISTED NAVAL DESIGN USING OBJECT-ORIENTED DATABASES

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Abstract This paper examines the advantages of using object-oriented databases in the field of naval design. The export of data for future use in development environments other than the original or to improve the productivity of the engineer. The Tribon object-oriented database was chosen as the study model.

Keywords: *proiectare navală, baze de date orientate obiect, tribon, top-down, sx700, vitesse, obiect.*

PROBLEMA EXTERNALITĂȚILOR DE MEDIU ASOCIATE ACTIVITĂȚILOR MILITARE

THE PROBLEM OF ENVIRONMENTAL EXTERNALITIES ASSOCIATED WITH MILITARY ACTIVITIES

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Abstract While essential to the world's economy and well-being, the commercial marine shipping industry is a major contributor to global air pollution and without action, the industry's emissions are expected to increase.

These emissions can harm human health and our environment.

New regulations and practical initiatives are planned or in force to reduce the amount of air pollution produced by ships.

Ships move approximately 80% of the world's goods. When compared to other forms of transportation, marine shipping is the most energy-efficient way to move large volumes of cargo.

The military activities within the Romanian Naval Forces through the ship units they operate, have an impact on the environment and therefore I propose to study the impact of the carbon footprint of a ship unit during a year and also to propose a plan measures to reduce energy consumption.

Keywords: *carbon footprint, Life Cycle Assessment, greenhouse gases, environmental externalities, military operations, environmental impact.*

METODĂ DE ESTIMARE A AMPRENTEI DE CARBON PENTRU LANȚUL LOGISTIC DE TRANSPORT MARITIM

CARBON FOOTPRINT ESTIMATION METHOD FOR SHIPPING SUPPLY CHAIN

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Abstract Shipbuilding industry is one of the oldest and most complex production and transportation methods. Merchant and military ships had significant importance throughout the history for both transportation of humans and goods. Due to its great carrying capacity, shipping is still the most important transportation method. In this study, the harmful effects and previous studies on emission estimation methods are investigated. Using the annual cruise data, annual emission footprint is calculated of three different cargo ships. The emission density of the different routes is also calculated. Some formulas are obtained according to the estimation methods, characteristic principal dimensions of ships. These formulas can be used in order to estimate ships' emission footprints by using the information of ships' routes and main dimensions. The developed formulas provide estimation, even during the predesign.

Keywords: *emission estimation, carbon footprint, efficiency, environment.*

SECTION 5

ENGINEERING PREAMBLE

ANALIZA CRITERIILOR DE ALEGERE A TROLIULUI UTILIZAT ÎN NAVIGAȚIE

ANALYSIS OF THE CRITERIA FOR CHOOSING THE WINCH USED IN NAVIGATION

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Abstract This paper presents the types of winches, used in navigation, as independent lifting or traction machines, their components and some necessary calculations in sizing and determination of the operating characteristics. Winches are simple machines, in the category of levers, which are used to lift or transport loads with the help of a cable, which is wound on a cylinder called a bobbin.

The paper presents an analysis of the main characteristics of the most well-known brands of winches on the market, making a comparison between them, in terms of functional mechanical characteristics, to choose the corresponding variant.

The conclusions present the optimal methods to choose a winch used in navigation. Through the construction, the lifting mechanisms must be able to ensure their function, to be adjusted so as to ensure the elimination of the risks of injury throughout their life.

Keywords: *winches used in navigation, technical characteristics, functional characteristics, bobbin, cables.*

PROCEDEE DE DETERMINARE A VITEZEI DE DEPLASARE, A DISTANȚEI PARCURSE ȘI A ADÂNCIMILOR ÎN NAVIGAȚIE

METHODS FOR DETERMINING THE SPEED OF TRAVEL, THE DISTANCE TRAVELED AND DEPTHS IN NAVIGATION

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Abstract The paper presents the physical principles on which are based the procedures for determining the directions at sea, the position of the ship, the determination of the distance traveled in a certain time interval, as well as the depths, this informations being of particular importance in navigation. Measuring the depth of the water is necessary to prevent the ship from stranding when sailing in shallow water, preparing for the mooring manoeuver, navigating near the seacoast in low visibility conditions and in many other situations. A series of basic concepts are presented, also the main devices available to seafarers to navigate the ship in complete safety.

Keywords: *Doppler principle, Ultrasound, Sonar, Piezoelectric, Magnetostrictive, Radar, Loch.*

TRECUT, PREZENT ȘI VIITOR ÎN NAVIGAȚIA MARITIMĂ

PAST, PRESENT AND FUTURE IN MARITIME NAVIGATION

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Abstract The paper aims to make a brief foray into what maritime navigation has meant in the past, how it is conducted today, what are the challenges it has to face, and of course what will be its future evolution. It summarizes some of the most common tools, equipments and navigation systems, and the remarkable transformations they have undergone over time to become what they are today. New technologies, process automation, information and communication technology in particular, have evolved at a spectacular pace, thus providing opportunities for the introduction of remarkable changes in maritime navigation. Some aspects related to newer concepts, such as e-navigation, digitalization of ships and autonomous ships are also presented, the latter being already, although only at the beginning, realities of the current period.

Keywords: *astronavigation, equipments, instruments, navigation systems, GNSS, autonomus ships.*

CANALUL SUEZ – INCIDENTUL EVER GIVEN

SUEZ CANAL - EVER GIVEN INCIDENT

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Abstract This paper presents a recent topic, with a high impact on the economy, but also on the transport of vessels, especially the containers ships on the Suez Canal. The Suez Canal is one of the most important artificial shipping routes, blocking it for even a few hours, or days, as has recently happened, can affect the entire transport system. This article has analyzed and discussed the hypotheses by which the container ship Ever Given failed on the bank, but also the ways in which it could be getting to float again. This unforeseen event demonstrated how quickly the canal authorities mobilized to solve the problem.

Keywords: *Suez Canal, container ship, Ever Given, Suez Canal blocked, maritime transport.*

CONSIDERAȚII PRIVIND ECLUZELE ÎN EXPLOATAREA CANALELOR NAVIGABILE

CONSIDERATIONS ON SLUICES IN THE WATERWAYS EXPLOITATION

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Abstract This paper is inspired by the study program followed by the author, Marine and Port Installations and Equipment.

The study has an informative and descriptive character regarding the construction and operation of a sluice what is a complex structure, with major importance in the construction and operation of navigable canals, in shipping also.

The paper presents the component parts of a sluice, the principle of operation, schemes, examples, conclusions, recommendations.

Keywords: *shipping, waterways, sluices, operation, exploitation.*

UTILIZAREA AUTOCAD PENTRU REALIZAREA UNEI MACHETE

USING AUTOCAD TO MAKE A MODEL

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Abstract Această lucrare își propune să evidențieze aspecte privind utilizarea programului AUTOCAD (Computer Aided Design, proiectare asistată de calculator) care ocupă un loc foarte important în plaja aplicațiilor vectoriale. AutoCad este un program foarte utilizat pentru proiectarea și desenarea asistată de calculator în multiple domenii de activitate: mecanică, electrotehnică, arhitectură, etc. Am realizat în lucrare ca aplicație macheta unei macarale cu acționare electrică și pneumatică pentru care schema electrică și desenele pieselor componente le-am desenat în AUTOCAD.

Keywords: *desenare asistată de calculator, blocuri și atribute, acționare electrică.*

BRAT MECANIC

MECHANICAL ARM

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Abstract Avantajele, calitățile remarcabile și flexibilitatea pe care le dețin acționările hidraulice, cum sunt: mare densitate de putere, asigurarea reglării optime a proceselor tehnologice, viteze mari de răspuns, excelente proprietăți dinamice, accesibilitatea utilizării celor mai moderne mijloace de conducere (calculatoare, microprocesoare), facilitățile oferite de elementele de interfață etc, au permis o rapidă perfecționare și adaptare la noile cerințe impuse de dezvoltarea ascendentă a științei și tehnicii și, deci, asigurarea în continuare a unei largi utilizări a sistemelor hidraulice de acționare și automatizare.

Keywords: *acționari hidraulice, procese tehnologice, sisteme hidraulice*

PUNCT MONITORIZARE ACCES PERSOANE, CU MICROCONTROLLER ARDUINO

ACCESS MONITORING POINT FOR PEOPLE, USING ARDUINO MICROCONTROLLER

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Abstract, This paper presents an automatic control circuit using an microcontroller Arduino Uno in order to monitoring the access for people, in a certain area. This electronic circuit will trigger the opening/closing of an electronic lock through sensors. Sensors are operated via a card containing an access code. The access card triggers comands on Arduino breadboard circuits. The chip is programmed by a source code file, written on a personal computer via an USB port. The input/output data managed by the microcontroller are saved in an Excel file. The file will contain: the date and time of using the access card, the card code and the access confirmation.

Keywords: *Arduino, microcontroller, breadboard, source code, sensor, automatic control*

MACHETĂ RADAR REALIZATĂ CU ARDUINO UNO

RADAR MODEL MADE WITH ARDUINO UNO

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Abstract The radar system is created by putting together several Arduino UNO components. This radar is made of an ultrasonic sensor and a servomotor, these being the most important components of the radar. The basic function of the radar made with Arduino UNO is to detect objects within a certain range. The ultrasonic sensor is attached to the servomotor that rotates at approximately 180 ° and provides a visual representation on a software called IDE. IDE (Integrated Development Environment) are known as platforms dedicated to the development of software solutions and applications, extremely useful to programmers by providing access to a complete set of tools for software development in a single product. The IDE can be used for both a single programming language, but can also support a multi-language language.

Keywords: *Senzor ultrasonic, Arduino, IDE, servomotor, comandă automata, limbaj multi-language, radar.*

MODELAREA REALITĂȚII PRIN GRAFICĂ

MODELING REALITY THROUGH GRAPHICS

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Abstract This paper presents an example of graphic modeling of an image using Adobe Photoshop CS6 software. This program is a tool for capitalizing on the benefits of using artificial intelligence. The knowledge of the technical elements combined with a highly developed imagination generates results that determine the change of perception on reality. All the means of editing used in this project are extremely common in fields such as: fashion, journalism, gaming industry, etc. For this reason we can label these techniques as tools that can play both a positive and a negative role in society.

Keywords: *Adobe Photoshop, editare foto, grafică, manipulare foto, software.*
