The second stage of the “Shilpasena” exhibition - Sri Lanka Technology Revolution inaugurated by H.E. the President Maithripala Sirisena was held for five days in the historical city of Polonnaruwa. The main objective of this programme is to take Science, Technology and Research knowledge to the village with a view to encouraging the communities in those areas and to secure the contribution of every citizen to drive the country towards rapid development. These are some of highlights of the event.

From

Sahasak Nimaum
International Exhibition 2019

- Vindhya Paadukkage

The “Sahask Nimaum” exhibition organized by the Sri Lanka inventors’ Commission with the objective of taking local Sri Lankan inventors, from the national level to the international level, was held recently at the Sri Lanka Exhibition and Convention Center. Winners from local schools, universities, and tertiary institutions, commercial and open categories competed in the final round. This event was held under the patronage of the Hon. Sujeeva Senasinghe, the Minister of Science, Technology and Research, Secretary to the Ministry Mr.Chinthaka S. Lokuheetti and Prof. Rangika Halwathura, the Commissioner of the Inventors Commission. Coinciding with this event, the Sri Lanka Inventors Commission’s Official website was launched and over 300 inventors participated in the event, including the Sri Lanka armed forces and foreign inventors.

Sri Lanka to chair Asia Pacific Intergovernmental panel on space applications

- Chintana Wijayawardana

The 23rd session of the Intergovernmental Consultative committee on Regional Space applications program of the United Nations Asia-Pacific Regional Economic and Social Commission (UNESCAP) (2019-2020) was held recently at the United Nations Conference Center in Bangkok, Thailand, and The representative from Arthur C Clarke Institute was elected as the Chairperson of the above committee.

The above space technology program covers all of the 62 countries of United Nations Asia Pasific Economic and Social Commission and out of those countries, 35 countries including Russia, China, India, Japan, South Korea, Malaysia, Indonesia, Singapore and Turkey represent the Intergovernmental Advisory Council.

Sri Lanka has gained a number of benefits for the development of space technology capability in Sri Lanka through a number of Projects implemented under this regional space technology capability development program and it also provides the opportunity for many engineers, scientists and technicians of a number of government agencies to participate in overseas postgraduate and other technical training programs in the field of space technology.
Advances in the technology have changed our world, revolutionizing entertainment, connecting friends and families across the globe, enriching our communications experiences and enabling major improvements in medical care and education. The innovation of recent decades has driven a huge leap forward in video quality. And video has also become more accessible, helping people worldwide to share their stories in vivid, moving pictures. These gains in both the sophistication and accessibility of video are built on International Standards. The video compression algorithms standardized in collaboration by IEC, ISO and ITU have been honoured with two Primetime Emmy Awards, recognizing that these standards are central to industry’s ability to meet rising demand for video, one of the most bandwidth-intensive applications running over global networks. International Standards meet industry demand for powerful compression capabilities. They also enable smooth transitions to the next generation of video compression technology, helping industry to maximize return on each wave of investment. Having standards recognized and respected all over the world means that video encoded on one device can be decoded by another, regardless of the device being used. This introduces economies of scale that help to grow the market, giving innovators the confidence to invest in new video applications and services.

International water Rocket Competition in Japan

The astronomy division of Arthur C. Clarke Institute for Modern Technology has carried out many programs during the last two decades to promote and enhance astronomical research, astronomy and space technology in Sri Lanka, and have achieved excellent results at the national level. Among these, discovering a new planetary system by Sri Lankan scientists, introducing astronomy to the university education in Sri Lanka and introducing national level programs such as water rocket launches acquire a prime position. Among these programs, the water pressure rocket-activities and competition program which was introduced to Sri Lanka in 2005 has become the most popular program among the school Children, and this program has so far provided the opportunity for over 90 school children to participate in international water rocket events held in different countries. Sri Lanka has become this international water rocket championship twice and has won first runners-up once. Accordingly, in this year15th Asia Pacific Regional Space Forum (APRSAF) International water rocket competition will be held in Japan in November 2019 and the selection of Sri Lankan competitors was held recently by the Arthur C. Clarke Institute for Modern Technology. The Arthur C. Clarke Institute for Modern Technology was in the process of selecting 6 winners from nearly 100 competitors representing schools from different parts of Sri Lanka to compete in the international competition which will be held in Japan. The six winners respectively were Rumana Reya-salith at Sacred Heart Girls’ Convent Galle (6th place), M. Sachitha Yasomai Balasuriya, Ananda National School, Chilaw (5th place), U.G. Didula Adithya at Sri Chandrananda Buddhist College Kandy (4th place), D.K.A.D Chathuranga at Rivisada Central College Mavathagoda (3rd place), Javiru Prasanjith Jinasena of Ananda College, Colombo (2nd place), and K.W.A.J.B. Karadagolla at Sri Revatha Central College Madatagama.

Introducing water rocket related activities to Sri Lanka Since 2005, Arthur C Clark Institute for Modern Technology has successfully represented Sri Lanka at international competitions in 14 countries, including Japan (2005), Indonesia (2006), India (2007), Vietnam (2008), Thailand (2009), Australia (2010), Singapore (2011), Malaysia (2012), Vietnam (2013), Japan (2014), Indonesia (2015), Philippines (2016), India (2017) and Singapore (2018). Sri Lanka has had many significant achievements in the last 14 Asia Pacific International water Rocket Competitions and these achievements are winning the 3rd place in the competition in Japan in 2005, winning the 4th and 5th place in 2009 competition in Thailand, winning 2nd place in 2015 competition in Indonesia, winning the first place in both 2017 competition in India and in the 2018 competition in Singapore, which can be mentioned with great pride.

Chinthana Wijewardhana
Deputy Director (Media)
Arthur C. Clarke Institute for Modern Technology
Disease diagnosis using conventional methods reflects several disadvantages, including less accuracy, lack of required rapidity and less sensitivity, which can negatively affect the end results of a particular test, leading to an incorrect diagnosis. However, with the emergence of the molecular diagnostic techniques, relatively rapid and more accurate disease diagnosis could be achieved throughout the world.

'Molecular diagnostics (MDs) is a broad term which is used to describe a category of diagnostic tests which are dedicated to determine or evaluate a disease status, predisposing factors of a disease response to a therapy or treatment at molecular level through detecting different bio-molecules such as DNA, RNA or proteins as markers in humans and disease causing organisms. Although, molecular diagnostics are highly pronounced in USA and Europe, countries including Japan, Korea, China, Thaivan, India and Singapore were also identified for their rapid bloom with respect to the development of MDs.

This prompt turn from conventional diagnostics to MDs might have triggered by several global issues including pandemics such as H1N1, prevalence of infectious diseases and cancers, ever increasing burden of chronic diseases, along with rising of the awareness on genetic disorders. Moreover, MDs have a direct impact on precision medicine or personalized medicine, which mainly focuses on identification of treatments which are tailored to the molecular profiles of individuals or small group of individuals, empowering the right therapy for the right patient, at the right time, with the right dose. At present the majority of MD tests (50-60%) were developed for infectious diseases; however, considerable portion is also devoted for identification of cancers and genetic disorders. In this regard breast cancer prognosis is a revolving the patient care paradigm by providing critical information to clinicians. In addition to that, hospital acquired infections such as Methicillin-Resistant Staphylococcus aureus (MRSA) infections and Ventilator acquired Pneumonia are also receiving the benefits of MDs in early detection. Cardiac risk tests (KIF6), transplantation/transfusion diagnostics are also spring up hand in hand with MDs. Infectious diseases are mainly diagnosed by MD techniques through detecting specific DNA or RNA or protein sequences of viruses, bacteria or parasites. In this regard, detection of mutant strains using protein markers, confirmation of active viral infections such as Human immune deficiency virus (HIV) and dengue virus infections, prediction of the progression of an anti-viral therapy treatment are some of the specific applications of MDs. Cancers have not only been diagnosed by MD techniques but also these techniques can suggest better therapeutic interventions along with assisting in monitoring and management of the cancer.

The advancement of MD techniques has opened edavenues to assess genetic variation on drug response, efficacy and metabolism in each individual, facilitating the medical practitionersto precisely decide on the most effective choice of drugs/doses and avoiding their potentially hazardous side effects. In general, simple to more complex techniques in Molecular Biology are applied in the field of MDs, including nucleic acid amplification techniques such as polymerase chain reactions (PCRs), Microarray techniques, DNA or protein sequencing techniques, florescence in-situ hybridization (FISH) technique, and some proteomics techniques (for analysis of protein based biomarkers) such as mass spectroscopy. In addition, advancement of field of Nano-technology also contributed a lot to the development of MDs by improving the sensitivity and specificity of tests used in MDs. In Sri Lanka, MDs is still a hot topic within local health care system. However, it has reached a relatively promising level in diagnosis of mainly some of the infectious diseases, along with selected genetic disorders and cancers. In this regard several universities and government based institutions as well as the private sector has taken initiatives. So that currently, MDs test for detection of infectious agents including HIV, Dengue virus, leptospira (causative agent of rat fever), leishmaniasis, MRSA, and Wuchereria (causative agent of filariasis), genetic disorders such as beta/ alpha thalassemia and Duchenne muscular dystrophy and several genetic markers for the breast cancer (e.g. BRCA 1 and 2) and prostate cancer (e.g. PCA3) are available in Sri Lanka.

However, there are some bottle necks which limit the expansion of MDs service locally. The high cost due to expensive reagents, expenses associated with importing reagents (including transportation) and equipment along with maintaining special laboratory conditions, is ultimately need to be born by the patient. Moreover, it is difficult to obtain a reference material for quality control at an affordable price. Nevertheless, some private sector service providers have come up with appropriate solutions for some of the aforementioned limitations by developing the required material (reagents and test kits) locally which can save a massive amount of money, flowing from our country to the foreign countries. Collectively, MDs has significantly improved the early detection and monitoring of life threatening disease worldwide and facilitated clinicians to take more accurate decisions regarding diagnosis of diseases and progression of the respective treatments, which in turn has saved the valuable lives of the patients. However, as every field engaged with science, MDs is also an ever evolving field, which may bring innovative means of extending life time of the human beings while propelling the health care sector to the betterment in future.

References

Dr. Anushka Alvitigala
Lecturer
Faculty of Nursing, University of Colombo
Astronomy is the science of space. The space is the vast expanse outside the Earth’s atmosphere. The purpose of astronomy is to acquire a scientific understanding of space, all that it contains and everything that happens. Space and everything in it is called the universe.

**The Solar System**

Eight planets, including Earth, revolve around a star called the sun. In addition to these eight planets, dwarf planets, Moons, asteroids, comets and clusters of lage, small celestial bodies such as meteors are orbiting under the sun’s gravitational force. This whole system is called the solar system.

**The Milky Way Galaxy**

Our solar galaxy is called Milky Way Galaxy. A galaxy is an enormous collection of stars that are joined together by gravitational force. Scientists say that the Milky Way galaxy contains approximately 400 billion stars.

**Local Cluster of Galaxies**

About 50 galaxies, including the Milky Way galaxy are known as clusters of local galaxies. The Andromeda Galaxy is the largest galaxy in the local clusters of galaxies. The Andromeda galaxy contains over a ten billion stars.

**Local Super Cluster of Galaxies**

A Collection of about 47,000 galaxies, including the local galaxy cluster, is known as the local super galaxy cluster.

**The Universe**

Our Universe is created as a collection of super cluster of Galaxies. Scientists believe that it contains more than ten million super clusters of galaxies.
There are few pieces of technology that excite tech lovers and the general public quite like aerial drones. These unmanned aerial marvels ignite the imaginations of people the world over, and the reality is that we are only scratching the surface of their potential. Rather than flying playthings, drone technology is being unlocked for practical uses in aerial data and information management.

While drones have been around for a few years, algorithms and programming are only just now starting to catch up to drone capabilities, presenting exciting possibilities, not only for the next few years, but the next decade. With an exponentially growing market, estimated worth of more than 100 billion dollars by 2025, this technology offer a barely explored potential gold mine of opportunities for any tech entrepreneur to break in to the global advance electronic and robotic market and to potentially revolutionize the aging fields of agriculture, logistics, surveying, cartography etc.

Drone technology has come a long way since its inception in the late 20th century thanks to advances made in the fields of computing, electronics, power storage, advance materials, communication technologies and advance design & manufacturing. Upon analyzing the current drone technologies it’s clear that the drone designers have mostly figured out the physical and electronics design and development potion of drone making, but there are significant development opportunities for improvements in range, incorporation of novel sensors, use of machine learning for navigation, data analytics and multiple source data aggregation.

Sri Lanka made its formal debut into the design and development of drone technologies in the early 21st century with a handful of institutions including government research organizations, armed forces and universities paving the way forward. Within years of initiation into the industry, Sri Lanka showed promise and a budding culture of design and innovation in both professional and grassroots levels lead to a widespread mainstream use of drones. Following years showed a massive influx of foreign made drones into the country and a lack of support from regulatory authorities and transition of culture and mindset from great innovation to one of simple integration lead to the demise of many promising startups and programs with only a few surviving institutions carrying out serious research and innovation activities currently.

Arthur C Clarke institute for modern technologies (ACIMT) one of the leading research institutions in the country is at the forefront of drone based research and innovation activities and continues to set the benchmark for advance aerial drone design and manufacturing in the country. ACCIMT started its drone program by design, development and testing of a low cost custom flight controller hardware and firmware intended for quad-copters. Based on those humble beginnings the teams currently carry-out design and development activities in the areas of drone structures, novel battery systems, advance firmware and software related to drones in both fixed wing and multi-copter variants.

The institute currently offers a range of multi-copter designs including hexa-copter capable of carrying payloads up-to 5kg, precision agricultural mapping drone, water proof drone with a surveillance payloads and a 2m flying wing. Apart from these the institute undertakes projects in developing custom drone solutions and carryout drone operation and maintenance, training programs for external clients on request. The institute has carried-out projects such as agricultural mapping, crop heath estimation, 3D mapping of landscapes, 3D mapping of structures and advance surveillance, thus acquiring experience in designing systems around advance sensor suits with the likes of 3D LIDAR, 2D LIDAR, Stereo vision and Multi-spectral cameras. ACCIMT aerospace lab employs experienced researchers and state of the art equipment such a Lynx foam cutters and composite 3D printers and aims to full-fill the countries drone requirement while carrying out cutting edge research studies to make its mark on the global drone industry.
A National Hub for the reception and distribution of earth observation satellite data will be set up in the near future

Bangkok, Thailand last month.

This is the fourth time we have been selected to chair the committee. This is a huge achievement for the country as a whole and it will be a great chance to develop our space technology capabilities regionally. For this purpose, a 3 years program has been initiated. Accordingly this technology program will be implemented over a period of 12 years from 2019-2030 to enhance the feasibility of each country's space technology development. Through this we get the opportunity to benefit from other space technology feasibility study programs. We have been able to get the membership of the UN committee for peaceful use of space which is the highest UN committee functioning globally. This is directly a committee of the United Nations General Assembly. There are very few such committees in the world. Sri Lanka had the opportunity of joining such a committee in 2015. That is how we were able to enter into such technical cooperation agreements with space superpowers to launch the first satellite of Ravana 1, designed by two engineers of ACCIMT.

Ravana 1 satellite has been very successful. It worked exactly as we planned. We did not expect this level of success as this is our first satellite. Four more research missions are expected to be achieved through the launch of Ravana 1 satellite. This is a research satellite. Five research missions are being implemented through this satellite. These are: capturing satellite images to collecting data on the magnetic field of the orbit of the satellite and transmitting it to the earth, conducting research to keep the movements of the satellite stable, conducting research on data communication technologies which is used in satellite technology and researching another technology that can be used in satellite design. All of these are being researched under space conditions.

Beyond Ravana 1

Actually, we named this as Ravana 1 because this is the first satellite of our Nano satellite Development project. In addition, a number of Nano satellite development projects are being implemented at the technology capabilities regionally. For this purpose, a 3 years program has been initiated. Accordingly this technology program will be implemented over a period of 12 years from 2019-2030 to enhance the feasibility of each country's space technology development. Through this we get the opportunity to benefit from other space technology feasibility study programs. We have been able to get the membership of the UN committee for peaceful use of space which is the highest UN committee functioning globally. This is directly a committee of the United Nations General Assembly. There are very few such committees in the world. Sri Lanka had the opportunity of joining such a committee in 2015. That is how we were able to enter into such technical cooperation agreements with space superpowers to launch the first satellite of Ravana 1, designed by two engineers of ACCIMT.

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New Solar System

This has been discovered 100% by two of our chief research scientists Mr.Sanjee Gunasekera and research scientist Mr.Alahem Herath. This was discovered in 2018, but it should be noted that the assistance of 11 foreign scientists have been secured for further research.

Among school children

There is a national need to bring school children to the field of science and technology. As a country we are not capable of following the development strategies we have seen in the West. So as a developing country, we must move forward in science, technology, innovation and high technology. One of the initiatives that should be taken is the expansion of education in the field of science and technology. We take various measures to motivate this. This is not a big part of our statutory role. But because of its importance, we are holding astronomy workshops, water rocket events. We also offer free visits to the institute.

Moving Forward

Our main objective is to improve the performances of our high tech sectors. It is our primary responsibility to manage the processes and the preparation of the ground work for the formation of a National Space Agency. We are also working on setting up an Earth Satellite Data Receiver Center and Distribution Center. The first phase of this project is expected to be completed by the end of 2021.

From an interview of Chairman of ACCIMT Prof. Upul Somnadara and Director General of ACCIMT Engineer Sanath Panawawatte, Chairman of Arthur C. Clarke Institute for Modern Technology, Prof. Upul Somnadara, and Director General of ACCIMT Engineer Sanath Panawawatte

Vidya Palakkage

Photo by Chaminda Nirushanana

The National Engineering Research & Development Center which always lends a helping hand to those who aspire to join their lives, has added a new component this year to mark its anniversary in the form of its technical support services division.

This has been established under the Technology Marketing Division, with the prime objective of encouraging building innovators in their creative work and assisting entrepreneurs in modifying market products.

The most common difficulties being unsecured by Sri Lankan Inventors are finding the necessary technical tools and as well as the difficulty of combining the required engineering concepts with the task of transforming their creative ideas into a true model of innovation.

The National Engineering Research & Development Center of Sri Lanka is now ready to provide designers with the latest technology knowledge and tools so as to encourage them to overcome these difficulties through the establishment of the Technical Support Division equipped with modern state of the art equipment.

Further details can be obtained through 011-2236284, 011-2234266 or email at tmdd@nerdc.lk

National Engineering Research & Development Center

The National Engineering Research & Development Center offers a super-technical guide to innovations

Arthur C. Clarke Institute of Modern Technologies can be identified as one of the leading institutes, which is engaged in a variety of technological research using hyper technologies associated with the space technology. ACCIMT

ACCIMT is primarily a research and development institute which conducts research on technology. Also our primary statutory role is to accelerate and enhance the process of introducing modern technologies in the field of space technology, for engineers, technicians and scientists working in various institutes, which is engaged in the Member countries of the UN committee functioning globally. This is directly a committee of the United Nations General Assembly. There are very few such committees in the world. Sri Lanka had the opportunity of joining such a committee in 2015. That is how we were able to enter into such technical cooperation agreements with space superpowers to launch the first satellite of Ravana 1, designed by two engineers of ACCIMT.

In addition to aerospase technology, there is a program to develop pinless aircrafts. We have also developed a system that can carry remote surveillance cameras. We also use lighting systems called LDA to create a wide range of observation planes. But in this process we have to develop our own software. We can easily adapt it to whatever purpose we need, such as firing systems, landing, fire Fighting, spraying, land surveillance, traffic monitoring and marine surveillance. We also have the capability to produce drones according to these requirements. We hope to further develop this in the future as well as implement a few more projects.

New Modern Technology to Sri Lanka

Specially, Research and Development related to technical fields, exclusive short term training courses for Engineers, technicians and scientists working in high tech sector in the country are conducted by our institute while providing consultancy services and laboratory support for research activities in our respective laboratories.

International acclaim

Space technology is one of the most important technologies in the implementation of the Global Agenda for Global sustainable Development Goals, personal charter for Environmental protection and disaster management. A national aerospace program in the Asia pacific region has been initiated to implement these agendas. This is being implemented by the
The very first powered engine plane- Kitty Hawk was flown on 17th December 1903 which was invented by Wright brothers. This turned out to be a revolutionary step in transportation. Today sophisticated aircrafts are providing services world around and within a centuary dramatic development experienced related to global aviation industry. Whatever the technologies involve in modern aircrafts the physics behind the general scenario will always remain the same. So let’s be aware of some of the basics involved in aircraft takeoff.

An aircraft moving parallel to earth on a runway lift itself up at the takeoff. On the other hand there exist flying structures such as helicopters, air-balloons, and specially designed aircrafts such as Harrier normally moves vertically at the takeoff without moving along a runway. Lighter aircrafts use maximum power at takeoff whereas larger aircrafts do not use their maximum power output put at the take off. This is done in order to prolong the lifetime of the engine, as well as to cut down the maintenance cost while reducing noise emissions. However depending on the requirement engine power could be used with deterioration. As to follow precautionary protocols engines especially the ones driven using pistons are compelled to run with their maximum power to verify its error free fitness before the takeoff. Normally and commonly the nose of an aircraft is kept at an angle of 5 to 15 degrees after reaching a specific velocity to enhance the aircraft to be lifted. If it is not done the aircraft needs to provide ultra powered power output for the takeoff.

Aircrafts which are designed for high speed requirements need not make controls over the nose as the wings are designed in a fixed manner and powered using ultra speed engines. Nevertheless those wings are broadly designed to suit specific requirements to save both engine power and takeoff distance. There are special mechanisms to retract the surface covers of the wings to assist at landing. The wind (cross wind) which flows to the opposite direction of the movement of the aircraft reduces its speed of movement requiring more power from the engines. Normally the lifting speed of a larger jetliner average up to a value between 240-285 km/h (130-155 Nots) and for lighter ones such as cessna, will be reduced to a value of around 63 km/h (55 nots). However depending on the weight and other factors the above listed values will slightly differ.

Short takeoff and landing called as STOL are the aircrafts designed for shorter distance takeoffs and landings. The takeoff speed depends on the air density, weight, dimensions/designes, contaminances inclinations of runways and other factors. Temperature and runway elevation mostly are the influencing factors of air density. The relationship of temperature, altitude and density is called as density altitude. There are special techniques and charts to determine the density altitude. Vn (Also called as Vr) is reached at which the pilot begins to apply control inputs to cause the aircraft nose to pitch up after which it will leave the ground. It could be observed that the nose of the aircraft starts lifting up at this stage and the vortexes are created at the wing tips. V2 is the speed at which the aircraft may safely climb with one engin in operative. In case of an emergency the speed V2 should be maintained from one engine inorder to leave the runway at a screen hight of 35 feet or higher to maintain the climb rate of V2 and afterwards the pilot can prepare for emergency landing.

Digit indication on runways
May be you would have observed the digits and letters at the beginning of a runway. Have you ever thought of the meaning of these? What might be reflected from those indications? Probably if you are not connected to the field of aviation or flying it might make a puzzle on your mind.

As we all know the earth has a rotation axis creating 23.5 degrees with the vertical axis. The magnetic poles that could be found with a compass are also making deviations with the geographical noth pole. Lets consider a hypothetical line drawn between the north magnetic pole and to the point where the runway is. The digit that could be seen on the runway represents the angle created by this hypothetical line and the line in parallel with the runway.
**Background**

Lightning is a frequent natural phenomenon which causes massive damages and losses to man, animals, infrastructure and equipment with its direct and indirect effects. The damages incurred can be minimized using lightning protection methodologies such as utilization of Lightning and Surge protection systems and following safety precautions.

**Lightning is a frequent natural phenomenon**

Sri Lanka being a tropical country, experiences a high level of lightning activity which results in damages and losses to living beings and property mainly due to lack of awareness, carelessness and absence of regulations and adequate testing facilities in accordance with recognized national and international standards.

Types of damages:
1) Injury of living beings
2) Physical damage (due to fire, explosion, mechanical destruction, chemical release)
3) Failure of electrical and electronic systems

Types of losses:
1) Loss of human and animal life
2) Loss of essential services (electricity, water, telecommunication etc.)
3) Economic loss (structures, equipment etc.)

**Isokeraunic (lightning activity level) map of Sri Lanka**

Establishment of Centre for Lightning Protection

In this regard, at an initial meeting held at the Arthur C Clarke Institute for Modern Technologies (ACCIIMT) in early 2018 with the participation of Prof. Chandima Gomes from CELP-Universiti Putra Malaysia, Prof Rohan Lucas from University of Moratuwa, Mr Nuwan Kumarasinghe, Senior Electronics Engineer from Department of Meteorology, Chairman, Director General, Deputy Director General (Technical Operations) and Director (Electronics Engineering) of ACCIMT, it was proposed to establish a Center for Lightning Protection at ACCIMT aiming to fill that void, also focusing on the research and development in the field of lightning protection with following objectives in brief.

1) To minimize the damages and losses of living beings, property and equipment caused by lightning
2) To provide standardized validation and conformity testing of Lightning Protection Systems (LPS) in domestic and industrial buildings, structures and towers according to national and international standards
3) To conduct research and development related to Lightning Protection After a further feasibility study with the professional guidance of field experts, the Centre for Lightning Protection at ACCIMT was established in mid-2018. During the past year we have extended our technical knowhow to cater the requirements to achieve the objectives of the Centre. Our team comprises of three engineers and three engineering assistants.

**Our services**

The services provided by the Centre are tests, measurements and consultancies related to lightning protection.

1. Our surge emulation and testing facility caters for performance and conformity testing of Class III surge protective devices (standard IEC61643).
2. We conduct earth resistance measurements in both 3-pole and Stakeless methods to evaluate earthing systems and soil conductivity (4-pole) measurements to design earthing systems.
3. We also provide consultancy services in designing and evaluation of lightning protection systems, both external (structural lightning protection) and internal (Surge protection) in conformance with recognized standards like IEC62305 (equivalent SLS 1472).

**Training & Workshops**

We conduct biannual one day comprehensive workshop on earthing which covers both theoretical and practical aspects on standardized practices of earthing and is aimed to provide technical knowledge to engineers and technicians in the field. Our CPD course on Modern Power Electronics covers the surge protection of low voltage systems.

**Research and Development**

Our Centre currently focuses on the following R&D projects.

1. Development of materials to Reduce Ground Resistance

The objective of this project is to develop a durable cost effective material to reduce Earthing Resistance to be used in areas of poor soil conductivity to improve effectiveness of earthing systems.


For more information please visit http://www.accimt.ac.lk

Centre for Lightning Protection
Arthur C Clarke Institute for Modern Technologies
Property rights. Unlike its predecessor – the Code of Intellectual Sri Lanka which creates, recognizes or regulates Intellectual rights in Sri Lanka. Therefore, there is no other legislation in which created or recognized or regulated Intellectual Property finance, Merchandise Marks Ordinance and all other enactments Designs Ordinance, Patents Ordinance, Trade Marks Ordinance 101 of the Act or, even perhaps, in connection with “act of unfair competition” or a “business identifier other than a mark or a trade name” or an element of the “goodwill or reputation” of an enterprise etc, as contemplated in Part VIII of the Act. Next, it is necessary to look at the Intellectual Property Act No. 36 of 2003 to ascertain whether it refers to the terms “brand” and “brand name” and whether these terms come within the scope and ambit of the Act. In this regard, the preamble of the Act states that it is an Act which provides for the Law relating to Intellectual Property Act No. 36 of 2003 compendiously sets out the entirety of the statutory law which now prevails in Sri Lanka with regard to Intellectual Property. It is evident that, the Intellectual Property Act recognizes and provides for and protects an array of specific and identified types of Intellectual Property such as Copyright, Industrial Designs, Patents, Trade Marks, Trade Names and Layout Designs of Integrated Circuits and also provides protection against Unfair Competition and misuse of Geographical Indications. However, the Act does not define or even refer to the term “brand name”. In particular, the term or concept of a “brand name” does not figure in Part V and VI of the Act which deals with “MARKS AND TRADE NAMES” and “TRADE NAMES” or in Part VIII of the Act which deals with “UNFAIR COMPETITION AND UNDISCLOSED INFORMATION” whichear the areas of Intellectual Property Law which may be connected or relevant to the term “brand name”. Thus, it is seen that, the term and concept of a “brand name” is not recognized by the Intellectual Property Act. Next, as far as I can ascertain, there are no decisions of the Superior Courts in Sri Lanka which have specifically recognized any rights which may arise from a claim to a “brand name” independent of rights under a trade mark.

Brand Name and Trademark

There could also be instances where the terms “brand” and “brand name” are used, in everyday language, when the intention is to mean and refer to a “trade name” or “a trade name” and to the term and concept of a “brand name”. Thus, it is evident that, English Law does not, however, protect brands as- such. It will protect goodwill (via the law of passing off); trade marks (via trade mark infringement) the use of particular words, sounds and images (via the law of copyright); and configuration of articles (via the law of unregistered design rights) and so on. But to the extent that a brand is greater than the sum of the parts that English law will protect, it’s defenses against the chill wind of competition.” (S.C. C.H.C. Appeal No. 10/2005)

Pabasari Arundathi Kolyabandara
Scientific Researcher
University of Sri Jayewardenepura

Tests using XRF (X-ray fluorescence) have confirmed that some plastic toys contain heavy metals such as mercury (Hg), Lead (pb), Cadmium(Cd). Cadmium is a plastic stabilizer or as well as a, known carcinogen.

You may have seen little children putting these toys in their mouths, chew and keep them on bed. So, by inhalation and oral administration, these toxins can enter to the body. Be careful in your choices, for a healthy future generation.

When you Purchase Colored toys, go for products that are free of Lead (pb) containing paint. Buy standardized products. Give right toys for the right age.

Look for toys that are made of wood or bamboo. If these toys have Forest Stewardship Council (FSC) mention on them, these are also good for the environment.

The US Consumer product safety Commission (CPSC) has already banned Several Phthalates (DEHP, DBP, BBP).

Raw materials such as polystyrene, PVC (poly vinyl chloride), are used for the manufacturing of plastic toys.PVC is commonly known as “Vinyl”. Vinyl releases toxic chemicals such as vinyl chloride, ethylene dichloride, from the production to its disposal and these chemicals are the root cause of many diseases like cancers. Plasticizers such as Adipates and phthalates are combined with plastic to increase durability, flexibility, softness and squishy nature of products Phthalates act as an endocrine disruption in the body.
Today we are going to talk about very interesting fact. That is “Time Travelling” we know that every matter on this word has a length, width and height so we are calling those there qualities as dimensions of and object. Objects which have those qualities identify as 3D (3 dimensions) objects. But did you know there is another dimension? Yes, that is “Time” as and example takes your 3 photos got at a same place in different ages. You can see visibly your length, height and width were changed one by one. Because of what? Because “Time” Time is the fourth quality of the objects. So there are 4 dimensions in every matter. Simply we can represent “Time Travelling” as changing of the 4th dimension (time) of an object.

**History of Time Travelling Concept**

Time travelling is the famous concept in scientific fictions field. H.G.Wells wrote “The time machine” novel in 1899 based on time travelling. In 20th century, we can see man two famous scientists who represented there ideas on time travelling. They are Albert Einstein and Stephen Hawking. According to Einstein’s theory of general relatively, “Gravity can bend time”. So he explained in his theory of special relatively that, “Time slows down” or speeds up depending on how fast you move relative to something else. At present many scientists and inventors are trying to reveal the method of “Time Traveling” and find a way to travel to past or future.

**What is Time Travelling**

Time Travelling means and ability to travel to past or future through the universe. But there are few main principles that anyone cannot break while Time Travelling.

**Principal 01**

Anyone cannot travel to past or future within his own lifetime.

Example: “X” Can travel through the time. He was born in 2000. And now he is 19 years old. He will die in 2080. So, according to the first principle, X is unable to travel through time between 2000-2080

**Principal 02**

Anyone cannot change the incident which happened in the past or will happen in the future, by Time Travelling.

**Principal 03**

Time Traveller cannot change or harm the normal flow of the time and he/she cannot be immortal while Time Travelling.

**What is the Time Travelling exactly?**

Example: In an old movie theater you can see a film reel projector. In a film reel. There are thousands of still photographs. So when you enter it and switch on the projector, you can see the movie. Because projector rotates the reel and combine all photos as one. Now we can substitute,

- One still Photograph= A pararrel world
- Film reel= Universe
- Projector= Time

Now you can understand there is a combination between time and parallel worlds.

H.D.Yohan S. Samarasinghe
Arthur C Clarke Institute for Modern Technologies (ACCIMT) conducts a wide range of training activities spanning from Continuing Professional Development (CPD) programs for engineers and technicians in the industry to basic and intermediate. Further, there is a program in astronomy and space science primarily designed for school children.

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<th>Course Title</th>
<th>Target Group</th>
<th>Course Duration</th>
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<th>Contact Person</th>
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<tr>
<td>Programmable Logic Controller Techniques (Siemens S7 – 200 &amp; S7 – 1200)</td>
<td>Electronic, Electrical, Mechanical &amp; Industrial Engineers, Technicians and Electronic Enthusiasts</td>
<td>5 days</td>
<td>Rs. 15,000/=</td>
<td>Contact: Ms. Champika Janashanthi, Coordinator E-Mail: <a href="mailto:champika@accmt.ac.lk">champika@accmt.ac.lk</a> ; <a href="mailto:isd-sec@accmt.ac.lk">isd-sec@accmt.ac.lk</a></td>
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<tr>
<td>Embedded Control Systems (Microprocessor / Microcontroller) for Industry Process Control and Automation</td>
<td>Engineers, Technicians working in the industry specially in production environment using Modern Controllers, Technical Institute Personnel</td>
<td>14 days (Saturday &amp; Sunday)</td>
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<td>Contact: Mr. Kavindralayawardana, Coordinator E-Mail: <a href="mailto:kavindra@accmt.ac.lk">kavindra@accmt.ac.lk</a></td>
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<tr>
<td>Practical Electronics</td>
<td>Any interested individuals preferably with GCE O/L, who wish to acquire basic knowledge and skills in electronics</td>
<td>6 months (Saturday: 9.00 am - 4.30 pm)</td>
<td>Rs. 12,000/=</td>
<td>Contact: Mr. Kavindralayawardana, Coordinator E-Mail: <a href="mailto:kavindra@accmt.ac.lk">kavindra@accmt.ac.lk</a> or <a href="mailto:nadeeka@accmt.ac.lk">nadeeka@accmt.ac.lk</a></td>
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<tr>
<td>Modern Power Electronics</td>
<td>Electronic, telecom and computer hardware professionals, process engineers, electrical engineers and technicians working with power electronic subsystems</td>
<td>3 days</td>
<td>Rs. 10,500/=</td>
<td>Contact: Ms. JanakiAthuraliya, Coordinator E-Mail: <a href="mailto:janaki@accmt.ac.lk">janaki@accmt.ac.lk</a></td>
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<td>Modern Power Electronics (MPE)</td>
<td>Electronic, electrical, telecom, engineers from the industry and technicians working with power electronic subsystems</td>
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<td>Contact: Mr. IndikaMedangoda, Coordinator E-Mail: <a href="mailto:indika@accmt.ac.lk">indika@accmt.ac.lk</a></td>
</tr>
<tr>
<td>Industrial Electro Pneumatics course (IEPC)</td>
<td>Engineers, Supervisors and Technicians who are involved or enthusiasts in Pneumatic and electro-pneumatic control systems</td>
<td>2 days</td>
<td>Rs. 9,500/=</td>
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</tr>
</tbody>
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Introductory awareness seminar on Bee honey quality detection kit developed by ITI

Quality of bee honey depends on various factors such as long storage, heating, addition of sugar, higher moisture content etc. Honey has to be compiled with SLS 464:2016. However, the test has been performed in a laboratory. Therefore, considering such practical difficulties, simplified test kit has been developed which can be used in the field and there by minimizing testing time. In addition, per sample testing cost is as low as Rs. 100/-.