

Mansoura University

Faculty of Engineering

Computers and systems engineering



Graduation Projects

Head of department:

Prof. Hesham Arafat

Control projects

Project name: One-eyed Self Learning Robotic Arm

Year: 2012

Supervisors: Dr. Amira Yassin

Dr. Abdelhameed F. Ibrahim

Abstract

Factories and workshops in Egypt lack the intelligence in their machines and still depend on human, and this has bad effects either on human, like having bad effects on their health that may cause death, or on Productivity as problems in production, waste for materials, and cost for each human worker.

All the previous problems lead to use robots with lower cost and use artificial intelligence and vision system to avoid reprogramming for each little change in the task.

The project serves in many places with many applications like painting, welding, drawing, assembling and so on. Robotic arm is used instead of human as it is more powerful, more accurate, saves the materials, efficient in repetitive tasks, reduces the cost, and that all lead to improve Productivity and quality of production.

At the 1st step, a picture of the object to be painted is captured using a camera in a fixed position. Some processing is done on this picture and then, the picture is given an ID and both the picture and its ID are stored in a database. After that, a new process called learning begins. In this process, the object moves until it reaches a position in front of our robotic arm. A joystick is then used to control the robotic arm so that it can "paint" the object totally. The movements of the arm robot are recorded and

stored in a database in the microcontroller memory and they are given an ID similar to the ID that was given to the picture of the object. This ends the learning process of our system on the object.

When another object is produced to our system, a picture of it is captured and compared with the picture of the objects stored in the database. Here we have 2 cases:-

- The 1st case: When the comparison finds a match between the objects In this case, the ID of the object in the database is sent serially to our control system so that it can repeat the recorded movements stored in the database in the microcontroller.
 - The 2nd case: When the comparison results in a no-match situation (The new object is not in the stored database). In this case, some processing is done on the picture of the new object. This processing aims at dividing the picture into groups (grouping) so that we can reach the required points we need to fully cover the object in the painting process .These points are then passed to the Inverse Kinematics part. Inverse Kinematics here is used to find the corresponding motor angles that are required to move the arm robot to each point.
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Project name: Human arm robotic simulator

Year: 2012

Supervisors: Dr. Mohammed Sherif

Dr. Abdelhameed F. Ibrahim

Abstract

Human arm robotic simulator project is a simulation system depends on capturing the human arms movements via sensors attached to his arms and interpret these movements into usable data; then use these data in controlling a robotic arm in a way that simulate the same human movements in more accurate way.

The capturing system depends on using sensor based on calculating the three dimensions and the angle to locate accurately the location of the node attached to the joint of the human arm then sends the location information to the controller to interpret the result in the real time.

The communication system is responsible for transmitting information wirelessly from the capturing system -through a controller to organize the operation- to the robotic arm.

A controller stands on the robotic arm receives the instructions and interprets it into number of degrees to every motor on the robotic arm joints and by that simulate the human arm movements.

The human needs the power of the machines but does not need to be replaced by it, so we are trying to compose a new system that combine between the human and the machine to empower the human not to replace him.

This project can be used at many fields and in many applications, like war field, medical field, mines sweeping field, save and rescue field, ROV field.

Project name: Smart wireless armed tank (SWAT)

Year: 2012

Supervisors: Dr. Abdelhameed F. Ibrahim

Abstract

Driving robots around a field of obstacles might look like fun. But for soldiers in combat, those robots in war clearly hold advantages from saving the lives of our own soldiers. Military robots are meant to perform tasks that are simply too dull, dirty and to operating in dangerous environments such as mountainside and caves to warrant the risk of human life. It also entertains the point that robots are “unaffected by the emotions, adrenaline, and stress that cause soldiers to overreact or deliberately overstep the Rules of Engagement and commit atrocities.

Swat is robot can be used in battlefield, special mission and exploring areas because it has the ability to track and hunt objects based on image processing techniques.

- It can be controlled from large distant because its wireless features.
- Because we have a camera on the robot, it has the ability to track, hunt target and secure areas automatically or manually as user need.
- In automatic mode the ability to track and hunt targets based on image processing techniques and predefined data.
- In manual mode you can control robot by joystick or by voice or by using smart phone (android) new way and so interactive.
- Using a mobile device supports flexibility & the availability to control & monitor the robot in various places not restricted to a fixed one.

- Using android as a platform is a plus as android is an open source OS with less restrictions for developers.

To make it easy in use and control, we developed GUI application using C# for desktop application or by using android for smart phone. We used our high experience to make it easy for user to control the robot either in manual (using joystick or voice or mobile) or automatic mode (using image processing techniques). In all GUI modes we have window to preview live stream from camera.

Project name: Wireless control of vehicle robot

Year: 2010

Supervisor: Dr. Mohammed sherif

Abstract

This project introduce a wireless intelligent system via computer to control moving robot with wireless camera that used at different fields like monitoring, mines, tracking, and spying. The control system enables any user even with special needs to easy handling the computer within a specific meter using a small wireless remote. Computer connected to electronic circuits through a serial cable to transmit and receive control signals then it transmitted wirelessly to control robot .The system consists of two parts:-

- 1- Hardware that responsible for work of the electronic circuit used.
- 2- Software that responsible for understanding of signal that following to the computer and work of the desired function.

This project useful for making 3 modes automation system: manual, automatic and remote control. Also, it's useful for discovering mines, reducing risks that face human and tracking by using wireless camera. It's a wireless system which can be used to control anything by adding additional functions to robot.

Project name: Machine vision system to control a wireless mobile arm robot through a USB data acquisition card.

Year: 2008

Supervisors: Dr. Fayez Gommaa

Dr. Sabry Saraya

Dr. Mohammed sherif

Dr. Tamer Hegazy

Dr. Amira Yassin

Abstract

This project for implementing embedded control system that uses machine vision techniques to recognize objects and its properties. The system is designed to be fixed on a mobile arm robot, so that the robot can recognize objects, and pick and place this objects.

Control system used computer system to give a powerful processing speed, and allow to attach WNIC (Wireless Network Interface Card) to the robot, and then the robot can be controlled through the local network or the internet. And that extends the robot working environment to the wireless network limits and this is much larger than regular remote control methods such as RF.

To interface the system to the environment, USB card must be implemented, that will allow the communication with the control

system with about 400 MByte/s and we will have a large number of I/O lines from the motherboard buss system. We will use the microcontroller technology PIC 18f4450 and that will allow the card to have PWM output, UART communication lines, and A/D converter. So, we will have a complete data acquisition system that can be used for any computer system. System will be tested on a mobile arm robot.

Project name: Control of production line using distributed systems and digital control

Year: 2009

Supervisors: Dr: Fayez gommaa

Dr: Sabry Saraya

Dr: Mohamed sherif

Dr: Amira Yassin

Abstract

This project is a computerized color mixing machine used to make a production line of paints. First: user enter the color id and number of needed, appropriate message is appeared on LCD.

Second: microcontroller when finish reading data from user, make processing on it, if it's valid data its goon working, other it will show the kind of error message and redirect user to enter again.

Next: from previous if data is valid microcontroller start to process the needed color and the number of bottles.

Valves is opened and closed according to the program of specific color, cylinders start to do its job, belt start to move to get empty bottles and fill it and pack it.

In project there is master pic to do real work of the mechanism, control valves, motors, mixer, cylinder, read from keypad and display on lcd.

Slave pic is used to display on 7 segment to ensure the number of current bottle serving.

Project name: Automated pharmacy using PLC

Year: 2009

Supervisors: Dr. Fayez Gommaa

Dr. Sabry Saraya

Dr. Mohammed Sherif

Dr. Amira Yassin

Abstract

Project aim to build a complete automated system that gives the image of a complete smart pharmacy. In such pharmacy everything is running in an automated manner.

The user has only to submit his request of required medicines through a GUI running on his computer.

This application is running over a complete database contains different information about different medicines.

Then corresponding values of selected medicines are outputted on parallel port.

Output value from parallel port are passed through an interface circuit between parallel port & controller device (PLC).

Finally the main automated system begins to run serving the user request of selected medicines.

Project name: PCB production line controlled using distributed control systems

Year: 2006

Supervisors: Dr. Mohammed sherif

Dr. Sabry Saraya

Dr. Fayez Gommaa

Abstract

Nowadays PCBs met a lot of attention in industrial fields, but PCB industry costs too much, so the idea is to make it cheaper. The project will make boards with minimized costs ready for putting components on it through other production line.

First, board will be drilled for components leads at required positions which determined by two methods, the first is manual, and the second is automatic using .net framework technology to prepare the arrays of x-direction and y-direction of the leads and send it to MMC – multimedia card, then the microcontroller uses the MMC to control the drill position, then the drill go down to make the holes, after the machine finish all the points the board will be moved for drawing the paths on it using the technique of silk screen, the board then taken to remove the undesired cooper from the board, finally the camera captures the board to be compared with a reference circuit using image processing techniques.

Project name: ROBOTIC SURGEON

Year: 2008

Supervisors: Dr. Fayez Gommaa

Dr. Sabry Saraya

Dr. Mohammed EL-Sherif

Dr. Tamer Hegazy

Dr. Amira Yassin

Abstract

Making robotic surgery by anesthesia the patient the appropriate quantity of anesthetic which is proportional to the patient weight

Which is taken from the load sensor then give signal to pic16f877a to open valve to give the patient the appropriate anesthetic that is proportional to the patient weight and give signal to pic16f877a to open valve for a limited period.

That is proportional to the required anesthetic quantity then make a complete scan for the patient body to reach the bullet place using (proximity sensor) That sense the place of bullet then give signal to pic 16f877a to stop the first motor and move in the reverse direction until the cutter reach the x coordinator (the place of bullet) and the horizontal motor move until it reach the y coordinator (above the bullet).

Then moving the cutter motor downward to make a small hole in the body (about 2cm) then the first motor move to the place of bullet and the magnet motor move downward to pick the bullet then the first motor move to ensure that there is no other bullets, if there is other bullets make the process again.

Project name: Plug and play automation system (PAPAS)

Year: 2009

Supervisor: Prof. Hesham Arafat

Abstract

High configurations cost hampers adoption of powerful home automation solutions.

PAPAS define the task of "plug & play" in the context of distributed control system built from smart sensors, actuators and network management services. It gives an overview of existing approaches and outlines the requirement for a comprehensive plug and play solution as well as work in progress toward this goal.

Automation systems have an important place in our present and future as well. It begins to surround us in different places and in different forms, we may find it in the airports, traffic monitoring, control factories and production lines, even our homes in a form of multimedia, surveillance, etc.

Project aim is to provide the country a cost achievable, high performance, easy to use automation system could be installed on any building whatever it was (home, company, factory, garage, public agencies, etc.)

PAPAS would be an example of a smart and scalable automation system that can be applied on any control system.

Building automation system would be a clear sample of how can PAPAS fit any system needs.

The modular functionality allows the customer to start with the units needed for the applications and to add more units when he wants.

Project name: HUMATEC

Year: 2012

Supervisor: Dr. Abdelhameed F. Ibrahim

Abstract

Humanoid robotics hardware and control techniques have advanced rapidly during the last five years. Presently, several companies have announced the commercial availability of various humanoid robot prototypes. In order to improve autonomy and overall functionality of these robots, reliable sensors, safety mechanisms, and general integrated software tools and techniques are needed.

A humanoid robot or an anthropomorphic robot is a robot with its overall appearance, based on that of the human body, allowing interaction with environments. In general humanoid robots have a torso with a head, two arms and two legs, although some forms of humanoid robots may model only part of the body, for example, from the waist up. Some humanoid robots may also have a 'face', with 'eyes' and 'mouth'. Androids are humanoid robots built to aesthetically resemble a human. Also a humanoid can do motions similar to humans.

So, we try to develop and evaluate a new interactive humanoid robot that communicates with humans and designed to participate in human society.

Project name: Self-driving car with automatic night mode system

Year: 2010

Supervisors: Dr. Fayez Gommaa

Dr. Sabry Saraya

Dr. Mohammed Sherif

Abstract

We -in these days-strongly need self-acting machines for difficult and complicated systems and for sensitive, accurate and fast environments, in this project we introduced a simple idea for how we can build such systems.

To do a self-acting systems you have plenty of options, beginning with doing actions based on substance detection in the surrounding environment and ending with neural processing.

We here will do a simple thing depending on our lake of resources which is doing actions depending on the feedback of a sensing element and a micro controller for processing.

The IR-sensor will detect the objects in some range of distance, we will make decisions at some distance and make the car drive to avoid them, and this will be the objective of PIC micro-controller and the program written on it.

The IR-sensor will provide the PIC with an analog voltage corresponding to the distance from the object.

The PIC is a digital processing Micro-controller so we must convert the analog input of the sensor into digital value for the PIC to understand, this PIC contains an analog to converter (ADC) embedded on it which will help us with this problem, according to the converted voltage we will make the car goes forward, backward, right or left, slowing down or speeding up so that the car be able to avoid obstacles.

The PIC will provide control signals to control the motor directions and speed.

Project name: Fire detection and suppression using robot via mobile device

Year: 2010

Supervisor: Dr. Ali Ibrahim El-Desoky

Dr. Hesham Arafat Ali

Abstract

The project main idea is to remotely control a moving robot, using mobile device supported by a web application via SMS gateway technology. Also we attached a wireless camera to the robot that enables us to capture, compare, stop & finally make specific action. And also we can attach a fire fighting to detect (fire extinguishers +smoke detector) system and suppress any fire in the surrounding environment.

The robot can monitor the surrounding environment through the remote access on a web site for security purpose. Also used for fire detection and suppression, using a mobile device or telephone, laptop, or either pc.

We can manually control the robot through PC-keyboard; can capture photos either by pc or mobile device. User is able to track something through a live-video, can calculate the area size through reaching the place boundaries; can inform the user by the presence of fire by sending SMS to their mobile, can detect the place of the fire, can also suppress the fire.

The output circuit has a general design; it's not designed specially to this project, so it can be used to control any other object.

This project is by the presence of reliability; as we have an input and output circuits to deal with the PC not directly connected. The low cost of the project, make it available for anyone.

Project name: Controlling a moving object

Year: 2009

Supervisor: Dr. Ali Ibrahim El-Desoky

Dr. Hesham Arafat Ali

Abstract

The main idea is to control a moving object "robot" remotely by using either fixed phone or mobile supported with position acknowledgement via SMS gateway technology and, also we can attach a wireless camera to the moving object that enables us to capture, compare, stop and finally make a specific action on the color had been detected.

Main objectives of the project:

- Gain full control on a moving object remotely.
 - Give the object the ability to make automatic actions, due to specific events.
 - Gain good monitoring of the object through simulation and acknowledgements.
 - Gain the ability to capture images of different locations.
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Project name: Automatic incubator

Year: 2008

Supervisor: Dr. Amira Yassin

Abstract:

Premature birth is a worldwide problem. Neonates, who are born premature, often don't have enough maturity to regulate their temperature.

These infants have low metabolic heat production rate and may have high heat loss from the skin. Premature infants are kept in infant incubators which provide convective heating.

There are two kinds of techniques available to control the incubator temperature.

Currently either the incubator air temperature is sensed and used to control the heat flow, or infant's skin temperature is sensed and used in the close loop control.

Skin control often leads to large fluctuations in the incubator air temperature. Air control also leads to skin temperature fluctuation. The question remains if both the skin temperature and the air temperature can be simultaneously used in the control. The purpose of the present study was to address this question by developing a fuzzy logic control which incorporates both incubator air temperature and infant's skin temperature.

The temperature space was divided into a number of sub-domains. The crisp values of skin and air temperature were first justified to obtain membership values which were then input to a rule base to obtain the output.

This output was defuzzied to obtain a crisp value for the heat flow parameter. This fuzzy logic control system was evaluated using a mathematical model of the infant incubator system (Simon, reddy, and kantik, 1994). Simulation results revealed that fuzzy logic system, incorporating both skin and air temperature, provide a smooth control when compared to either the air or skin control.

Project name: CNC (Multi-Operation System)

Supervisor: Dr. Mohammed Sherif

Dr. Fayez Gommaa

Dr. Sabry Saraya

Abstract

The aim is to design a microprocessor position controlled using microcontroller design approach.

Objectives:

- Understand and apply the CNC design approach.
- Improve the ability to work with team spirit.
- Apply control design.
- Earn enough knowledge about electric motors and its drive circuits.
- Study position feedback techniques.
- Use microprocessor programming to control hardware peripherals.

Learn new management skills.

Project name: 3D printer "CNC machine"

Year: 2008

Supervisor: Dr. Hesham Arafat

Abstract

The introduction of 3D printers in industry will radically change the manufacturing industry. Curves will be as easy to cut as straight lines, complex 3D structures will be relatively easy to produce and the number of machining steps that required human action will be dramatically reduced.

With the increased automation of manufacturing process with 3D printer machinery, considerable improvements in consistency and quality have been achieved.

3D printer automation also allows for more flexibility in the way parts are held in the manufacturing process.

The system consists mainly of:

- A CNC machine with built in interface and driver circuits, provided with a camera for feedback signaling.
- A Controlling program with a friendly GUI, provided with capabilities to control the features of the machine used, and the printing process.

A Simulator with online feedback, to ensure correct process before and after execution.

Project name: Monitoring and controlling trains' movement

Year: 2010

Supervisors: Dr. Fayez Gommaa

Dr. Sabry Saraya

Dr. Mohammed Sherif

Abstract

When there are two trains on the same track, if the first train stopped suddenly for any reason the second train must be slow down or stop according to the signal which it received from the check points on the whole track to avoid accident.

This thought was born by a disaster.

The 2009 Cairo train collision killed at least 50 people and injured 30 others on 24 October 2009.

One of the trains was going southward to visit Asyut and Aswan, popular tourist destinations.

A second train slammed into the first, which had stopped to allow an animal described by various witnesses and officials as either a cow or a water buffalo, to make its way safely across.

So, this idea will avoid these train accident from happening.

Project name: Smart gate with face recognition

Year: 2010

Supervisors: Dr. Ali Ibrahim El Desoky

Dr. Hesham Arafat Ali

Dr. Amira Yassin

Abstract

Human have been using physical characteristics such as face, voice, gait, etc. to recognize each other for thousands of years.

With new advances in technology, biometrics has become an emerging technology for recognizing individuals using their biological traits.

Now, biometrics is becoming part of day to day life, where a person is recognized by his/her personal biological characteristics. Examples of different biometric systems include fingerprint recognition, face recognition, iris recognition, retina recognition, hand geometry, voice recognition, and signature recognition, among others. Face recognition, in particular has received a considerable attention in recent years both from the industry and the research community.

So, the objective of this project is to create a c# code that can be used to identify people using their face images.

Project name: Smart parking

Year: 2011

Supervisor: Dr. Abdelhameed F. Ibrahim

Abstract

Because of Problems with currently (traditional) parking such that:

- 1- Hard to find proper space to park cars.

- 2- Take long time to find proper space & this space may be too far away from the place that the person lies onto.
- 3- Problems occur for cars when they are parked in second row.

So, the idea is how to use a small space of area usefully to make smart park system that park cars automatically in several units.

- The car will stop on the standby floor and automatically by arm of clerk using robot system, it will be raised to the specific place specified by user.
- When the car stopped on standby floor, the card machine reads the card ID and sends to computer.
- Computer search via DB and detect if card ID isn't available, microcontroller will send signal to buzzer.
- Else, microcontroller moves the clerk towards the standby floor.
- The security system will check that the arm is down and on the last of clerk by using limit switches that will send signals to microcontroller that all right.
- The microcontroller sends command to move the arm up, then raise the car and get out from the level 0.
- The car will be raised by the arm using powerful motor to specific level.
- The arm puts the car on that level.
- Finally, microcontroller sends a signal to motor of the arm to get down and the clerk goes to its initial place.

Project name: Hope Glimmer

Year: 2012

Supervisor: Dr. Abdelhameed F. Ibrahim

Abstract

Have you ever imagined how much a blind person suffers when he walks alone outside? Or how painful it is when he collides with a harsh wall unexpectedly? Or how dangerous it is when he tries to cross the road alone? We think about that and searched for a way to help blind persons to live normally, be able to walk outside alone safely and do most of their affairs with no need for help from another person.

the Project is an integrated system that allows the blind to live normally the idea of this project based on warning the blind of the drawbacks that might stand in his way to walk easily by himself It can also guide him navigate through the streets to his destination. Not only it tells him the direction in the street using GPS but it can also determine the quibble direction It helps him to detect colors to choose his clothes easily It also can pronounce date and time

For saving the blinds life the device will generate a light in dark. The device will be easy to recognize it. Also it has small size and weight.

The device doesn't need any addition connection to work not laptop or headphone.

Project name: Real time object tracking

Year: 2010

Supervisor: Dr. Ahmed Ibrahim Saleh

Abstract

Is how to handle a video stream either live video or recorded video, and how to obtain a useful data from it such as how to calculate a moving object speed, dedicate a specified object, and draw a diagram to show the behavior of the object. There are two fields of object tracking:

- Static object tracking:

The static means that the video stream tracked through a fixed camera, and hence the available space (range) will not be varieties as the camera will not move then the frame taken will be with constant polarities (Dimensions).

EX: the radar system used in traffic signs.

- Dynamic object tracking:

The dynamic means that the video stream tracked through a moving camera may be carried out over a robot; in this type the polarities (range) will be varieties.

EX: the football player's statistics such as the distance which each player runs.

Project name: Seawater desalination using solar energy

Year: 2010

Supervisor: Dr. Sabry Saraya

Abstract

The origin and continuation of mankind is based on water. Water is one of the most abundant resources on earth, covering three-fourths of the planet's surface. However, about 97% of the earth's water is salt water in the oceans, and a tiny 3% is fresh water.

This small percentage of the earth's water which supplies most of human and animal needs exists in ground water, lakes and rivers. The only nearly inexhaustible sources of water are the oceans, which are of high salinity. It would be feasible to address the water shortage problem with seawater desalination; however, the separation of salts from seawater requires large amounts of energy which, when produced from fossil fuels, can cause harm to the environment. Therefore, there is a need to employ environmentally friendly energy sources in order to desalinate seawater.

Process is, the solar energy heats airflow up to a temperature between 50 and 80 °C. The moderate solar heated air will be humidified by injecting seawater into the air stream. Later on, the water being free of salt will be extracted from the humid air by cooling it.

Using air as a heat carrier and keeping the maximum operating temperature in the process lower than 80 °C enable the use of cost effective polymers as construction material. The main feature of the present process is a successive loading of air with vapor up to a relative high humidity, such as 10 or 15 %.

Project name: Smart electronic mall

Year: 2008

Supervisors: Dr. Fayez Gommaa

Dr. Sabry Saraya

Dr. Mohammed sherif

Dr. Tamer hegazy

Dr. Amira Yassin

Abstract

Project allow mall to provide high services for its visitors through latest technologies as following:-

1- Parking

People who come to mall by car, they need a wide parking for their cars.

They use an electronic semaphore which open when it sense that the car is coming.

While the parking is full semaphore will not open to the coming car until some cars out.

2- E-Map

Now, the visitor is inside the mall and it can be its first visit to mall, so he needs a guide.

The guide must be electronic, so we develop traditional map to be easier for visitors to know his direction.

3- Selection path

When a visitor wants to go to more than one place in mall but he doesn't want to waste his time because he busy, he just choose places (shops) and we can arrange them according to the shortest path.

4- Fire alarm

When any unpredictable fire broken out so, an alarm is needed to warn visitors to go out from mall.

5- UPS(uninterruptable power supply)

A device which maintains a continuous supply of electronic power to connected equipment by supplying power from a separate source when utility power is not

available. It differs from an auxiliary power supply or standby generator, which doesn't provide instant protection from interruption. Integrated systems that have UPS and standby generator components are often referred to as emergency power systems.

6- Invitation message(using GSM)

Visitors received messages on their mobile phone send by mail GSM which contain shop's invitation, offers, sales, new versions etc.

IT Projects

Project name: Enhanced traffic controller shaper with extensible API. With AJAX web management interfaces (shabacat)

Year: 2007

Supervisor: Dr. Tamer hegazy

Abstract

Shabacat is a project that intends to provide all in one out of the box bandwidth management solution that combines the power of linux kernel advanced features like traffic control, advanced routing features and networking services that are provided with the commercial routers or internet gateway devices.

The solution should provide an easy to use web interface for remote management enhanced with AJAX technology that makes the administration experience more enjoying.

The project has three components:

- 1- A background controlling daemon.
- 2- A web interface running over a customized apache server and PHP.
- 3- A customized Linux kernel with advanced networking features and traffic flow control.

The daemon provides the following:-

- a) Complete manipulation of net filter kernel based firewall with integrated user space tracking component that integrates features like UPnP.
- b) Advanced traffic control using HTB 3.0 with high flexibility and accuracy.
- c) Basic/advanced kernel routing features manipulation.
- d) Simple DNS caching and forwarding server.

The web interface is designed to be sleek and easy to use with internal modular design using reusable components.

There are many technologies evolved in the development of this web interface like GWT, RRD, PHP and MySQL, those

technologies are carefully used to provide a unified professional interface for those complicated low level services managed by the daemon enriched with detailed graphs and diagrams.

Project name: Modular GPS platform

Year: 2010

Supervisor: Dr. Mohammed sherif

Abstract

One of the useful technologies that can serve in many applications is the GPS technology. GPS devices can be used in vehicles, navigation, civil engineering applications, tracking, military application etc. But, yet there is no GPS solution that can be modular enough to work with any application. This project aims to introduce a GPS device that can be easily tweaked and integrated with any application (in both software and hardware aspects)

The problem is there is no product that supports modularity in GPS applications from either the software or the hardware points of view (except a primitive Bluetooth-connected GPS receiver provided by some companies.)

MGP is a GPS platform that will be able to interface with any computer-based device with just a little configuration. The project should be modular and easy to be customized with easy to use graphical user interface. That consists of:-

1- Modular

Modular GPS platform will make it easy to integrate multiple GPS-dependent services such as navigation, audio

tours, in case of emergency services on a single platform in a modular way so, you can add whatever service you need any time you want.

2- GPS

The global positioning system (GPS) is a space based global navigation satellite system that provide reliable location and time information in all weather and at all times and anywhere on or near the earth when and where there is an unobstructed line of sight to four or more GPS satellites.

3- Platform

Typical platforms include a computer's architecture, operating system, programming languages and related user interface (runtime libraries or graphical user interface).

Project name: Color imaging system for machine vision applications

Year: 2012

Supervisor: Dr. Abdelhameed F. Ibrahim

Abstract

Invariant representations of color images to shadows and highlights were proposed in several ways. These invariant methods play an important role in many applications of computer vision and image analysis. The performance of the invariant method was examined in experiments using real world metal

object of copper and dielectric objects of plastic and ceramic. In this project, we develop invariant method for a variety of materials including various metallic objects of gold, silver, bronze, two kinds of brass and aluminum. The effectiveness of the proposed method for a variety of metals and dielectrics are examined in experiments for real images of various objects and a part of raw printed circuit board (PCB). Here we measured the illumination color by using the imaging system and a standard white reference.

Project name: Deaf to blind interpreter

Year: 2012

Supervisor: Dr. Hesham Arafat Ali

Dr. Abdelhameed F. Ibrahim

Abstract

There is no doubt that everyone in the community is of particular importance and should be considered a different perspective and every individual in society has his own talents, which should benefit from them and put them in mind so it was imperative for us in the project have to think to solve the problem and realistic found in our society and needs to solve that problem, which may help in the development and progress.

Individuals can communicate in the community and benefit from the expertise that they own and the search for new experiences and the world has become now already open for those who want to gain experience in all areas.

The problem is when people with a disability or audio-visual in their interaction with the community, but they may reach seven million disabled people with different type of disability.

Smart phone are now affordable to everyone can use and easily allows many more features.

We decided in our project shed light on the techniques of modern technology in smart phones, which have been able to contribute but little in the renaissance of our nation, Take advantage of the potential in young people are healthy they are or disabled all of them have the right to do so, but they lack a way to continue and aware of and understand each other.

And smart translator included as an applications smart phones "human being" widespread will help the deaf to communicate with those around him translate the sign language which he understands and speaks to the text of my book and then to voice he hears the other party, who try to understand what he wants without the need for a person interpreter which may give him more confidence and be able to communicate normally , and so even if the other party does not see the movement of blind reference will not be a problem because he already hears what he wants to say.

And the blind also not lose sight of the thinking in a way to help him if he needed to communicate with each other is deaf, the interpreter intelligent "human being" will transform his voice to the deaf sign language watch phone using the intelligent is understood unless he hears it.

In condition; hope after the competition stages of the implementation of this application, "person" to be in the possibility of every individual in society, the Arab use and benefit from it and we have shared the contribution of even simple in the renaissance of our society, Egyptian, Arab and provide some scientific solutions to the problems of our reality and we all face a lot.

Project name: A tablet PC educational Kit

Supervisors: Prof. Mofreh Salem

Prof. Hesham Arafat

Prof. Ali El-Desoky

Dr. Aida Othman

Dr. Ibrahim Saleh

Abstract

This project aim to develop some vb.net applications that used in e-learning which consist of two program one for the student and the other for the teacher.

Student program, let the student to write and draw in one application so we can say that we collect the benefits of drawing applications and word processing applications in one application, the student can use this application by answering the exam by writing and drawing with all tools needed such eraser, pin, colors, font size, font type and hand writing recognition.

The program has a good advantage that let user write with his hand by the pen and the program automatic recognize his writing and let him to insert it in the file, by a small window appear to let him enter text by hand writing.

After the student complete answering the exam we let him to save his answer and then send it to the teacher over the network.

Teacher application, to some extent like the student application but it has additional component a remote server that allow the students to send their answers on the local computer of the teacher with a folder for each student with his name so, teacher can show the answer and also save the final modification on the file.

Project name: Building PC Remote control based wireless technology

Year: 2010

Supervisor: Prof. Hesham Arafat Ali

Dr. Mohammed Sherif

Abstract

This project introduces a wireless remote system for controlling personal computer. The control system enables any user even with special needs to easy handling the computer within an area of 300 meter using a small wireless antenna. The system is composed of software and hardware components.

The aim of the project:

1. It is useful for helping handicapped to control (use) the computer without the need to move to it.
2. It also need in meetings, discussions and lectures which use the power point.
3. It allows you to play music and videos and control most actions in your computer from a remote space.
4. Help user who can't use the computer by using specific buttons.
5. Making the use of the computer easier for every one by using the remote control.

In this project we have to search for address of each key in the keyboard of the computer. And find a way to send these addresses to the CPU.

We need to handle the process need and send signal directly without devices.

Project name: A WEB-Based Student's Affairs System

Year: 2011

Supervisor: Dr. Ahmed Ibrahim Saleh

Abstract

Student affairs job is to provide the students with their lectures schedules, exams schedules and their results. This information can't be accessed easily by the students and it will take a lot of time when it is done on paper. Also if any sudden changes are required in the schedules it would be hard to notify students because the need to go to their faculty in order to know if any changes happened. Also accessing the student result requires students to go to the faculty and also it would be a time consuming process for the employee to access the result of a student from all the paper work in front of them.

Our approach is to use information technology to provide the solution for the mentioned problem. Creating a database on the internet that contains all student personal information, lectures schedules, exam schedule and their results. All of this information can be accessed from any place in the world.

This method provides a fast access to students and teachers and better accesses to students with disabilities. Also it preserves the information in a database that can be accessed in a very fast rate and there will be no need to paper records which can be damaged easily this methods helps in preserving information. On the other hand this method provides authentic and up to date information.

