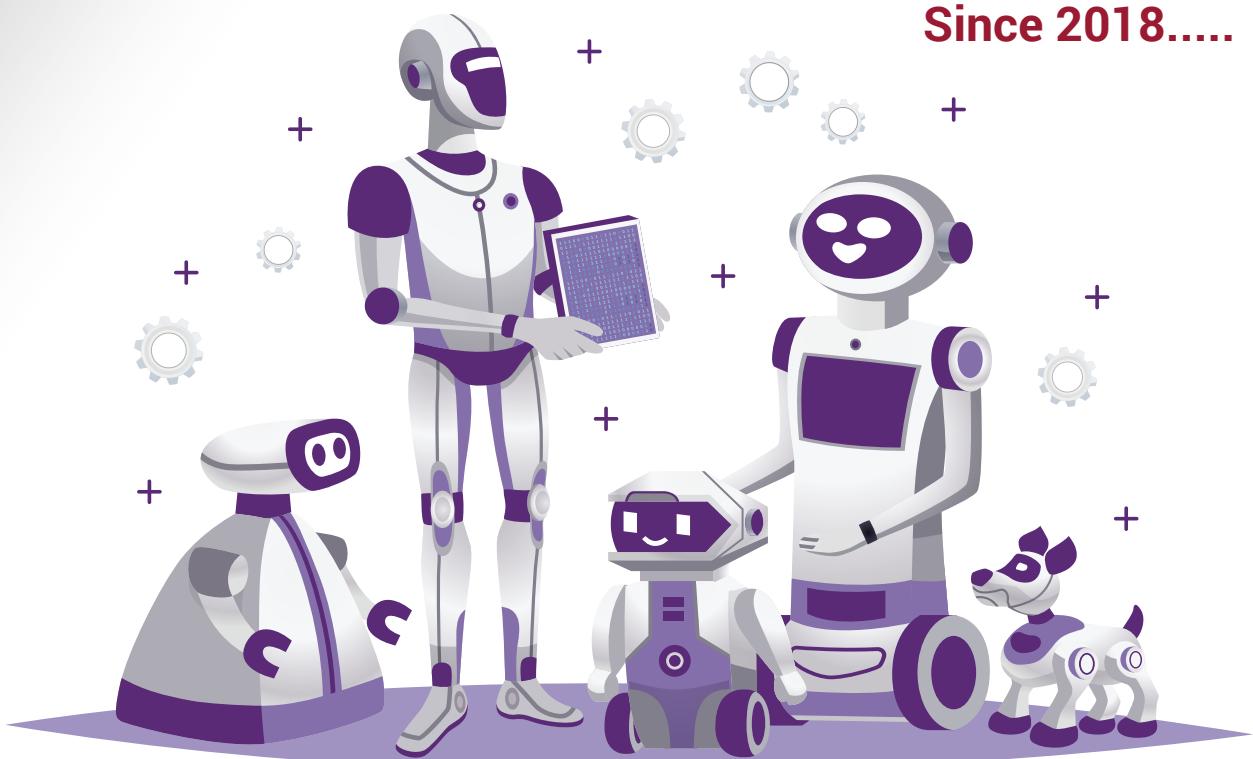


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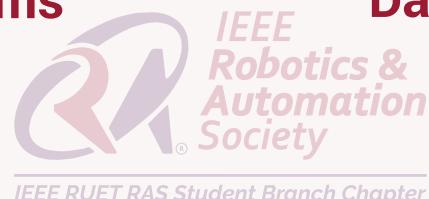


Since 2018.....



Encourage to work in the field

- » IOT based systems
- » Automation
- » Robotics



Sets a number of

- Day-long workshops ↵
- Conferences ↵
- Seminars ↵



Md Mushfiqur Rahman Promel

EEE'18

In a country like Bangladesh, where agriculture is the major employment, it is unfortunate that our agricultural system continues to lag far behind technology. As a result, farmers can not see the face of profit and are unable to break free from the vicious cycle of poverty. Consequently, many people are abandoning this noble profession, putting the nation in big trouble. So it is high time to integrate technology into our country's golden pride.

While discussing agricultural technology, the first word that springs to mind is "Smart Agriculture. Smart agriculture is a relatively new concept, and the majority of farmers are unaware of what it entails. The use of technology such as the Internet of Things, sensors, positioning systems, robotics, and artificial intelligence on your farm is referred to as smart agriculture. The ultimate objective is to increase crop quality and quantity while optimizing human effort.

Here I am mentioning some examples of technologies used in smart agriculture :

- Precision irrigation and precise plant nutrition
- Climate management and control of greenhouse
- Sensors – for the soil, water, light, moisture, temperature management
- Software platforms
- Location systems – GPS, satellite, etc
- Communication systems – based on a mobile connection, etc
- Analytics and optimization platforms

The Internet of Things connects all of these technologies; it is a means for connecting sensors and devices, culminating in a complicated system that manages the farm depending on the data collected. Farmers can monitor farm processes and make strategic choices remotely – from their tablet, phone, or another mobile device – without being on their field.

Our app-based technologies are evolving on a daily basis. It is high time to consider our farmers. If we can teach our farmers about the benefits of new technology, we will be able to assist our country to become self-sufficient in food production.





Tayeba Nusrat

EEE'18

CAN'T HELP MYSELF'-AN AUTOMATION OF TRUTH

In 2016, Guggenheim Museum of Spain amazed its audience by installation of an exhibit named 'Can't Help Myself' inside clear glass walls by Sun Yuan and Peng Yu, two most controversial artists of China. The art was basically a robotic hand made from visual recognition sensors and software systems, that has a deep red fluid coming out from beneath the giant hand and the hand has to scrap that liquid towards itself to keep the liquid in a certain area by preventing it from smearing outside that predetermined area. If the amount of liquid present outside the arm crosses a certain amount the arm is functioned to die or to stop working. The sensors detect the smearing of the fluid and make the arm shovel it back into place if the liquid has smeared too far. Aside from sweeping the red liquid, the arm also used to move in such a way that made the audience assume that it's dancing in those clear walls. But as years passed, the gears and parts of the arm got worn out and so the arm has slowed down and now it's solely trying to keep the liquid in the predetermined area, as the liquid has smeared too much. It doesn't dance anymore and the screeching noise that the arm produces, makes people wonder that the arm is tired of this job and now is waiting badly for it to get finished but for survival it has to carry on with what it's doing. Exactly like human lives. If the liquid is compared with the unavoidable jobs that we have to do to survive and live nicely in this world, and the robotic arm is compared with a human who is trying heart and soul to finish the jobs in order to ensure his survival, the scenario becomes quite clear. The failures and mess that a person has to face while accomplishing life goals make one tired and bored of life that results in unwillingness to carry out anything after all one has faced but still has to keep going to survive, like that slowed down arm. This is the circle of human life, of what a person faces while he's alive shown perfectly by a robotic arm.





MD. Zahidul Islam

EEE'18

Automation in Manufacturing

Automation is an application of machines to tasks once performed by human beings or, increasingly, to tasks that would otherwise be impossible. It implies the integration of machines into a self-governing system, although the term mechanization is often used to refer to the simple replacement of human labor by machines.

Automation has one of the most vital application areas in manufacturing. Three types of automation in production can be distinguished as (1) fixed automation, (2) programmable automation, and (3) flexible automation.

Fixed automation

It is also known as "hard automation," refers to an automated production facility in which the sequence of processing operations is fixed by the configuration of equipment. In effect, the programmed commands are contained in the machines. Examples of fixed automation can be

- i. Machining transfer lines found in the automotive industry
- ii. Automatic assembly machines

Programmable automation

It is the automation for producing products in batches, ranging from several dozen to several thousand units at a time. Production rates in programmable automation are, in common, lower than in fixed automation, because the equipment facilitates product changeover rather than for product specialization. A numerical-control machine tool is a good example of programmable automation.

Flexible automation

It is an extension of programmable automation. In flexible automation, the variety of products is sufficiently limited so that the changeover of the equipment can be done quickly and automatically. So that the disadvantage of programmable automation, lost production time, is taken off in flexible automation as the reprogramming of the equipment is done offline by accomplishing programming at a computer terminal without production equipment itself.

Conclusion:

Unquestionably, automation has immense impact on manufacturing. Automation has revolutionized manufacturing areas, and there is scarcely an aspect of modern life that is unaffected by it.



Computer Numerical Control in Manufacturing



A. S. M. Faysal Ahmed

EEE'18

The Automated Modern Fire Controlling System

Nowadays fire is a very common phenomena in industry, corporate office, residential building and others places. In Bangladesh, most of the times this type of accident causes death and serious injury to the people and also a huge loss to the company also. If we can apply modern technology here to prevent and control the fire, the consequence and the loss of this type of accident can be diminished.

In case of a fire accident, most of the time we can't realize timely that there is a fire already in that industry or building. This time delay can have a very bad consequence on lives and economy. But if the happening of fire is identified more timely, it will be more beneficial. For that, in every point of the building or industry, there are fire sensors which are connected to a robot wirelessly. Then this robot takes step to prevent the fire. The whole system is described below briefly.

Identifying fire: First the place where fire have taken place has to be identified by sensor. All the sensor are connected together with center circuit module.

Sending signal to the robot: The center circuit module sends a signal to the working robot through an IoT system wirelessly that there is a fire in that place.



A fire fighter robot

Preventing fire: Receiving the signal, the robot will go to the spot and try to put out the fire using fire extinguisher or water or sand which has inside itself.

Calling the fire service: If the robot can analyze that this is a major accident, or the fire can't be controlled, it will call the nearest fire service for help using IoT system. For this the robot should have internet connection and a sim inside it.

For Bangladesh this fire controlling system can have to be faced many problems due to technological awkwardness. Cost is also a very important factor here. But if this technology can be implemented, our people and property will be safe from fire accident.



Maliha Anam

EEE'18

IoRT: A Coalition of Physical and Virtual Reality

Technology has loomed into a new dimension with the availability of Internet of Things, shortly known as IoT and Artificial Intelligence aka AI. While IoT is a concept of communication of physical things via the internet, AI is more of a branch of computer science dealing with intelligent machines. What if the two are combined? Sounds appealing, doesn't it?

The dedication of human being towards development has made them think of this tempting merge for quite some time. Therefore, Academics Francois-Xavier Dudek and L.D. Fauvet invented the term "Internet of Robots" (IoRT) in a paper published in the Journal on Autonomous and Adaptive Systems in 2009.

It refers to a group of interconnected robots that can respond autonomously to changes in their environment, sense other robots and things in their immediate vicinity, interact with one another without the need for human involvement, and take appropriate actions.

IoRT may collect data from all devices and provide a report after the data has been analyzed when connected to the cloud, obtain OTA (over-the-air) upgrades automatically and reduce industrial labor costs while also reducing errors. It can not only be used with different AI sectors but also with digital twins, distributed ledgers, virtual reality, and much more.

In a summer 2016 interview, ABI research director Philip Solis presented a few examples of prospective Internet of Robotic Things applications:

- A robotic gadget that might check if a car is authorized to park in a business parking lot and, if it isn't, provide an alarm.
- He also uses Amazon Robotics' warehouse automation fulfillment center as an example, where mobile robots move bins and pallets and can coordinate their movements.

Also, FANUC, a well-known Japanese and globally active maker of industrial and intelligent robotics and expert in factory automation, teamed together with Rockwell Automation, Preferred Networks, and Cisco to develop a system using IoRT called 'FIELD'(FANUC Intelligent Edge Link and Drive) in the Industry 4.0 domain.

IoRT is still in its infancy and has a lot to act to achieve the final goal. However, it holds much potential to bring phenomenal advancement in our manufacturing, healthcare, security, and transport.



Nasrin Sultana

EEE'18

The IoT Based Smart Irrigation System

Like Bangladesh, all other agronomic countries from all over the world are dependent on irrigation systems. With a motive to alleviate physical labor and wastage of water resources a group of researchers introduced "The IoT based Smart Irrigation System" where sensors are used to monitor the groundwater level and notify the farmers through SMS. In this system, drip irrigation methods are applied instead of traditional ones. Drip irrigation is a micro-irrigation system that allows water to fall drop by drop on the plant roots saving both water and nutrition. Different types of sensors such as soil moisture sensors, temperature sensors, float switches, relay, node MCU, and water pumps are the components of this irrigation system.

Now coming to the biggest question: how does the system work?

- With the assistance of several sensors and pipe tubes, the drip irrigation method is applied to the arable land. Soil moisture sensors and temperature sensors are used to collect and monitor field information, float switches are used to check the groundwater level. All the sensors are connected to the cloud through cellular /satellite networks. When land is dry, sensors detect the scarcity of water in it.
- Then the motor will switch ON automatically to raise the water level and an SMS will notify the farmer.
- Again, when the water level reaches its optimum level, the motor will turn OFF itself, and again an SMS will be sent to the user device.

And that's how an IoT-based smart irrigation system works. But nothing is free from barriers!

A grower has to face many challenges like poor internet connection, costly hardware, and disrupted cloud connectivity regularly. Despite these odds, the IoT-based smart irrigation system has undoubtedly become one of the greatest breakthroughs in the agricultural sector contributing a major part to the national GDP.

Reference:

- <https://tinyurl.com/ycxh598t>



Zareen Tasnim Pear

ECE'18

MY MOM IS A SUPERHERO

The advancement of technology has brought bigger blessings in our daily life. Thinking about the past, when all things used to be done manually, it was quite hard to maintain all the work at once. Yet, our mothers used to accomplish all the tasks with greater efficiency that still surprises me. Yes, our mothers are Super Women.

That was a little tribute to all the mothers in the world. Also, each and everybody is getting benefited with the upgradation of the technology including IOT advancement and automation. Life is now easier with this. From office work to household chores, also in industrial sectors, IT automation and Robotics has brought a bigger revolution. With Robotics, human involvement is reduced and human tasks are delegated to machines.

<https://newsroom-old.cisco.com/robots-and-automation>

Robotic process automation, a software technology that makes it easy to build, deploy, and manage software robots that emulate human actions interacting with digital systems and software. IoT devices that include wireless sensors, software, actuators, computer devices and more, adds more benefits to it. Attached to a particular object operating through the internet that enables the transfer of data among objects or people automatically without human intervention bringing a lot of changes to automation companies, it helps intensify operations and increase productivity.

Despite the benefits it has some disadvantages too. As huge amounts of data is handled, there remains a security concern and also as everything is now tech dependent, it consumes a lot of power. Well, everything has its pros and cons. Eluding the disadvantages and focusing on the bright side, IoT, Robotics and Automation is making our life comfortable and saving our valuable times. Indeed it is a great invention of human civilization.



Amimul Ehsan Zaki

MTE'19

In the 4th industrial revolution IOT, automation, robotics has become inevitable thing in our world.

IOT means Internet of things .it man's controlling an object through internet. Automation is the process of doing something automatically.

We have seen recent advancement in IOT. we can see Smart home technology with the help of internet of things.

Now let's talk about some innovative idea that can be included in this sector.

If face recognition system added in the front security camera and connected with the lock system then the control unit will match the input data with the recorded data and opens the door else send information to the owner through internet.

In the medical sector the treatment system could be Controlled through IOT and robotics technology. Operations of patients in remote areas can be possible with robotic arms and IOT.

Insulin is vital for diabatic patients but it is hard to give treatment in remote areas all over the world. In the automatic system the diabetics measuring machine will measure diabetics. Regarding that processing unit will measure the amount of insulin needed to stabilize glucose level of the patients and inject that with robotic arm.

Another instance of automation can be smart street light system. which will turn on Photoelectric Device. To reduce electricity consumption, we can set the intensity low normally. when a human or moving object will go through the road the motion sensor will detect them and increase the light intensity for a sudden time being.

If a wheelchair system can get command by voice and through internet and have robotic arm system to ride on chair for physical disabled people that will be a great instance of IOT and robotics .

IOT , automation, robotics will make world much easier to live then it was before.



Iffat-Ara Sharmin

EEE'19

People are getting busier in order to cope with the current world. So caring for babies and children has become a challenge for 21st century parents. To make this tough parenting easier, an idea to make a baby caring robot "ROBO MOM" would be materialized by applying the ideas of Internet of Things, Automation, and Robotics. Let's imagine, it's early morning, a little baby suddenly gets up and starts crying and frequency of this sound will be received by the radio receiver and instantly the baby's cradle starts automatically swinging and a sweet sound of birds' chirping spreads throughout the room and toys start moving; a joyous environment is created. Milk for the baby kept in the fridge is automatically thrust out, smoothly received by a robotic arm, brought to normal temperature and kept to the heater for boiling the milk. At the same time, an alarm is rung to make this baby's guardian aware about its awakening so that they can change any program of the automated system even staying at their working place. A sensor kept in the cradle checks whether the baby is dry or not. If not, it will make its cloth dry using absorption technology and germicide is spreaded. It checks the baby's body temperature, heart beating rate, blood circulation, and so on. Mother's voice recording is played and a three dimensional holographic image of mother is created to console the baby giving it a feel of its mother's presence. Essential accessories needed daily for the baby such as nutritious food, pampers, medicines, massaging oils, skin nourishing creams etc are smartly ordered online from market after checking its unavailability at home. People's access in the room would be smartly handled using face recognition biometrics. These precautions, the IoT, Robotic arm, and automation system would take until the baby's parent comes to fix its aspects. For a child of 3 to 5 years, holographic ROBO MOM can tell educative and informative story to enrich its knowledge, take its emotional care, analyze its psychological demand; teach it rhymes, poems, easy mathematics, ethics, religious verses, other essential things, and give it motivation to step forward, be a companion to it. But we must be careful about one thing, this ROBO MOM is complementary for baby caring, but must not be a substitute. A child deserves loving care of its real parents and nothing else can substitute parental love and affection.



Mayeesha Farjana

CSE'19

AI meets IoT

Both the Internet of Things (IoT) and Artificial Intelligence (AI) are powerful technologies. And when you combine AI and IoT, you get AIoT—the Artificial Intelligence of Things—a more influential technology. AIoT is a newly emerging technology that enables decision making and analytics at IoT devices.

Due to increased interaction with people and other physical objects, IoT provides a great opportunity for collecting colossal amounts of data. And AI applications can enable real-time analysis of the data that IoT devices have collected, helping devices to take immediate action based on the input data.

As the number of IoT devices and the data they generate is expected to grow, the main challenge in IoT will be to use this data in a meaningful way. According to a Gartner* survey, 87% of organizations have limited business intelligence and analytics maturity. Therefore, most organizations underutilize their data and fail to get value from it. Integrating AI-based solutions in IoT projects will help organizations achieve better data management and analytics capabilities.

The potential uses of AIoT includes Smart City, Smart Home, Industrial Internet of Things (IIoT), Autonomous Things (AuT), Wearable Devices for disease detection etc.

Alibaba Cloud and Tesla have already led the way of AIoT. Created by Alibaba Cloud, ET City Brain is an AI-powered solution that optimizes the usage of urban public resources. And Autopilot is an advanced driver assistance system that is utilized in Tesla's self-driving cars. With countries like Germany allowing self-driving cars on the road, this is one of the biggest areas of growth for AIoT.

In essence, you can think of IoT devices as the digital nervous system while AI is the brain of that system.

*Gartner, Inc is a technological research and consulting firm based in Connecticut, USA.



Champa Akter

EEE'19

Home Automation Using Google Firebase and Node MCU

In this smart world nowadays, it has become necessary to make our home smart and make our lives easier. We can modify our house's current electronic system into a smart home with the minimal cost through this system. Instruments need for the projects are-

- NodeMCU
- 5V relay
- Diode 1N4007
- BC-547
- Triac
- Resistor (220ohm, 1k, pot-100k)
- Capacitor

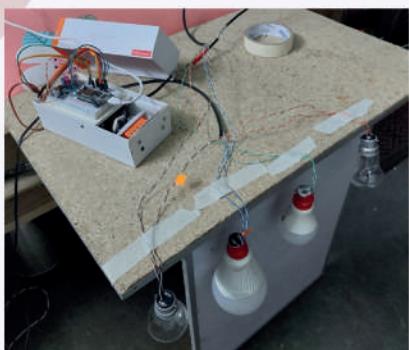
In the software section, we need-

An APK to control our desired device from our smartphone and google firebase so that we can put our data on the server. We need an internet connection in our homes and mobile devices for all of this to work.

After building this system, we need to connect this system with our existing home electric system in parallel to control all of our electronics both from the electric switchboard and our innovative approach.

This system allows us to control the speed of fans and the brightness of lights. It will restore the last comments and status of lights and fans from the server whenever a power down situation happens. For this, we need not worry about the power down the case. It can be more intelligent using some motion sensors and RTD modules to be programmed and used to turn off or on lights or fans depending on motion or time.

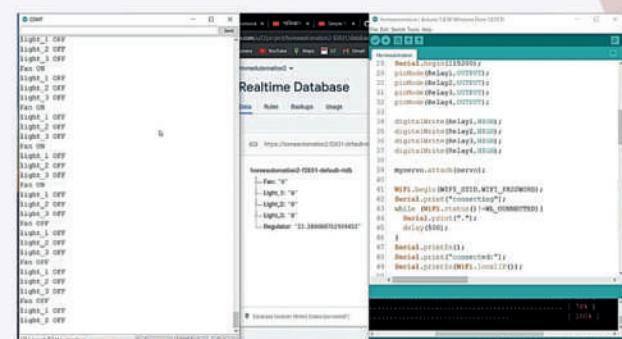
Along with all the advantages, it has some limitations too. It needs one relay and dimmer circuit to control a single light of fan with the speed.



Testing of the System before implementation



User App Layout



Arduino Code and Firebase Status Screenshot During Testing

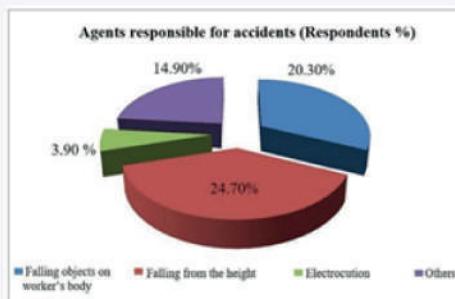


Hafsa Rahman Rinky

CE'19

Iot Based Safety Monitoring in Construction site

Every year a lot of construction laborers lose their lives by falling , stucking , electrocutions or being caught between two objects . To protect workers and prevent accidents in construction sites , a novel design of an autonomous system is proposed which monitors, localizes and warns site laborers which result in saving project time and cost.



The system is composed of RFID(Radio Frequency Identification Device) tag and smart helmets . RFID tags are a type of tracking system that uses radio frequency to search, identify, track, and communicate with items and people. RFID reader will be installed in each floor and each labour , necessary and moving item will have a RFID tag added with it. Every RFID system consists of three components: a scanning antenna, a transceiver and a transponder. Once activated, the tag sends a wave back to the antenna, where it is translated into data and the supervisor will receive the location of labour and the instruments . Thus any labour in risky condition will get an alarm thus preventing accidents along with reduced material stealing .

The smart hard hat (helmet) is furnished with gyro sensor, PIR , ultrasonic , temperature sensor and heart rate monitor along with a sos button . Gyro sensors sense angular velocity , if a worker lifts his helmet up then it will be sensed and then notified to put it on .An ultrasonic sensor measures the distance to an object using ultrasonic sound waves . It will notify if laborers are maintaining a safe distance from moving things . The temperature sensor and HRM keep updated worker health conditions . SOS panic button will instantly send a signal to higher authorities to avoid major losses .

Overall the system ensures the safety of labourers, reduces the project cost and prevents the wastage of working time .



Puja Mazumdar

MTE'19

Can AI predict if and when a patient could die of cardiac arrest?

Johns Hopkins University researchers developed a new AI-based method that can predict if and when an individual could die of cardiac arrest up to 10 years ahead. Researchers are claiming this technique to be significantly more accurate than a doctor. This method is built on raw images of patients' diseased hearts and backgrounds. It stands to revolutionize clinical decision-making and increase survival from sudden and lethal cardiac arrhythmias.

The researchers published their findings in a paper titled "Arrhythmic sudden death survival prediction using deep learning analysis of scarring in the heart" on April 7, 2022, in *Nature Cardiovascular Research*.

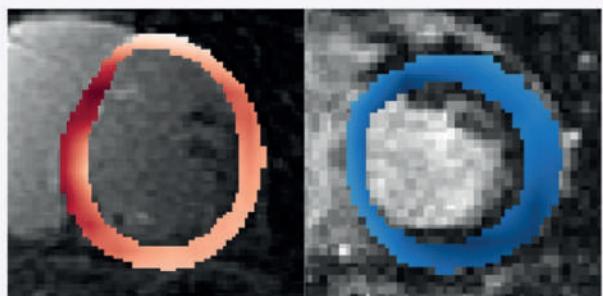
A first-of-its-kind AI detected high risk in the heart circled in red. Credit: Johns Hopkins University

Sudden death caused by arrhythmia is accountable for almost 20% of all deaths worldwide, and only a little is known regarding its reason or who is at risk. Natalia Trayanova, Ph.D., senior author of the paper, and her colleagues brought a groundbreaking revolution in healthcare as they used neural networks and personalized survival analysis to predict the chance of death in individual heart diseased patients.

The research team used a deep learning technology named Survival Study of Cardiac Arrhythmia Risk (SSCAR). This method utilized contrast-enhanced cardiac images from actual cardiac patients to train the algorithm to detect patterns and relationships which are not visible to the naked eye. This scar pattern often results in arrhythmia. But traditional clinical cardiac images only emphasize scar features like mass and volume, ignoring other crucial data.

The algorithm prediction was evaluated and delivered with about 74% accuracy when it was tested with an independent set of data collected from 60 health centers across the US.

Reference: "Arrhythmic sudden death survival prediction using deep learning analysis of scarring in the heart" by Dan M. Popescu, Julie K. Shade, Changxin Lai, Konstantinos N. Aronis, David Ouyang, M. Vinayaga Moorthy, Nancy R. Cook, Daniel C. Lee, Alan Kadish, Christine M. Albert, Katherine C. Wu, Mauro Maggioni and Natalia A. Trayanova, 7 April 2022, *Nature Cardiovascular Research*.





Subrota Sarker Rabin

MTE'19

Visual Inspection and Reading For Blind People

Blindness makes life tough for many who suffer from it, but the use of technology can help with some day-to-day activities.

People who are blind are unable to perform tasks efficiently. Text reading, for example, necessitates the use of a braille reading system or a digital speech synthesizer (if the text is available in digital format). The majority of printed publications published do not include braille or audio versions, while digital versions are still in the minority. Blind people, on the other hand, are unable to read simple cautions in walls or signals that surround us.

So, in this case, a new way can be offered by inventing a new camera module which gives their upholder signals and reading of speech of the in-front situation. It's speed has to boost up at 5×10^{-17} seconds.

Nowadays, we have many book readers and scanning apps which is really a good progress. If you evaluate this with mixing up these two processes, it will make a great revolutionary change in our world. And in business, it is also profitable too.

Many companies took some steps ahead for this.

One is E_Reader that works with British firm Bristol Braille Technology plans to launch an e-reader for blind people that can enhance their reading experience and spare them from lugging around hefty print volumes. Named Canute 360, it's the world's first multi line Braille e-reader, displaying nine lines of text at a time, or about a third of a page of regular print. It refreshes a line at a time, starting at the top.

In an upgradeable way, blind people still cannot access internet service.

They just use only voice recordings and just find the voice and cannot get the feeling.

In a better future using sensors they can sense that thing and also the colour verification.

That can help one to evaluate and can do all work easily like a simple man.

In conclusion ,we can see a better future that people can't regret with their lack of body parts. They overcome this and make our nation proud..

A man can see with this and sense this and take this information and got by the listener.

Reference :

1.Roberto Neto and Nuno Fonseca / Procedia Technology 16 (2014) 1200_1209

2.<https://m.economictimes.com/>



K. M. Rifat Al Eman Shoron

EEE'20

Concept of IoT: (What is IoT?)

IoT is the abbreviation for Internet of Things. In order to understand Internet of things, lets first briefly talk about our known internet. Internet is a net or web of computers where every computer is connected with each other. So, our known internet can be called Internet of Computers. As you have already guessed that Internet of Things is a net or web of things. What things you may ask, for example Google home, Amazon Echo, Smart Light, Smart watch, Smart Fridge, Smart switches etc. We can see a pattern here any ordinary object with the word "Smart" are usually IoTs.

Components of IoT: (How an IoT system works)

There are 4 fundamental components in IoT system.

1. Sensor/Devices:

IoTs collect data from their environment using sensors and devices.

Smart Watch is one of the most familiar IoT. It has sensors like, Accelerometer, Gyroscope, Heart Rate Monitor, Skin Temperature Sensor, GPS etc.

2. Connectivity:

Collected data from sensors are needed to be transferred to cloud. (Here cloud means central Device. In the case of smart watch cloud would be your phone)

Various connection method is used to transfer data. A regular smart watch uses Bluetooth, Wi-Fi, Cellular connectivity.

3. Data Processing:

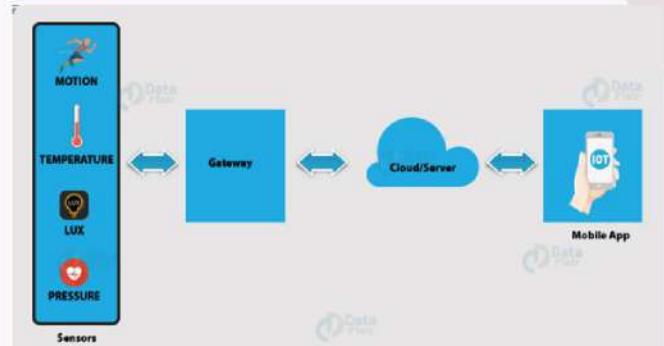
The cloud does the processing and sends back the required information to the IoT.

For example, your smart watch sends your workout data to your phone and your phone analyses those data with your previous record and sends back processed data or information.

4. User Interface:

The information must be useful to the end user in some way. So, there is usually a user interface to deliver the information to the end user.

For instance, your smart watch shows you your progress chart and your next workout goal.





Md Himel

ME'20

LPG GAS LEAKAGE DETECTOR ROBOT

INTRODUCTION

Fire accidents and loss of many life have become unstoppable in this time. Nowadays, we hear about the death of many families by LPG cylinder blast. So we have to make a solution to reduce this life loss.

A self-governing robot can help to find the leakage and raise an alarm and also send an SMS to inform the family members. It can be used particularly in the kitchen and bedroom.

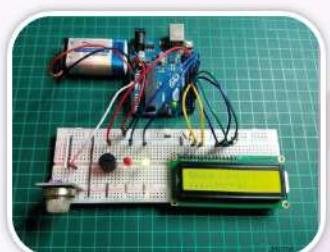
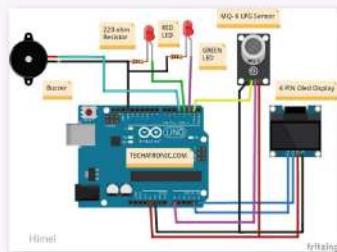
LPG GAS

Liquefied petroleum gas (LPG) is a monochrome order less fluid which promptly evaporates into a gas. LPG might leaks as a gas or a fluid. If it leaks as fluid, it will instantly transferred into gas. As it is heavier than the air, it will remain in the ground.

COMPONENTS

The main instruments of this robot :

1. LPG gas leakage sensor
2. Microcontroller
3. GSM Module
4. LCD Display



WORKING

The working of the proposed robot is simple and user friendly. It can be used with both power supply and battery. When the robot gets the power, the microcontroller Starts working with its basic function program. The gas sensor in the robot can highly detect any LPG gas leakage within 25 to 30 feet. When the concentration of gas increases, the gas sensor output voltage increases also. If the robot finds any suspicious gas leakage, it raises the alarm. If the alarm is not switched off physically within 5 minutes, the microcontroller start sending SMS to the register mobile number in every 15 minutes until the alarm switched off physically.

CONCLUSION

This family robot is greatly helpful to our lives. It is affordable and cheap and more importantly, it can save human lives.

019

Meftahul Jannat Nuha

EEE'20

GreeCon- A new dimension in the logistic sector

Logistics is undergoing a period of change that could not be more fundamental. The digitization of everything and having artificial intelligence in everything really will change everything for everyone. Today, the increasing complexity of logistics and supply chains can only be managed by means of digital platforms on which data can be securely and confidently communicated across borders by means of artificial intelligence.

Here I like to introduce my new idea 'GreeCon' to add more efficiency in the logistics sector in the world of globalization. Our motto is 'Be green with Automation'. The GreeCon will provide a technological and organizational framework for the logistics developments of the past ten years and forms the digital infrastructure for artificial intelligence in logistics. It thus puts the concept of the platform economy on a new foundation and creates an alternative to monopolistic platforms that cause isolated solutions and dependencies. The GreeCon is based on an open source infrastructure and freely available technical components for services and platforms. Using these components will make it possible for a wide variety of the most diverse logistical and industrial platforms to coexist.

In this project, the blockchain management system will play a significant role. As a key technology, the blockchain technology has the potential to make the data exchange tamper-proof and to automate and autonomize a large number of processes in the value chain. Instead of paper consignment notes and lengthy, manual invoicing processes, goods can be invoiced close to real time by means of a blockchain. Digital Load Carrier Exchange project focuses on designing a uniform and as simple an exchange process as possible with regard to hardware and software. The source code of hardware and software will be freely available. The AI-based ETA service will improve the accessibility of intermodal transports and calculation of intermodal routes and transport durations. Therefore, an open data approach is used, where the system collects, preprocesses and learns from open data sources only to provide large-scale accessibility.

GreeCon will develop both the software and the hardware environment for tomorrow's autonomous logistics, all controlled by artificial intelligence. Our new logistics operating system will meet the highest data protection requirements. Only a complete digital infrastructure like GreeCon will enable comprehensive transparency in value added networks and create trust along complete supply chains – from raw material suppliers to end customers.

The given chart shows the included components of the GreeCon project.

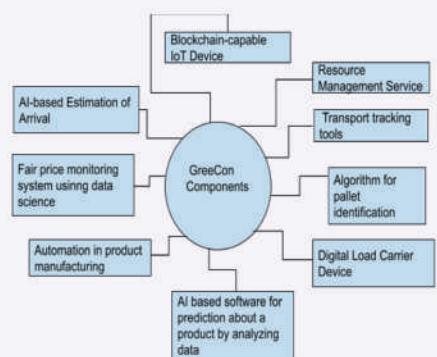


Figure : GreeCon components.

My Robotics and Automation implementation:

By adding a fertigation pump, electro-mechanical shelter, Arduino(as a controlling device), and a wifi module to the system, we can imply robotics and automation to this recent invention. We can set certain thresholds according to whether to control that actuator. Like when the temperature rises or humidity of the soil decreases, the pump will automatically irrigate and while rainfall is too heavy or the sunray is too bright the electro-mechanical shelter will automatically spread over the crop field. Arduino and wifi module is the controller that operates the actuators according to sensors signal.

This is how crop yield can be increased effectively compared to conventional methods.



Mir Ashikur Rahman

CSE'20

Modern technology has changed civilization in many different ways. Humans have almost always been on a path of progression, the twentieth and twenty-first centuries have seen a number of advancements that revolutionized the way people work, live and play. IoT, Automation and Robotics are also assumed a huge field on modern technology.

The Internet of Things, or IoT, refers to the billions of physical devices around the world that are now connected to the internet, all collecting and sharing data. IoT is influencing our lifestyle from the way we react to the way we behave. From air conditioners that we can control with our smartphone to Smart Cars providing the shortest route or our Smart watch which is tracking our daily activities. IoT is a giant network with connected devices. These devices gather and share data to communicate with each other in real-time without involving a human being.

Automation is the creation and application of technologies to produce and deliver goods and services with minimal human intervention. The implementation of automation technologies, techniques and processes improve the efficiency, reliability, and speed of many tasks that were previously performed by humans. Automation is being used in a number of areas such as manufacturing, transport, utilities, defense and lately, information technology.

Robotics is the engineering and operation of machines that can autonomously or semi autonomously perform physical tasks on behalf of a human. Typically robots perform task that are either highly repetitive or too dangerous for a human to carry out safely. It is a branch of Artificial Intelligence (AI). Mainly Robotics is science of building or designing an application of robots. The aim of robotics is to design an efficient robot.

IoT, Automation and Robotics have changed our day to day life. We have to use these technologies for the betterment of human being.



Tanzila Sultana

EEE'20

Robotics and Automation implemented IoT device

Agrisnap is an IoT based monitoring and controlling system for a better agribusiness. Agrisnap is an IoT-based monitoring and controlling system which consists of four sensor circuits modules that integers magnetic pogo pin connectors for easier assembly with the controller circuit module. This enables farmers to assemble, troubleshoot and maintain the system independently.

There are so many advantages of using IoT in the field of agriculture such as farmers can remotely monitor any environmental changes, formulate fertilizers according to their needs, and can detect optimum temperature, and water need for crops.

Instead of having so many benefits, farmers are afraid of using IoT in farming. Here are some major reasons why:

1. Their lack of knowledge about technology and troubleshooting.
2. Lack of engineering skills regarding the installation of the device.
3. High cost of implementing the system.

The device Agrisnap is designed such as the farmers do not need any knowledge about advanced technology, or engineering skill to install and execute the device. "Self-integration, self-troubleshoot, self-maintaining" is the motto of this device which will help them to run a more proficient, predictable, and profitable agribusiness.

The design and work procedure of the device are described below:

1. The controller enclosure (system's brain) has a screw-fastened cover to protect the electrical circuit inside the enclosure and a 5v DC supply source that uses only two units of energy per year.
2. The four sensors are humidity, rain index, light intensity, and temperature sensor. The sensors have embossed icons on them to make it easy to identify the sensors separately. Pogo pins and strong magnets are used to specifically connect the sensor in the slot joint. Different magnetic pole combinations are used as a safety precaution so if the user tries to insert the sensor into the wrong slot, the slot will repel the sensor. The farmers just have to match the emboss icons of the controller and the sensor to one another and will automatically attract the sensor to the slot.
3. The microcontroller will detect the change of humidity, light, temperature, rain index and send the signal to ThingSpeak(a web-based open API IoT source information platform that can store sensors data and graphically present it on the web) that will send the farmer graphical presentation which will allow them to visualize live data stream on their phone and help to make an accurate and proactive decision.
4. By notifying the broken sensor or device to mobile via ThingSpeak, Agrisnap will help them to troubleshoot all by themselves as they can snap out the broken sensor and replace it with a new one.
5. In addition, they can modify the device by disabling the unnecessary sensors.



Famin Salekin

ETE'20

MECHANICAL SUPPORTIVE ARM

In our world many people are born with physical disabilities. Among them armless people are common. Besides many people lose their arms because of accidents. Life without arms is full of sorrows and agony. We can reduce their sorrows with the help of robotics and automation technology. The way to help these people is ' Mechanical Supportive Arm'.

What is a 'Mechanical Supportive Arm'?

A mechanical supportive arm means an arm made of stainless steel/iron/other kind of strong and non-reacting metal or materials which will work as original arm of physically disabled people.

Materials needed for 'Mechanical Supportive Arm':

Metals (such as: stainless steel, iron etc.), electrical circuits, sensors (for receiving signals), lubricant (for reducing mechanical sounds) etc. are needed for making a mechanical supportive arm. The size of the mechanical supportive arm depends on the person who'll use it.

How does it works:

Normal mechanical supportive arms generally works on the muscle pressure and tension. But persons without full arm can't produce muscle pressure and tension. For this type of people my mechanical supportive arm will work. It will receive signals from brain by the sensors. Then by using the signal the arm will response and the work will be done easily. By this invention many people will get back their arms.

To the conclusion, this invention will give the feelings of real arm to the peoples who has lost their arms or born without arms.

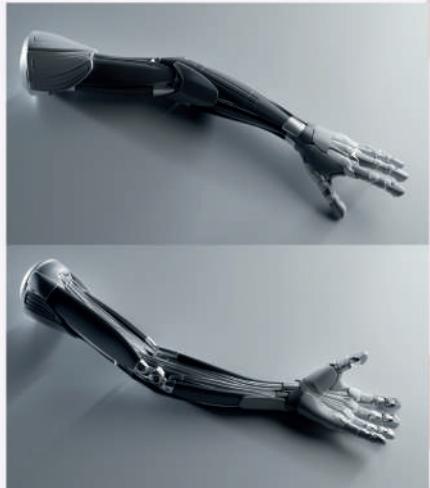


Fig-1: mechanical supportive arm



ADVISOR

Dr. Sajal Kumar Das

Advisor

IEEE RUET RAS SB Chapter

EDITOR

Shaharior Anik

Chair

IEEE RUET RAS SB Chapter

GRAPHIC DESIGNER

Rifah Tasnia

Membership Development Coordinator
IEEE RUET WIE Student Branch Affinity Group

Mehreen Tabassum

Graphic designer (Volunteer)
IEEE RUET Student Branch

CONTENT

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