CNFIS-FDI-2020-0199

Publication presenting the main topics of fundamental and applied research, addressed by UPET students

Analysis of the quality of banking services offered by the "Transilvania" bank

Author/s: Bita Paul Constantin

Mining Faculty, Specialization: Quality engineering and management

Coordonator/s: Asist.univ.dr.ing.,ec. Dovleac Raluca

Keywords: quality, management, services, banking

Abstract

The aspects of quality management in banking are relatively recent (the ´80s of the twentieth century are the starting point), but research in the field demonstrates the importance of sustained concerns for continuous improvement, especially in banking systems in developed countries. The increase in the number of banks has led to the development of competition and awareness of aspects related to the quality of banking services offered on the market, so as to take into account not only the "quality desired / achieved by the bank" but also the quality perceived by the customer. Why did I choose to analyze, in particular, Banca Transilvania? I chose to analyze the quality of the products / services offered by Banca Transilvania because this is a successful Romanian brand, an example both in terms of growth and "ability to act quickly and permanently optimize the business model."

Introduction

According to ISO, Quality represents the totality of the performances and characteristics of a product or service that determines its capacity to satisfy the direct or implicit requirements of the consumer.

As technologies evolve, the supply of products and services for society and individuals diversifies; new products appear, with performances and characteristics that 15-20 years ago could not have been imagined.

Consequently, the quality of a product or service is rigorously built according to precise norms and methodologies. The concern for quality has led internationally to the development of standards and guidelines for quality systems that complement the relevant requirements for products and services included in the technical specifications. At European level, standards from the ISO 9000 family have been developed to ensure a generic regulatory core for quality systems applicable to various industrial or economic sectors.

Research objectives

The objective of the current research is to perform a comparative analysis of a banking product in order to determine its quality and to see where Banca Transilvania falls in relation to other banking institutions in Romania.

Research methodology

To measure the quality of banking products, a technique called mystery shopping has been applied as a method - "mystery shopping". This consists in the supervision and analysis of the interactions between bank officials and customers, and results in obtaining the so-called "moments of truth", the method being applied to assess the quality of services provided by employees. Due to the impediments encountered in practice, however, there are differences between the theoretical version of the method and how it is applied.

The following steps were followed to apply the method:

- Choice of services to be tested;
- Identifying and defining the functional dimensions regarding the quality to be evaluated;
- Elaboration of the action for evaluating the functional quality;
- Establishing a scale for the identified dimensions;
- Planning the application process (setting up the testing program and its application);
- Centralization and interpretation of data.

Results

The introduction and maintenance under control of the operations within the bank and the permanent comparisons with the best ones in the field – benchmarking, are likely to determine the achievement of the established objectives in the field of quality. The objectives, strategies and policies specific to a bank determine the nature of the quality approach in the respective

Clienți activi BT*	31.12.2019	31.12.2018	2019/2018
Clienți Corporativi Mari	1.483	1.365	8,6%
Clienți Corporativi Medii	8.985	7.929	13,3%
Clienți IMM	18.593	17.700	5,0%
Clienți Micro Business	298.152	256.972	16,0%
Clienți Persoane Fizice (Retail)	2.931.894	2.560.651	14,5%
TOTAL	**3.259.107**	**2.844.617**	**14,6%**

bank. According to the undetaken SWOT analysis, the bank has well-designed online applications, with a high degree of information security and fast access from the home page. The services offered are varied and complex: view active accounts and transaction history; transfers in lei or in foreign currency between own accounts or to other accounts in Romania or abroad; ordering payments to the state treasury; pay bills to utility providers; predefining beneficiaries for intra and interbank payments; establishment and liquidation of deposits and foreign exchange.

REAL - TIME MONITORING SYSTEM IN THE SERVER ROOM

Author/s: **BOTOȘ DRAGOȘ-OLIVER** [1]

1Faculty: MECHANICAL AND ELECTRICAL ENGINEERING

, Field of study: COMPUTER SCIENCE

Coordinator/s: **Lect. Phd.Eng. SÎRB Vali , Assoc. Prof. PHd. eng. EGRI Angela**

Keywords: servers, air quality, high security

Abstract

This paper develops and presents a hardware and software system that monitors the following parameters: temperature, humidity, smoke and air quality in the server room and when the normal values are exceeded, a visual and acoustic alarm starts, which serves to warn that there is an excess of certain values. This system was designed for a server room, because inside such a room there are devices and systems that work non-stop and have a very high market cost.

Introduction

Parameters such as humidity, temperature, smoke or low air quality are factors that disrupt the quality of life today. If these values are not within a normal limit, they can affect both the daily life and the average lifespan of electronic devices. The idea of carrying out this project started from a detailed study of the needs of people and certain companies that want to keep the used devices in the best possible condition and therefore to have a high safety.

Research Objectives. In this project was designed and implemented an intelligent warning system for monitoring some parameters in the server room. The objectives pursued in carrying out this project are the following:

The project should be easy to implement;

To be done with a minimum of costs;

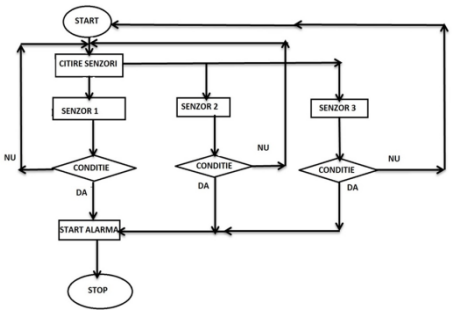
To have several operating modes;

Monitor a fairly large number of sensors;

Be a minimalist project and easy to use in any circumstance.

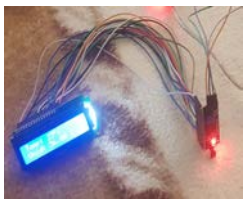
Research Methodology

The analysis of the problem, the elaboration of the software and the monitoring of the parameters were done according to the algorithm presented in the figure below.



Results

The hardware and software system of the intelligent warning system was designed to monitor some parameters in the server room.



```
if  (sensorValue>150){
    digitalWrite(rosu, HIGH);
   digitalWrite(buzzer, LOW);
```

Smoke sensor system alarm

```
else  if ( sensorValue2>300){
  digitalWrite(rosu, HIGH);
   digitalWrite(buzzer, LOW);
```

Air quality sensor system alarm

```
else if (t >= 25){
digitalWrite(rosu, HIGH);
  digitalWrite(buzzer, LOW);
 }
else if   ( h >= 80){
    digitalWrite(rosu, HIGH);
  digitalWrite(buzzer, LOW);
```

DHT1 sensor system alarm

After testing in all conditions, high humidity, high temperature, presence of smoke and poor air quality, the system responds exactly as it was set. When one of these values is exceeded, the system sends a signal to the buzzer and the LED and they start, establishing the necessary conditions for the alert system.

USE OF LOW-CODE PLATFORM IN BUSINESS

Author: **Eng. GHICAJANU (CAȘOTĂ) MARIA-ISABELA**

Faculty: Mechanical and Electrical Engineering

Field of study: Applied computer techniques and technologies

Coordinator/s: Lect. Phd. Eng. SIRB Vali, Assoc. Prof. EGRI Angela

Keywords: low-code platform, retail, business

Abstract

This paper presented how to create a low-code platform, its benefits and usefulness in management and business processes, and the most significant contributions in improving activities, services and business processes.

Introduction

In the current conditions of the world, when we realized the importance of digitalization in the business environment in almost all fields of activity, especially retail, financial-banking services, education, health, especially caused by the COVID 19 pandemic, the future for operating in conditions normal and efficient is information technology and digitization of activities. The sectors and fields of activity that benefit from such programs and applications are from various business areas, which can be divided into:

- customers in the Retail domain
- customers in the private banking domain
- customers in the corporate domain

The rapid spread of the Covid-19 virus triggered mandatory isolation of the workforce at home and home or remote office became strictly necessary. The current work landscape raises a completely unique set of issues that already have a severe impact on the physical and mental well-being of the workforce and the operational continuity of the companies for which it works.

A low-code development platform is software that provides a development environment used to create application software through graphical user interfaces and

configuration instead of traditional hand-coded computer programming. A low-code model allows developers with varying levels of experience to create applications using a visual user interface in combination with model-based logic. Such platforms may produce fully operational applications or may require additional coding for specific situations.

Research Objectives

The key objective of the platform is to simplify communication so that all public entities are registered in a digital system capable of responding to citizens' requests in the shortest possible time.

The capabilities of the low-code process automation platform aim to reduce:

- the number of employees likely to fall ill in condensed periods of time.
- the psychological impact of employee isolation will have an unprecedented impact on the health and productivity of the workforce.

Research Methodology

The techniques used in the low-code platform application with several levels are those in which:

- the application will be outside the blockchain
- the application will be hosted on a private blockchain
- the application will be hosted on a public blockchain.

Results

Following the testing and implementation of the low-code platform application, the required performances were obtained, respectively:

- simplification of communication
- response to requests as soon as possible
- correct operation of the modules
- monitoring employees working from home in the current context of the COVID-19 pandemic

DESIGN OF AN INTERACTIVE TOY

Author: Antonia – Gabriela MARCU

Faculty of Mechanical and Electrical Engineering, Computers
Coordinatori: Prof. Univ. Habil. PHD. Eng. Monica LEBA, Assistant. Research. Drd. Eng. Arun Fabian PANAITE

Keywords: toy, artificial muscle, interactive, McKibben

Job summary

I have opted for this development, because I believe that smart toys can help raise a child, but also to heal it through its behaviour - Joey, the hug bear. Thus, Joey is based on an Arduino UNO alongside a presence sensor and an ultrasonic sensor. Everything occurs through the artificial pneumatic muscle. It brings together, to some extent, the three properties above, being only a prototype for what could become a teddy bear for children who have suffered abuse or require more affection.

Introduction

The process of building the toy was complex because of the materials used and because it was often able to improvise. Although it resembles a McKibben muscle, the difference in materials and inventiveness with which the materials were used make it unique in the world.

For starters, it needed a support for the skeleton of the interactive toy.

The two artificial muscles were made up of five elements:

•balloons;

•cable braid;

•plastic zip-ties;

•infusers;

•syringes.

Research objectives

The main purpose of a toy remains the same regardless of its condition – intelligent or not, their purpose is to delight and delight children in their daily activities. Thanks to advancing technology today, they can do more than that, offering special experiences and benefits, making the little ones more eager for knowledge, socialization, thus keeping them well disposed throughout the day.

Thus, the skills that my project has targeted are different. One of the main reasons, the main one – for me – was that it can help to solve problems related to social anxiety, a condition that is a mental health problem, chronic, which implies an irrational fear of social situations and activities, this being caused for various reasons, one being also bullying or familiar problems caused by various factors.

Research methodology

The balloon is the inner part of the muscle that causes it to contract, along with the cable braid which, thanks to the diagonal braids, when the balloon inside swells, it contracts, creating the action of a human muscle. The use of plastic necklaces was necessary because the muscle had to be caught at the ends, and the infusions gave us the end on which we can attach these necklaces (these being quite rigid), but also the end that enters the inside of the balloon, being a surface with high adhesion for its end.

The syringe helped create the piston that acts on the two muscles, and the infusion hose helped to create a link between the piston and the operated muscles.

After the five components were fitted, out of curiosity, the two muscles were tested for force. Thus, one of them was operated with a lubricant and the other pneumatic.

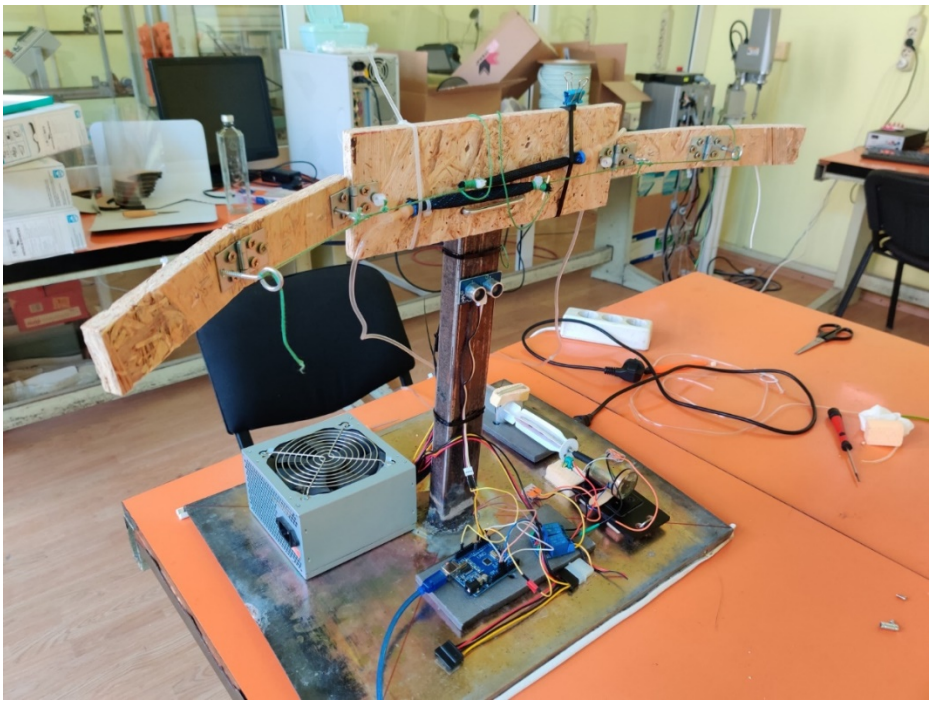
The result of the two experiments revealed that the pneumatically operated muscle lifted the load more easily. Although the stroke of the syringe was longer than that operated by the lubricant, the force of the pneumatic one was greater, the body on which it was acting, rising about two centimeters more than that operated by the lubricant.

The strength of the muscle operated by the lubricant is that, from what I have observed, it can support more weight than the pneumatic one, but the actuating force would become greater and greater, whereas at the pneumatic one, the piston will always be easy to operate due to the mechanism and principle on which it is based.

Results

Because inside a teddy bear or a toy, the contraction of the muscles would not be visible, we decided that the mechanism should be operated on a skeleton of the toy. Thus, a wooden plate was built into three pieces, measured and made according to the shape of the chest and the two arms of a teddy bear. The wooden plates required to be sanded and straightened for use.

We opted for this option because it is much more visible the mode of operation and the principle on which artificial muscles are based. Being inside, the whole process would have been covered and all we could have noticed would have been just the fact that the two arms are moving and making the essential movement to embrace.



Circuit mounted and assembled.

We can see every day how technology is advancing at a high enough speed that it's very hard for us to keep up, and that can be both a positive and a negative aspect. For the smart toy industry, this is certainly a positive one.

Although until decades ago, the smart toy industry was dominated by certain manufacturers and there were not many toy variants to make better selection from, today there are millions of interactive toys, from a talking doll to a robot that follows you.

ANALYSIS OF THE PREMISES OF THE IMPLEMENTATION OF THE QUALITY MANAGEMENT SYSTEM AT EXCELLENCE CONSULTING GROUP S.L.

Author: Iurie Mihailov[1] ,

[1] Faculty of Mine, Quality Engineering and Management
Coordinator: Andreea Ionică

Keywords: quality, client satisfaction, ISO 9001:2015

Abstract

The research focuse on evaluating Excellence Consulting Group S.L. activities, an organization with great potential and experience on the market. The company is developed having several subdivisions in different fields of activity, continuously improving its products and services. The company Excellence Consulting Group manages both production operations and import / export operations, being always in close contact with suppliers and customers. Often, companies, in the process of interacting with suppliers and customers, face certain dysfunctions that have negative effects on the organization. The research undertaken demonstrates that increasing the efficiency in using the organization's resources to improve customer satisfaction is a considerable advantage after implementing an Quality Management System (QMS).

Introduction

The Quality Management System (QMS) is a set of well-correlated elements that serve to continuously improve quality in a company. An QMS includes certain functions and principles, which once implemented and strictly followed, will have a positive effect on the development and the productivity of the company. Moreover, the implementation of a European Quality Standard (ISO 9001:2015) will bring a number of benefits within the organization, such as increasing the quality of products and services that meet customer requirements and comply with applicable legal requirements and regulations, the ability to demonstrate compliance with the specified requirements of the QMS, increase the level of customer and employee satisfaction, optimize resources and expenses, a better customer-organization relationship, better risk management. All these benefits, together with the implementation of an QMS, would positively influence all the processes within the company.

Research Objectives

Pentru atingerea scopului cercetării, care vizează determinarea gradul de satisfacție al clienților din punct de vedere al calității produselor și serviciilor recepționate de la compania Excellence

Consulting Group S.L., au fost setate următoarele obiective: 1. Identificarea clienților fideli companiei pe subdiviziunile firmei; 2. Identificarea căilor de cunoaștere a companiei Excellence Consulting Group de către clienți; 3. Determinarea criteriilor urmărite la achizionarea produselor și serviciilor oferite de companie; 4. Evaluarea gradului de satisfacție al clienților în raport cu calitatea produselor și serviciilor recepționate; 5. Influențarea deciziei finale de cumpărare, ca efect al certificării produselor companiei cu Standardul European de Calitate (ISO).

Pentru evaluarea disponibilității implicării top managementului în implementarea SMC au fost setate următoarele obiective: 1. Identificarea top managerilor pentru subdiviziunile firmei; 2. Identificarea avantajelor implementării unui SMC; 3. Determinarea amenințărilor ce stau la baza relației cu clienții; 4. Identificarea barierelor ce au stat în calea procesului de implementare a unui SMC.

Research Methodology

In order to achieve the research goal, which aims to determine the degree of customer satisfaction in terms of quality of products and services, the following objectives were set: 1. Identifying the customers that are loyal to the company (at the level of the company subdivisions); 2. Identifying the way the clients know about the company; 3. Determining the criteria followed when purchasing products and services offered by the company; 4. Assessing the degree of customer satisfaction in relation to the quality of products and services received; 5. Influencing the final purchasing decision, as an effect of certifying the company's products with the European Quality Standard (ISO). In order to evaluate the availability of the top management involvement in the implementation of SMC, the following objectives were set: 1. Identifying the top managers for the company's subdivisions; 2. Identifying the advantages of implementing a QMS; 3. Determining the threats underlying the relationship with customers; 4. Identifying the barriers that stood in the way of the QMS implementation.

Results

The results of the research have shown that most top managers have the willingness and commitment to implementing an QMS and believe that implementing ISO requirements would help the company eliminate most of the unpleasant situations it faced in the relationship with customers and improve the quality of products and services. Also, most top managers, given the current pandemic situation, as well as the objectives initially proposed for the development of the company through the introduction of innovation in production processes, are motivated to implement a QMS in the coming period. Also, it was found the need to implement the requirements of the ISO 9001 standard in order to successfully manage all the processes that take place within the company: from the production process to the import / export operations. The implementation of this standard will lead to a visible economic and financial growth of the company and even to the establishment of new subdivisions, with the help of which the company will be able to access many other market segments.

Achieving a robotic head

Author/s: Muntean Emanuel

[1] University of Petrosani, Faculty of Mechanical and Electrical Engineering, Field of study: Computer Science
Coordinator/s: Leba Monica, Mija Nelu, Rosca Sebastian-Daniel

Keywords: 3D printing, degrees of freedom, robotic head, anatomical model, prototype

Abstract

In this paper we analyze the prototype of a robotic head according to the humanoid anatomical configuration. Taking into account the human physiognomy and the functions that the neck and head-specific anatomical joints must perform, in order to achieve biomimetic movements, according to the literature, the joints and elements that make up the actuator system, as well as the control loop, are performed 3D. It also aims to create a system of perception of objects using sensors, but also to achieve a way that mimics human speech.

Introduction

Robotics is the science that deals with the technology, design and manufacture of robots. Robotics requires knowledge of electronics, mechanics and programming and the person working in this field has come to be known as a roboticist or robotics engineer. The name robot was first introduced by Karel Capek in 1921 in his work „Universal Robots of Rossum", starting from the word ROBOTA = work, routine activity, then taken over by Isaac Asimov in the science fiction story „Run in a Circle" in 1941. Robots are mechanisms that perform different tasks on their own.

Robots are mainly achieved by combining mechanical, electrotechnical and computer disciplines. In the meantime, it was created from their mechatronic sway. In order to develop autonomous systems (which find solutions for themselves) it is necessary to link as many robotics disciplines as possible. This focuses on the link between the concepts of artificial intelligence or neuroinformatics and their biological ideal, thus establishing biocybernetics. From the link between biology and technique, bionics developed.

The most important components of robots are sensors, which allow their mobility in the environment and the most precise direction. A robot does not necessarily have to be able to act autonomously, so a distinction is made between autonomous and teleguided robots.

Research Objectives

In this work we proposed the creation of a 3D prototype that depicts the head and neck of a man in abstract form. To make the prototype we used the 3D printing technique, while the construction of the control loop required the use of an Arduino development plate, a 12-channel engine driver to control 5 servomotors for precision mechatronic operations, mounted in the key joints of the prototype as well as an ultrasonic sensor used to achieve human-robot interaction based on the feedback provided by the sensory perception of motion.

Research Methodology

Regarding the realization of the actual model of the prototype were studied from the literature anatomical models of the musculoskeletal system related to the neck joint in order to be able to correctly imitate the collection of structures that connect the head to the torso-mandibular joint to best represent the structure that connects the skull to the mandible. We also studied the anatomy and physiology of the extraocular muscles responsible for controlling the movements of the eyeballs.

Results

The prototype of the robotic head is able to detect objects around it, speak and move independently, having 4 degrees of freedom and offering functionality similar to the class of movements offered by the anatomical model that has 6 degrees of freedom, secured through seven cervical vertebrae. On the basis of two threaded axises with two beginnings the prototype model allows the roll movement of the neck joint towards the side at an angle between 60°-130°, the movement of cervical rotation is carried out using a movement mechanism composed of a system of two toothed wheels, one of which is directly operated by a servo motor to allow biomimetic movements at an angle between 30°-150°. The third flexion movement – extension is ensured by means of a third shaft threaded with 4 beginnings and allows angular movements between 20°-160°. A fourth degree of freedom is also ensured by a threaded shaft connected to a servo motor that acts the mechanism of the mandible at an angle between 10°-25°. The movement of the eyeballs is ensured by means of 2 continuous rotational micro-servomotors. In figure Fig. 1 shows the overview of the prototype of the robotic head.

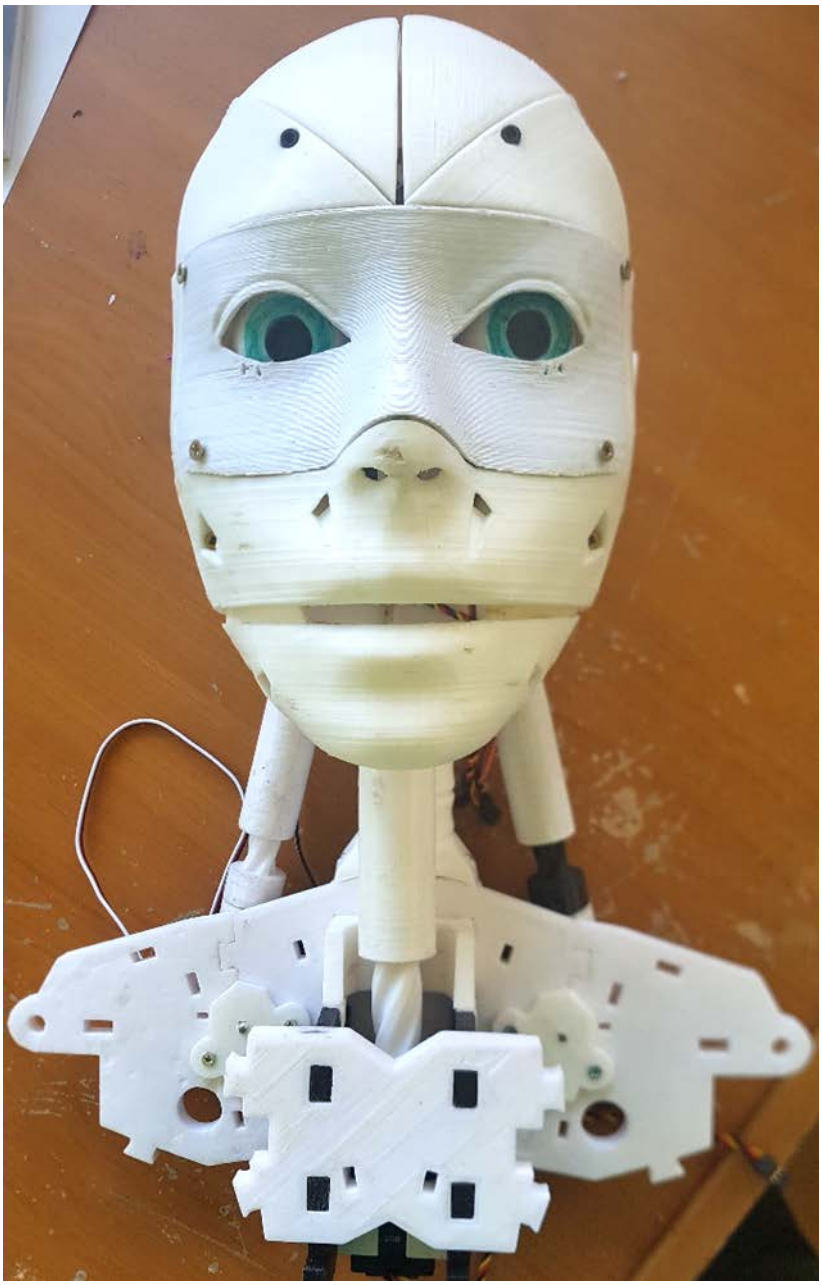


Fig. 1 *Robot's head, neck and shoulders (full assembly)*

Display text information in Augmented Reality

Author/s: Pătrașcu Maria-Vasilica[1]

[1]Facultatea de Inginerie Mecanică și Electrică, Calculatoare
Coordonator/s: Prof.univ.dr.habil.ing. MONICA LEBA, Asist.cercet.drd.ing. OLAR MARIUS LEONARD

Keywords: Augmented reality, tracker, 3D printing

Summary work

In this project we made a display of some text and image information in Augmented Reality. With Augmented Reality, you can display different virtual graphics over real objects, so you can display a museum painting exhibition on a wall, or if a photo is viewed with a mobile phone to recognize the elements in that image and display additional information about those items. In this project, several 3D graphics and text were produced, which are displayed on the mobile phone screen, when it views two real objects, the logo and name of the Universities and Petroşani.

Introduction

In order to carry out the draft presentation of the license paper, we also did a review of the details of the Extended Realities, in particular the Augmented Reality. We also presented the applications with which all the graphics presented were made.

To display graphic and text information on the screen of a mobile phone we also made an app, which was later installed on the mobile phone. For the final presentation we connected wirelessly, the phone with the laptop connected to the projector, and so you could see on a screen what was seen on the mobile phone screen.

Research objectives

Research in this project consisted of finding a way to use Augmented Reality technology to display different virtual information related to different realobjects.

The main objectives were:

- Making 2D-3D graphics objects and printingthem acestora to the 3D printer.
- Deploy them in the virtual environment of the Unity platform and rre-install the application needed to display virtual information

Research methodology

First I made a list of the necessary applications, then I selected the ones I was good at working on, so I chose the 2D vector graphics application, Corel Draw, the 3D graphics application, Autocad 123Design and the Unity virtual platform, and for data processing for 3D printing, Meshmixer and Cura Ultimaker.

For 3D objects I chose the University logo and my name, and these will lead to the display on the phone screen of the University logo in 3D format, and the Name of the University will display some infirmities about me, about the Faculate and my specialization. All of these 3D objects were connected to virtual elements through the Unity platform, from where we also compiled and exported the final application. The actual objects were 3D printed and highlighted with the marker. Then, at the end, I installed the resulting app on my mobile phone and checked to see if all the impressions were working.

Results

The results of the project are as follows:

Graphics, 3D printed, and those that were displayed in the app:

APPLICATION FOR THE PETS' IDENTIFICATION USING BEACON DEVICES

Author: Peev Alexandr [1]

[1]Faculty of Mechanical and Electrical Engineering, Computers Specialization,

Coordinator: Se lucr. dr. ing. Rîurean Simona Mirela

Keywords: Apple iBeacon; Android SDK; Microsoft Visual Studio; Xamarin

Abstract

Positioning technologies, based on technological advances in low-power, short-range wireless communication tools, as well as languages that encompass more and more specific media and libraries, have enabled the development of applications. most useful dedicated to mobile phone. In this paper I present a useful application in identifying pets and notifying owners of lost animals. The application is supported by the iBbeacon type device that is fixed on the collar of a pet. The device will send information to an application created by me, when the pet enters the bluetooth coverage area of our phone. The application can be accessed in real time so that information about this animal is received. If the animal is lost, this is seen in the database and so we can contact the owner to inform him where his animal is. We can also use this device to find a pet more easily, if he has the iBeacon around his neck and his owner uses our application. Thus we can quickly identify, within a range of about 15 meters the condition of the animal (lost / or not) and we can quickly communicate its location.

Introduction

Globally there are already similar applications, but all are made using GPS modules that require a much larger battery and are not as convenient to use or if they are on beacons are useful only if the phone is always connected to they.

In the research I will present the efficiency of iBeacon technology by using the UUID which is unique and works just like a key. Thanks to it, each iBeacon can be used, both for connecting to an application that carries some data related to this iBeacon, as well as for making payments, due to the high level of security.

The implementation of the connection between the Beacon device and the smartphone is done with the help of a client application called "xPetTracker". For the operation of this client application, the server application called "PetTracker" is created, with the help of which the database and the server are created, both hosted on Azure.

Research Objectives

The main objective is to create an application on the mobile phone that can access in real time a dedicated platform on which to identify the status of an animal (lost / or not) that has an

iBeacon device attached. It uses Bluetooth technology that allows the exchange of information between various devices such as mobile phones, laptops, personal computers, printers, digital cameras and video cameras or video consoles through an encrypted (secure) and short-range radio wave, of course only if these devices are also equipped with Bluetooth.

Research Methodology

Bluetooth Low Energy, formerly known as Wibree, is a subset of Bluetooth v4.0 technology with a whole new stack of protocols for quickly building simple links. As an alternative to the standard Bluetooth protocols that were introduced in Bluetooth v1.0 to v3.0, BLE is intended for very low power applications that flow from a coin-sized cell.

The iBeacon beacons used for this work are small and cheap Bluetooth transmitters The applications installed on the iPhone listen to the signal transmitted by these beacons and respond appropriately when the phone is within range. For example, if a beacon in a store broadcasts, the reseller app (assuming you installed it) might display a special alert for you. On a visit to a museum, the museum app will provide information about the nearest exhibit. , using the distance from the beacons placed near the exhibits to find the position.

With the help of an iBeacon, the software of a smartphone can find approximately its location relative to a beacon in a store. Retail stores use beacons for mobile commerce, offering customers special offers through mobile marketing and can allow mobile payments through point-of-sale systems.

For software development we used Android SDK, Java SE Development Kit, Microsoft Azure, Microsoft Visual Studio, Microsoft Visual C #, Visual Studio Community, Microsoft SQL Server, ASP.NET Core, ASP.NET MVC, HTTP, OpenID Connect and Xamarin.

Results

The application is created for a target group, which is represented by people who have cats and dogs in their care, and is a way to greatly facilitate searches in case of loss of a pet.

The advantages of the application I created are:

• It is developed on Cross-Platform which means that, although it is created for Android, it can be easily ported and made on Windows Phone and IOS;

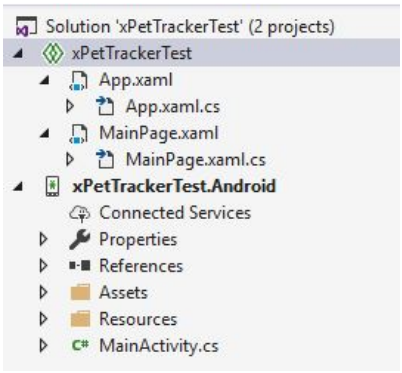
• Represents an application that is not described anywhere, nor from a conceptual point of view, nor is it a similar project implemented in Romania;

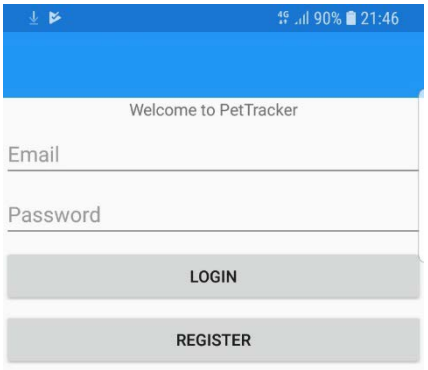
• It is very simple to use by people without specialized knowledge in the technical field;

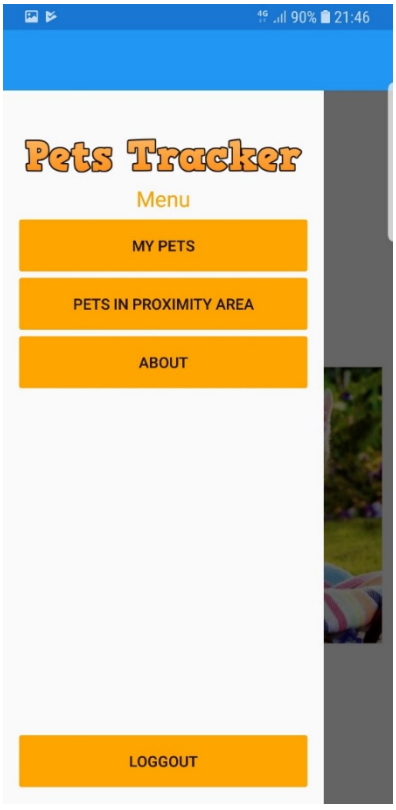
• It is created on a free platform, but very well developed.

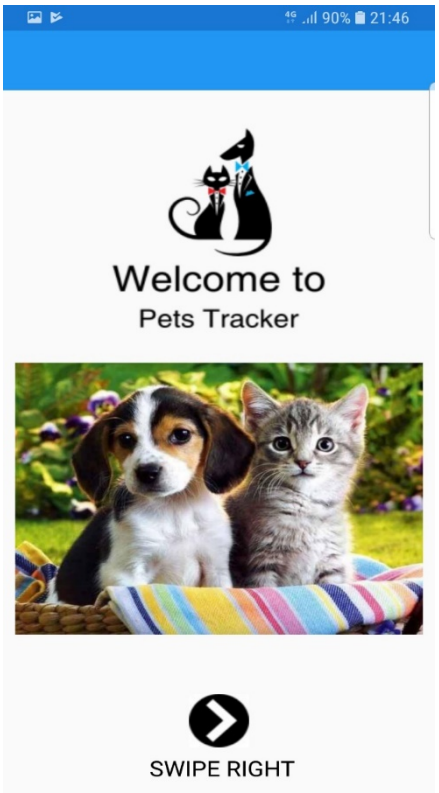
A disadvantage of this application would be that it is very dependent on the human factor, because it is not automated. In other words, its efficiency depends a lot on the number of users and the good faith of its users. If the application is used by a small group of people, its efficiency and the chances of finding the lost animal decrease greatly..

.


Solution 'xPetTrackerTest' (2 projects)
xPetTrackerTest
App.xaml
App.xaml.cs
MainPage.xaml
MainPage.xaml.cs
xPetTrackerTest.Android
Connected Services
Properties
References
Assets
Resources
MainActivity.cs


90% 21:46
Welcome to PetTracker
Email
Password
LOGIN
REGISTER


90% 21:46
Pets Tracker
Menu
MY PETS
PETS IN PROXIMITY AREA
ABOUT
LOGGOUT


90% 21:46
Welcome to
Pets Tracker
SWIPE RIGHT

Wireless Data Communication Prototype using Visible Light

Author: Popa Alexandru[1]

[1]Faculty of Mechanical and Electrical Engineering, Computer Automation Specialization,

Coordonator: Sef lucr. dr. ing. Rîurean Simona Mirela

Keywords: Arduino; simulation; PIN PD, APD, LED

Abstract

Communication methods have expanded a lot in recent years, from corded telephone to internet communication and this can only bring advantages through the speed with which information is transmitted. The way the information is transmitted takes into account a few things, the most important being their speed, low cost and security. In recent years this has become extremely important and efforts are being made to use the most secure methods of communication and data transmission possible. What is considered a faster, more secure and cheaper solution than the classic internet is the communication through the visible light spectrum and extrapolated this method led to the creation of Li-Fi, a technology similar to Wi-Fi, but which uses waves from visible and infrared light space instead of radio frequency waves. Experts warn that we are approaching a potential crisis in terms of transmission in the WI-FI space, due to the proximity of maximum capacity. LI-FI has no limitations in this regard, or at least very difficult to be reached.

Introduction

Anyone uses light sources such as the simple LED and the fact that by turning it on and off data can be send, associated with zero strings and one seems incredibly simple. What greatly complicates this method of communication is the reception of the light signal but it is still under development and its implementation as a functional integrated system will take time.

The visible spectrum is that visible part of the electromagnetic spectrum for the human eye. Electromagnetic radiation in this wavelength range is called visible light. The human eye will perceive the wavelength between 380 and 740 nm, with frequencies between 430-770 THz.

VLC systems are based on the flashing of LEDs, when information is transmitted through them, a photovoltaic cell can detect the "on-off" behavior and decode the integrated information. In principle, the basic idea of this type of communication is the replacement of cables and frequencies. radio by simply switching a light bulb or LED, practically the easiest way to transmit digital information. Theoretically, any light can be used for data transfer but the main features that will be processed will be the intensity and frequency of light.

The rate of data transmission will depend on how fast the light turns off and on, which is why LEDs are preferred.

Research Objectives

The main objective is to create a prototype of data communication in the visible light space, using an LED and a PIN or APD photodiode. The transmitted string data must be received as a number, the value being 255, which represents the conversion from binary to decimal of the number of bits of the microcontroller used.

Research Methodology

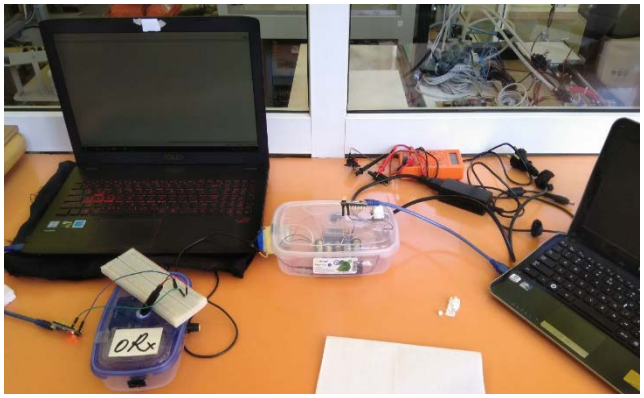
In order to demonstrate the principle of data transfer through the visible light spectrum, we made an electronic assembly consisting of two parts, namely the light transmission part and the reception part.

The transmitter of visible light spectrum communications is directly responsible for transforming digital data into optical pulses that can be transmitted over an optical channel. The transmission part will consist of three main components: the LED, a switching circuit and an Arduino microcontroller. The performance of light spectrum communications is determined by the physical characteristics of the LED, where the data rate depends on the ability to change the state of the LED and the speed of the control circuit. The data transmitted by the LED must be properly encoded by a recognizable modulation technique by the receiver. Here, the switching circuit plays a major role in modulating the signal by changing the status of the LED from "off" to "on". Basically, by turning the LED on and off we will send binary signals of "0" and "1". The Arduino microcontroller can convert binary data sequences into sequences corresponding to low voltages so to send a higher current, a transistor is the best method. I used a bipolar transistor type NPN 2N3904.

The main role of the receiving part will be to extract the data from the optical signal, amplify them, convert them, demodulate and decode them. The way in which this reception is achieved is through the amount of current produced by the photodiode, being an indicator of the light beams detected by the photodiode. The current will be transformed into the corresponding voltage levels and then processed into the amplification level, then demodulated and decoded using an Arduino microcontroller with the same characteristics as the one shown in for signal transmission. The biggest problem with creating a prototype that receives light signals is that components will need to be chosen to minimize environmental noise and interference from the outside environment. As a data reception element we used a photodiode produced by Vishay BPW20. To convert the current received by the photodiode into voltage and compare it to remove any signal distortion we used an integrated circuit from TEXAS INSTRUMENTS TL072C..

Results

During the experiments on the transmission and reception of light signals I tried simulation programs such as Serial Lab, through which I transmitted serial data, but the limitations of LED and photodiode made it impossible to transmit data at a rate higher than 2400 bps.



Also, in Multisim it was impossible to use a photodiode similar to the one in the electronic assembly, due to the fact that the transmission can be made by means of an optocoupler.

The conclusion is that, although the signal could have been transmitted and received as can be seen in the graph above, studies will have to be continued to achieve perfect communication between transmitter and receiver, eliminating any environmental interference that would distort the signals. .

It can be seen that the received signal has no constancy due to the fact that there have been countless ambient noises, which can be eliminated by means of a special filter. Those sudden drops in the signal were caused by the change in the position of the comparator potentiometer in the reception. Following the experiments performed, we noticed a limitation of the components used in the prototype, which led to a discrepancy between the simulations made in Multisim and what resulted from practice.

EVALUATION OF CUSTOMER SATISFACTION WITHIN THE QUALITY MANAGEMENT SYSTEM AT "VINĂRIA PURCARI"

Author: Eudochia Puica[1]

[1]Faculty of Sciences, Management

Coordinator: Andreea Ionică

Keywords: quality, SR EN ISO 9001:2015, SR EN ISO 22000:2006

Abstract

The aim of this paper is to present in a coherent approach the complex concept of quality, as a determining factor of the business and to assess the impact of the Quality Management System (QMS) implementation on meeting the consumers' needs. Satisfaction of consumers' needs will be analyzed as a result of the implementation of the QMS within "Vinăria Purcari" SRL. The research presents the theoretical foundations of quality management, the advantages of QMS implementation according to SR EN ISO 9001:2015, QMS analysis by defining the objectives, policy and mission of the company, along with the requirements imposed by the international standards SR EN ISO 9001:2015 and SR EN ISO 22000:2006, the analysis of the Quality Manual (QM), together with the related documented information, the results of the analysis the level of external and internal customer satisfaction, both based on the information provided by "Vinăria Purcari" and through a quantitative research based a questionnaire.

Introduction

" Vinăria Purcari" is one of the subsidiaries of the Purcari Wineries Public Company Limited group in the Republic of Moldova, which produces its reference brand, founded between 2002-2003 beeing the first winery in the Republic of Moldova. Together with „Crama Ceptura", „Vinăria Bostavan" and „Vinăria Bardar", produces premium class wines, being the undisputed leader in this niche.

The winery has successfully managed to design a complex management system that monitors all administrative, organizational, technological, operational, control and improvement activities in order to ensure compliance of products and services on the market, the requirements of standards and of course the requirements of the stakeholders, especially the customers. The basic tool for the implementation was the QM designed on the basis of the two standards SE EN 9001: 2015 - "Quality management systems. Requirements" and SR EN ISO 22000: 2006 -"Food safety management systems".

Regarding the documented information of food quality and safety, were included sheets about the level of customer (both internal and external) satisfaction, being systematically carried out a comprehensive process of marketing research, in order to coordinate, synchronize and subordinate a series of activities, for identifying and meeting consumer needs. The analysis of internal customer satisfaction is performed by the Human Resources Manager, through the questionnaire technique application, regarding certain researched factors, such as work physical conditions, remuneration, benefits and advantages, career prospects, teamwork and others. The analysis of the external customer satisfaction, like the internal one, is determined through the questionnaire, referring to four distinctive elements: sales promotion, range of products and services provided, pricing policy and customer relations.

Research Objectives

Research objectives: (1) Analysis and presentation of the complex concept of quality, as a determining factor in the organization and operation of the company and (2) Assessing the impact of SMC implementation on meeting consumer needs.

Research Methodology

In order to achieve the first objective of the research, the analysis of documents was used as a research method, and for the second objective, a quantitative research based on a questionnaire was applied. The initiated questionnaire, regarding the “Evaluation of customer satisfaction within QMS” addressed to final customers, was developed on the online platform “Google Forms”, with a content of 23 questions, structured on four distinct sections: A.Introduction to survey; B. The level of satisfaction regarding the quality of products/ services; C. QMS-products, services, professionalism and communication with the client; D. Information about the respondents.

The reviews posted by the users of the Facebook and Google Maps platform were analyzed. In the case of Facebook, the company has an official page "Purcari Wines" with about 84,856 followers and a total number of reviews of 84,089, which suggests that most followers have positive feedback, appreciate the brand and want to be aware of the products and the services offered, and also about the events, news, news and competitions organized periodically. A community of consumers is formed, which posts pictures with the purchased products or with the places from the visited tourist complex, accompanied by reviews, comments on the lived experiences. Also, like every Facebook page, it has a rating scale on a scale from 1 to 5, which at the time of this analysis was 4.8 points, quantified based on the opinion of 186 people.

Google Maps has a method of evaluating certain geographical locations, usually touristic locations, where "Château Purcari" has a score of 4.5 based on 133 reviews. Also, along with this indicator, the platform has created a special score for locations to visit, recreation and transport that is placed at an average level of 3 points out of 5 maximum, which means that the location is appreciated by tourists. This score is calculated based on data from

Google Maps based on 3 influencing factors: distance to activities (3.5 / 5 with the rating "great"), distance to public transport (0.0 / 5 with the rating " not very good ”) and access to the airport (1.9 / 5 with the rating“ ok ”). The initiated questionnaire, regarding “Customer satisfaction assessment within SMC at Purcari Winery” addressed to final customers, was developed on the online platform “Google Forms”, with a content of 23 questions, on a sample of 97 respondents from 130 reprezenting the research universe.

Results

In conclusion, analyzing the answers provided by the respondents, in order to identify the level of satisfaction, we highlighted the answer options with the highest weight (Fig1., Fig.2). Thus, the final external customers purchase the products and / or benefit from the services of "Purcari Winery" for more than 2 years, thus suggesting that they are satisfied and loyal to the company.

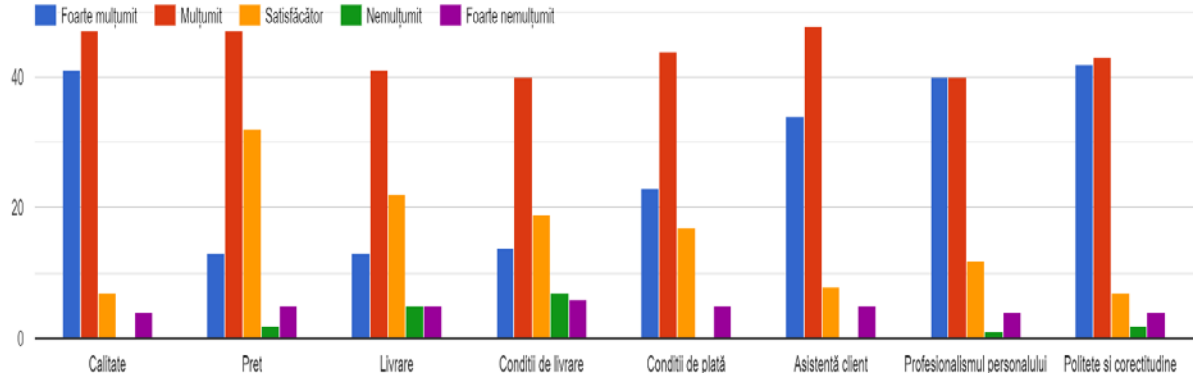


Figure 1. Results related to the satisfaction of the respondents regarding the products / services within the QMS

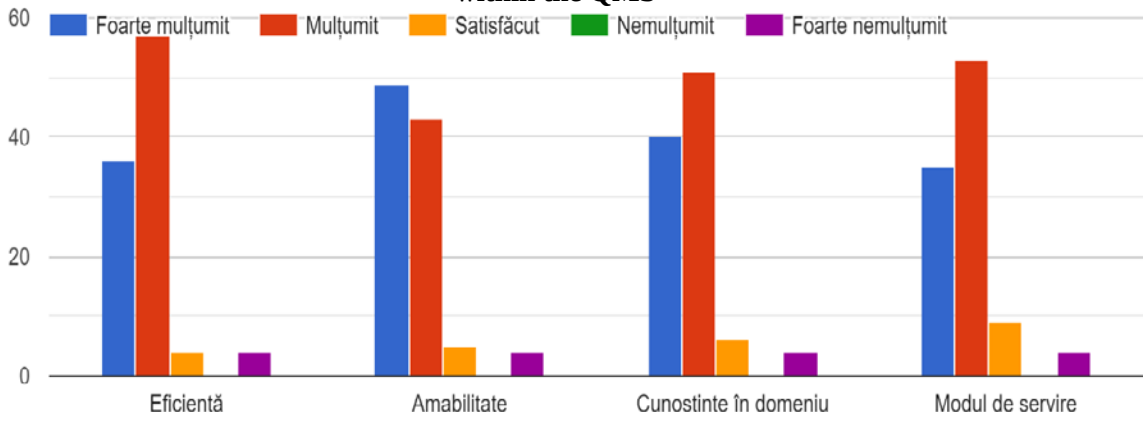


Figure 2. Results related to staff performance within the QMS

DESIGNING AN ELECTRIC KART

Author/s: Stoica Gh. Alexandru[1]

[1]Faculty of Mechanical and Electrical Engineering, Automation and Applied Informatics
Coordinator/s: Monica LEBA, Cosmin RUS

Keywords: electric kart, motor, control, hoverboard

Abstract

This paper presents the mathematical modeling, design and construction of an electric kart. The kart is a motor vehicle with the simplest construction of all vehicles. It has a command and control system, steering system and braking system. By converting a kart with a classic gasoline engine into a go-kart with electric motor, several benefits were obtained, including the possibility of using these types of vehicles inside halls that do not have a special ventilation system.

Introduction

In general, electric karts are specially designed to be used by children aged between 4 and 12 in profile competitions. Electric karts can reach very good performances, recording maximum speeds between 55 - 135 km / h, depending on the classes and ages of the children. The main benefits of electric karts are much reduced noise, low maintenance and zero emissions. Therefore, competitions can be organized in the centers of big cities, not only on specially designed tracks and difficult to access by the public. In Romania, there will be 188 electric karts until the beginning of the new competition season. Young people easily adopt the latest technologies, which use the latest innovations in the field. These electric karts can be equipped with operating systems connected to compatible applications Android, Microsoft (Windows 7 - 10) and IOS, which facilitates remote control, monitoring and recording driver performance, but also setting e-karts (speed and power) depending on the training level of the junior pilot.

Research Objectives

It was desired to obtain an electric vehicle that meets the following requirements: zero direct pollution, to be able to recharge even from a simple outlet in an interval of up to three hours, to have a much lower risk of fire / explosion in In the event of an accident, due to the lack of fuels such as petrol / diesel, which are flammable, maintenance and refueling costs will be lower than in the case of conventional fuels and noise pollution on the go will be much lower.

Research Methodology

The research on the modeling, design and construction of an electric vehicle had as a starting point the purchase of a kart vehicle with a classic thermal engine. The heat engine part and the command and control part of this engine were removed and the functional platform of this

vehicle was prepared so that an electric motor could be mounted. The motor chosen in the first stage consisted of two BLDC type motors recovered from a hoverboard (two-wheeled mobile electric device. The control part was taken from the hoverboard and a suitable drive system was designed. tested with this variant of motorization controlled by means of control units but although a high efficiency (about 85%) and a low electricity consumption were found, due to the control mode which supposed that the driver synchronized almost perfectly the left engine with the engine the right of the control levers (left, right, front, rear) could not be obtained a perfect control according to the safety rules, given that the steering axle (removal of the steering column) could not be obtained an optimal control over the steering only from the acceleration or deceleration of one of the drive wheels and so that a second constructive variant was tried which, although having a lower efficiency, offers greater stability and safety in operation. The second engine variant is the one with a DC motor recovered from a forklift vehicle and adapted accordingly. The motor power is 1kW, 1420 rotations / minute and cosφ 0.82, protection class IP 44. The power supply of this motor is made with the help of three 12V, 66Ah batteries. The control part of the motor is made analogously using the control and command interface by means of a potentiometer with which the motor speed is adjusted and by means of two contacts with the help of which the operating direction can be selected (forward - reverse).

Results

The competitiveness of this system is primarily due to the improvement of command and control strategies of static voltage and frequency converters, a decisive contribution being the introduction of microprocessors with which sophisticated controls can be developed and at the same time can monitor the operation of the inverter in correlation. with the global parameters of the system. Following the research carried out to carry out this work, it can be stated that the construction of an electric vehicle at the moment can be done very easily, starting from its simple control to the power supply using car batteries.

BlueBerry Platform for Real-Time Monitoring of Data Acquired by Sensors

Author: Zaharia Vasile-Ștefan[1]

[1]Faculty of Mechanical and Electrical Engineering, Computers Specialization,

Coordinator: Sef lucr. dr. ing. Rîurean Simona Mirela

Keywords: platforma open source; HTML5; CSS3; AngularJS; Bootstrap; Java script

Abstract

Today there are many dedicated applications and platforms for monitoring sensors, but the idea behind this project is to unleash the creativity of users, regardless of the types of sensors they use. The main advantage is that the user can come with his personal sensors and is not obliged to buy a certain type of sensor made by a certain manufacturer, in order to be able to monitor it. The BlueBerry application is made in such a way that it can monitor the user's sensors, providing a complete end-to-end IoT platform from a software point of view. This type of application helps to develop small companies that cannot afford to buy expensive and difficult to manipulate hardware devices, which often require the payment of a special fee to allow access to the source code. BlueBerry, can also be accessed from your mobile phone and can monitor or manipulate devices in real time from any hardware platform connected to the Internet, be it a PC, laptop, tablet, smartphone or even a smart watch.

Introduction

A very good example of an application that monitors data taken from a sensor is the application of Texas Instruments "sensorTag" available on both Android or IOS devices, but also on Windows. However, the disadvantage of this application is that it is only compatible with the sensor provided by them "sensorTag cc2650" or other compatible products in their range of devices.

Hence the idea of this application, namely to be able to monitor the data purchased by sensors of any type, without the need to install a dedicated application that forces users to buy sensors of a certain type.

The visual part of the application, because it is optimized to work on any type of display, will not make it difficult to use the application even if it is accessed from a device with a very large screen or a very small one.

Research Objectives

In the vast majority of projects of this kind, the investment for the programs used is quite high, so the final cost of the project becomes considerable. The ultimate goal of this app is to keep

costs low so that it feels the most in the end user's pocket, as he pays, in almost every case, for production costs and related costs.

After searching and documenting on this topic, I tried, as much as possible, not to use very expensive software programs, if possible at no cost.

The list of programs used in this project is as follows:

Software:

1. Visual Studio code (version 1.31.1): coding; extensions Live server; Interpreter.
2. Adobe Illustrator: Creating illustrations; Vector objects; Css code type vector graphics.
3. Adobe Photoshop: Edit images; Graphic editing; Construction of structuring images.

Programming languages:

1. HTML5: Basic structuring; Adding tags; Indexing.
2. CSS3: Arrange elements; Minimal animation; Page responsiveness.
3. AngularJS: Execution of functionality; Functionality structuring; Construction of execution routes.
4. Bootstrap 4.1: Standardization; Structuring.
5. Java script: Animation.

Research Methodology

Web design adaptability, or abbreviated to (RWD), is a web design approach that makes web pages looks well on any device, at any screen size. Nowadays, the adaptability of the design on any device is considered an extension of RWD, because the content, design and performance are required on any kind of device to ensure user satisfaction and utility.

An application based on the RWD standard, adapts the layout to the viewing environment by using proportional grids, flexible images, CSS 3 media queries and an extension of the placement rule as follows:Conceptul grilei de așezare solicită dimensiunea elementelor să fie în unități relative, nu în unități fixe, cum ar fi procentele, față de proprietăți absolute, cum ar fi pixelii;

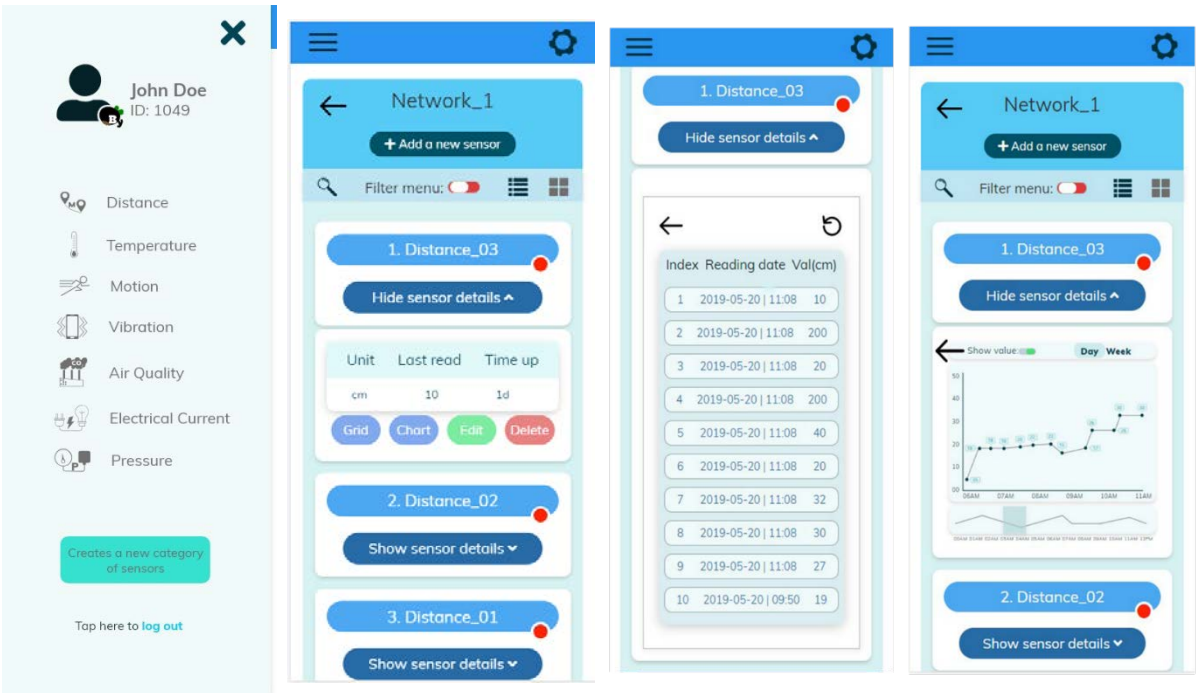
- Flexible images are also dimensioned in relative parameters so as to prevent them from being displayed outside the elements in which they are located.
- Media parameters, allow to apply CSS features depending on the width of the surface on which the content is displayed.

The elasticity of web design has become increasingly important as mobile traffic accounts for the largest amount of total internet traffic. Therefore, Google started the

Mobilegeddon project in 2015 and started to increase the rating of sites that are adapted to any mobile device.

Results

The BlueBerry platform is a project that can be developed more and more because this side of the technology is constantly evolving, every day appearing more and more sensors, each serving a different purpose than the previous ones.



The project is developed only with open source technologies, with the main purpose of eliminating the barriers of other platforms of this kind. These barriers consist in the fact that any monitoring platform obliges users to use the sensors built by the respective developers, as they are paid for both in terms of hardware and in terms of software. This prevents small developers who have the opportunity to create such hardware machines, but do not have the opportunity to develop a software platform for these machines.