

# FIT Chronicle

Faculty of Information Technology-University of Moratuwa

ISSUE 07

DECEMBER 2015

## Artificial Intelligence in Aeronautics

[Page 11]

## Ingenium 2015

[Page 2]

## ITRU Research Symposium 2015

[Page 1]

## MIT GSL Demo Day

[Page 9]

## FIT Sixes 2015

[Page 17]





# The Editorial

## Editor-in-Chief



Senuri  
Wijenayake

## Managing Editors



Yasas Sri  
Wickramasinghe



Anoukh  
Jayawardana



Shakthi  
Weerasinghe



Kolitha  
Warnakulasooriya

# Contributors

## Photographs



Viduranga  
Wijesooriya



Pavani  
De Silva



Cherani  
Liyanage



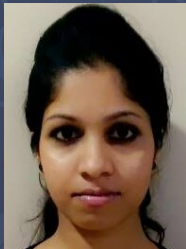
Natasha  
Ramanayake



Ashirwada  
Dayaratne



Himan  
Indeewara



Thilini  
Hansamali



Aeshana  
Shalindra



Nilushika  
Gamage



Supun  
Sethsara

## Sub – Editors

Cover and Page Designs : Shakthi Weerasinghe & Supun Sethsara (Batch 14)

Photo Credits :

# Editor's Note

## FIT Chronicle with a New Appearance

The Faculty of Information Technology, University of Moratuwa has never stopped impressing the world with not only our comprehensive knowledge but also and more importantly, the impressive multi talents that we possess. With the guidance of our staff members, as FIT students, we embrace our organizing, communication and team work skills to develop ourselves continuously, while taking pleasure in working together to raise our voice as a faculty.

This year's FIT Chronicle is the perfect example for another immensely successful result of the combined effort of the faculty's staff members and FIT students. In this year's issue, we have taken the faculty magazine to a different level with a significant change in our vision and strategy. With a strong and tremendously committed editorial team, we have achieved a new milestone in the history of the FIT Chronicle, revamping it with a dash of life and pride.

The FIT Chronicle this year unveils the staff events, faculty events and academic programs, student achievements, student extracurricular activities with the new addition of a student's corner to exhibit our composing talents and artistic insight. Among the many student contributions, Shakthi Weerasinghe's featured article on "Developments in the Applications of Artificial Intelligence in Aeronautics and Aerospace Industry" and Yasas Sri Wickramasinghe's (The Arcade Independence Square) and Udara Sampath Bandara's (Sigiriya Rock Fortress) attractive photography on the back cover deserve special acknowledgement.

As the Editor-in-Chief I am immensely thankful to Mrs. Sumudu Wijetunge and Ms. Thilini Weerasuriya for their invaluable guidance and to my editorial team for their continuous support and keen interest in putting up this issue together. It was a life changing opportunity to be working with such a dedicated team which makes the FIT Chronicle experience a memorable one. I am gladly looking forward to uphold the same success in the future issues to come.

As their pictures say a thousand words, special thanks goes to Viduranga Wijesooriya and Himan Gamage, for their artistic photography of all faculty events. The magazine will not be as colorful or memorable without your captures.

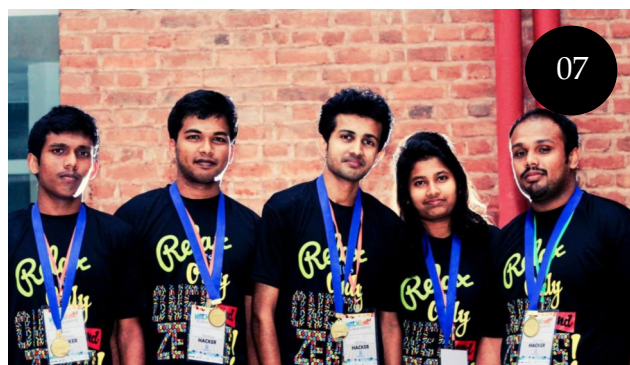
To end this note with a merrier thought, I wish you all the very best for your all your endeavors in the coming new year while encouraging you to join hands with us to raise our identity as a faculty in the future issues of the FIT Chronicle.

Best Regards,

**Senuri Wijenayake**

**(Batch 12)**





# CONTENTS

of FIT Chronicle's December 2015 Edition





02



03



11



13



21



22

**01 ITRU RESEARCH SYMPOSIUM 2015**

**02 INGENIUM 2015**

Annual Talent Show of Faculty of Information Technology.

**03 PIRITH CEREMONY**

Annual Pirith chanting ceremony of Faculty of Information Technology.

**04 ACADEMIC NEWS**

MSc/Postgraduate Diploma n Information Technology - 9th Intake.

Appointments and Promotions in the Faculty.

**07 STUDENT ACHIEVEMNETS**

Achievements of the students of the Faculty of Information Technology in the year 2015.

**13 FEATURED ARTICLE**

Developments in applications of Artificial Intelligence in Aeronautics and Aerospace Industries.

**18 EXTRA CURRICULAR ACTIVITIES**

INTECS Outreach : Ratnapura

FIT2School Revamped

FIT Sixes 2015

Frater Night 2015

FIT Future Careers 2015

**23 CARTOON**

**25 PHOTOGRAPHS**



## Faculty Events



Mr. Yapa highlighted the necessity of paying attention to the complex problems that can be addressed using Information Technology, and provided insights on how the world can be made a better place to live in by using IT innovatively.

Nine research papers were presented in two parallel sessions, chaired by Dr. Ranga Rodrigo of University of Moratuwa, and Dr. Menaka Ranasinghe of The Open University of Sri Lanka.

The Best Paper Award was presented to the paper titled "Sinhala Handwriting Recognition Mechanism Using Zone Based Feature Extraction" by K.A.K.N.D. Dharmapala, W.P.M.V Wijesooriya, C.P. Chandrasekara, U.K.A.U. Rathnapriya, and L. Ranathunga of the Department of Information

# ITRU RESEARCH SYMPOSIUM 2015

The Information Technology Research Unit (ITRU) organized its annual research symposium on 4th December 2015, under the theme 'Honouring the Past, Treasuring the Present, and Leveraging Information Technology to Shape the Future', at the premises of the Faculty of Information Technology.

The event was graced by the participation of a number of reputed academics, and distinguished invitees from the industry. The Dean of the Faculty of Information Technology, Mr. P. M. Karunaratne welcomed the gathering. Prof. Ananda Jayawardane, Vice Chancellor of University of Moratuwa, in his address, emphasized the need for staff and students to publish their research in international peer reviewed journals and present at international conferences, and appreciated the role of the ITRU Symposium for being one mechanism for the dissemination of research findings.

The keynote address on "Revisiting the Role of IT Professionals" was delivered by Mr. Shanta R. Yapa, Chief Operating Officer of Epic Research & Innovations, Epic Technology Group. In his speech,

Technology.

The ITRU Research Symposium 2015 concluded with the vote of thanks delivered by Dr. Subha Fernando, Director/ITRU, who thanked all participants and everyone who helped in making the event a success, including the industry partners, IFS, Zone24x7, and 99x Technology, who supported by providing generous sponsorships.





# INGENIUM 2015



Exposing the inborn talents of the FIT family, Faculty of Information Technology proudly organized its inaugural talent show 'INGENIUM 2015', an evening filled with glitz and glamour on 19<sup>th</sup> November 2015 at the Civil Auditorium of the University of Moratuwa.

Being renowned as a technical university, students' talents were concealed behind the monitors and lines of code. 'INGENIUM 2015' was an ideal platform for the students to synchronize themselves with the vision of the faculty - development of a complete personality - which is a much preferred choice in the competitive professional environment.

'INGENIUM 2015' was another landmark of success in the history of the faculty. It was a day of absolute unadulterated portrayal of talent and vigor. This event which was a night of surprises, organized by Batch 12 of the Faculty of Information Technology under the guidance of ITFSU not only exposed the talents of the undergraduates of all four batches including Batch 11, Batch 12, Batch 13, Batch 14, faculty academic and non-academic staff members but also promoted and strengthened unity and brotherhood.

INGENIUM which included several entertaining dancing and musical items stimulated creativity among FIT family members, and was also an ideal moment to distinguish and escalate the concealed talents, providing a platform to display and expose the aesthetic skills apart from excelling in a professional career. We were fortunate to witness the very rare sight of academic and non-academic staff

members performing to add color into this fabulous night.

Hemal Rajapaksha and Lakshan Vithana emerged as the winners of the 'Most Creative Dubsmash' while Janitha Wijekoon and the team emerged as the champions of the 'Most Popular Dubsmash' of the 'Dubsmash Challenge' introduced to expose the unseen amusing talents of our own brothers and sisters.

It was such an overwhelming moment to witness seniors and juniors along with the faculty staff rejoicing throughout the evening without any differentiation.

The night of exuberant performance was extremely successful with the braced comradeship of undergraduates and was a titanic success with both the performers and the audience relishing every moment of the show, filled with shining talent by the FIT family members. Behind the success lay commitment, passion, dedication, hard work, success and most of all brotherhood we shared together.

With the belief of there is never an end to anything but always a beginning, the great extravaganza 'INGENIUM 2015' closed its curtains with unforgettable memories for a lifetime.

Covered By :  
**Pavani De Silva**



# Pirith Ceremony 2015



lamps in the university premises brought serenity to every mind. The pirith chanting brought solace to the minds of students, staff and other members of the faculty who were a part of the event. The ceremony was held with the hope of elevating consciousness, clearing delusory states of mind and refining the consciousness of the recipients.

Mr. P.M. Karunaratne, Dean of the Faculty of Information Technology and many other staff members from the Faculty of Information Technology were present at the event, which was an immense encouragement to the students.

The all night pirith chanting ceremony was held on 10th October 2015 followed by "heel dana" on the next day at the Faculty of Information Technology, University of Moratuwa. This year's pirith ceremony was organized by the students of Batch 11 of the Faculty of Information Technology. Irrespective of race and religion all students provided their utmost contribution to make this day a success.

A magnificent "pirith mandapaya" was set up by the busy hands of the students in the faculty premises. The monks were brought in a procession to the venue. The sight of illuminated lanterns and oil



Covered by **Natasha Ramanayake**



# Master of Science / Postgraduate Diploma in Information Technology - Intake 9

The 9th batch of the Master of Science/ Postgraduate Diploma in Information Technology was inaugurated on the 10th of October 2015. The inauguration ceremony was held at the premises of the Faculty of Information Technology, with the participation of the Dean of the Faculty, Director Postgraduate Studies, course coordinators, and academic staff members of the Department of Information Technology. The batch consists of 31 selected students, representing several academic and professional institutes of the country.



# New Appointments and Promotions

## in the Faculty



**Dr. (Ms.) G. Upeksha Ganegoda** has been promoted to the post of Senior Lecturer Grade II in the Department of Computational Mathematics with effect from 20th August 2015.

She joined the Department in 2007. She holds a B.Sc. in MIS from University of Ireland, Ireland, Master of Engineering in Computer Science and Technology from Central South University, China and Doctor of Engineering in Computer Application Technology from Central South University, China



**Dr. (Mrs) Thushari Silva** was appointed as a Senior Lecturer with effect from 15<sup>th</sup> October 2015 in the Department of Computational Mathematics.

She holds a PhD in Information Systems from the City University of Hong Kong and a Masters degree in Information and Communication Technology from Asian Institute of Technology in Thailand. Dr Silva completed her B.Sc. degree in Computer Science and Statistics from University of Kelaniya with First Class Honors in 2004. Her research interests

are semantic web, machine learning, big data analytics and innovative collaboration in social media.



**Dr. C.R.J. Amalraj** assumed duties in the Department of Information Technology as a Senior Lecturer. He received his PhD from the University of Tokyo, Japan, and his M.Sc. (Eng) and B.Sc. (Eng)

degrees from the University of Electro-Communications, Tokyo, Japan. His research interests are concentrated in network protocols, sensor networks, wireless communication, and cluster computing.

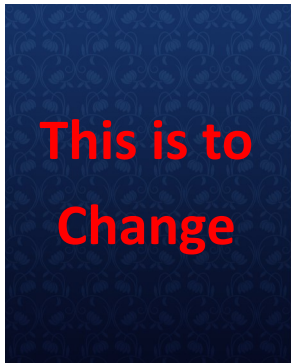


**Mrs. Kaushalya Kumarasinghe** assumed duties as a Lecturer (Probationary) in the Department of Information Technology.

She obtained her B.Sc. (Hons) degree in Information Technology with a Second Class Upper Division from the University of Moratuwa in 2013. She had been serving the department as a Lecturer



(on Contract) since 2013. Her research interests are machine learning, robotics and biomedical signal processing.



**Mr. Thilina Madusanka Thanthriwatta** assumed duties as a Lecturer (Probationary) in the Department of Information Technology.

He received a B.Sc. (Hons) degree in Information Technology with a First Class from the University of Moratuwa in 2013, and was awarded the Gold Medal for academic excellence in Information Technology by the University of Moratuwa in 2013. He had been serving the department as a Lecturer (on Contract) since March 2014. His research interest is in modelling and mining massive datasets by adapting machine learning approaches.



**Ms. Thilini Sashika Piyatilake** assumed duties in the Department of Computational Mathematics as Lecturer (Probationary) on 2nd November 2015.

She received her B.Sc. (Hons) Mathematics (Special) Degree (First class) from University of Ruhuna, Sri Lanka. Currently she is reading for her PhD in Mathematical Modeling from University of Colombo, Sri Lanka.

## Quotes for Life

“The first rule of any technology used in a business is that automation applied to an efficient operation will magnify the efficiency. The second is that automation applied to an inefficient operation will magnify the inefficiency.”

- Bill Gates

“Any sufficiently advanced technology is indistinguishable from magic.”

- Arthur C. Clarke



# CHAMPIONS of “Hackanix”

## From Faculty of Information Technology

Coverd by **Senuri Wijenayake**

“**H**ackanix”, an island wide, two day hackathon organized by AIESEC CS with the collaboration of Microsoft Sri Lanka was held on 27<sup>th</sup> and 28<sup>th</sup> of March at Trace Expert City, Colombo 10.

Team “SAS Ninjas” was crowned the champions of the hackathon beating fifteen university teams by presenting an Augmented Reality based educational application. The team comprised of five undergraduates from the Faculty of Information Technology namely, Yasas Sri Wickramasinghe, Thuan Shafer Preena, Viraj Hasith and Parami Sachinthika.

Adding up to this achievement, Team Enigma, yet another team from the Faculty of Information Technology was able to secure the position of 2<sup>nd</sup> runner up by introducing a web based platform to educate the general public on the application and usage of Sri Lankan law to answer their day to day legal requirements. Senuri Wijenayake, Heshan Jayasinghe, Malitha Rukshan and Dinuka Chathuranga contributed to the team from the faculty.

Sampath Dhananjaya, Lakshan Vithana, Chanaka Athurugiriya and Ramindu Rusara also competed as a team from the Faculty of Information Technology on the final day.

Dr. Lochandaka Ranathunga, Head of the Department of Information Technology in the Faculty of Information Technology, participated as a chief guest for the final presentation sessions, to encourage all the teams and gave feedback on their innovative ideas.





# Runner-up at Imagine Cup '15



**F**our students from the Faculty of Information Technology, University of Moratuwa made their alma mater proud again by being the 1<sup>st</sup> Runner-up under Gaming Category of the Microsoft Imagine Cup 2015 which was held on 22<sup>nd</sup> of April at the Microsoft Head Office, DHPL building, Nawam Mawatha, Colombo 02.

Microsoft Imagine Cup is an annual global competition where undergraduates are given the opportunity to bring life to their innovative ideas with the help of their creativity and technical expertise as breakthrough products which could significantly impose positive impacts to the society.

Thuan Shafer Preena, Viraj Hasith, Chandima Gunawardane and Yasas Sri Wickramasinghe were members of the victorious team, as they presented "Excavange", a mobile game which was implemented using Virtual Reality Technology. It was an innovative concept where the players can experience the game using Virtual Reality wearable devices or smart phones. The game was powered using 3D modeling, audio-visual effects and highly responsive user

interactions developed by the team members.

Furthermore, they had included an Augmented Reality component to their game to inspect the game map which was the same as any real world map, prior to playing the game.

At the end presentation ceremony, the team was encouraged with positive feedback and well wishes from the distinguished panel of judges, which was an immense encouragement to all undergraduates of the faculty to continue bring glory to their alma mater.

Coverd By  
**Senuri Wijenayake**

Faculty Students

# Continue to Shine at Competitions

**Victory** at Dialog Ideamart “Mora Hack”



Students of the Faculty of Information Technology are no strangers to hackathons. Throughout the year, dozens of victories were secured by the faculty’s undergraduates at various competitions.

“Mora Hack 2015” is yet another addition to the long list of achievements of FIT undergraduates. It was organized by Dialog Ideamart for the 3<sup>rd</sup> consecutive time in 2015, especially for the competitors from University of Moratuwa and was held on 21<sup>st</sup> to 22<sup>nd</sup> of August at Dialog Arcade, Colombo.

Four teams from the Faculty of Information Technology participated at this year’s Mora Hack. “Team Navitaz” was able to secure the 2<sup>nd</sup> runner-up position pitching “VRELLAR”, An IOT device which can be controlled through a virtual remote and a wearable. Yasas Sri Wickramasinghe led the winning team while Gayantha Namarathna, Dhammika Hiran, Harith Kolitha and Gayathree Kaluarachchi gave their maximum contribution to bring this victory to the faculty.

**Making a Change :**

**Code4Good**



“Code4Good”- Sri Lanka’s first social impact hackathon, was held from the 18th to the 20th of September 2015 at WSO2. The 3-day hackathon saw two teams from the Faculty of Information Technology: Team SAS Ninjas comprising of Thuan Shafer Preena, Ramindu Senarath, Anoukh Jayawardena, Tharindu Senanayake and Supun Priyadarshana and Team Dare-Devils comprising of Hasitha Prageeth and Heshan Jayasinghe.

The specialty of this hackathon was that each team was paired with their own Civil Society Organization (CSO) to come up with an idea that would solve current social issues in Sri Lanka.

Team SAS Ninjas emerged runners up and obtained an opportunity to partake in a 6-week incubation program to improve the validity of their winning product.



# HackaDev

Keeping in line with the trend of Social Hackathons, the UNDP - United Nations Development Program along with Dialog Ideamart played host to "HackaDev", held at Dialog head office on the 25th and 26th of September of this year.



Team SAS Ninjas comprising of Thuan Shafer Preena, Malintha Fernando, Ramindu Senarath, Tharindu Senanayake and Supun Priyadarshana were among the most talented fifteen teams, chosen for the final round.

The team once again made the Faculty of Information Technology proud by being the 2nd runners up of the competition with their product - a wearable, IOT based innovation, which provided a solution for women and child abuse across the globe.



# IESL YMS Hackathon

The annual "IESL - YMS Hackathon" is a much sought after competition for the FIT students who have continuously accomplished victories in the past years.

This year's IESL-YMS Hackathon was held on 9th October with a significant participation from FIT students namely, Supun Priyadarshana, Dilshani Kumarapeli, Kasun Weerakoon, Sameera Wickramasekara, Uditha Jayawardena, Uchitha Rajapakse, Shyamali Gunawardana, Gayathree Kaluarachchi, Ridmal Liyanagama and Ashan Priyadarshana.

Honoring the past achievements of the faculty, Team SAS Ninjas comprising of Thuan Shafer Preena and Anoukh Jayawardena secured the 2nd runner up position in this year's hackathon.



Coverd By  
Anoukh Jayawardana

# MIT Global Startup Labs

## 2015: Demo Day



With the pride of being the privileged participants of the MIT Global Startup Labs 2015 program, conducted consecutively for the 5th time by the facilitators from the Massachusetts Institute of Technology (MIT), United States, six undergraduates from the Faculty of Information Technology presented their startup ideas in the final demo day held on 7th August 2015 at Taj Samudra.

Seven startups presented their ideas to the panel of judges and entrepreneurs led by with Mr. Jeevan Gnanam, CEO of Orion City; Mr. Fayaz Hudah, investor and mentor; Mrs. Anarkali Moonesinghe, Founder of 'Spiralation' tech accelerator; Mr. Madu Ratnayake, Head of Digital, Senior Vice President and General Manager of Virtusa; Mrs. Shehara De Silva, Deputy CEO of CIMB Investment Bank and Founder of IDEAHA Institute of Social Design and Mr. Girish Anand Sobti, entrepreneur and investor.

Two ideas out of the seven presented were put forward by the undergraduates from Faculty of Information Technology, University of Moratuwa. Ms. Thilini Weerasuriya, lecturer in the Department

of Interdisciplinary Studies of Faculty of Information Technology, compered the Demo Day proceedings.

"Team Artron" presented their innovative business idea with an Augmented Reality based mobile application called "Magic Book". Hasitha Prageeth led the team with Yasas Sri Wickramasinghe, Kalani Koonara, Pasan Udawatta and Janath Thilakasiri as his team members. "Team Syna" which included Anoukh Jayawardana from the Faculty of IT pitched the "Unified Payment Gateway" business idea aiming to leverage the engagement in e-commerce for SMEs.

Prof. A.K.W. Jayawardane, Vice Chancellor of the University of Moratuwa, Mr. P.M. Karunaratne, Dean of the Faculty of Information Technology and many other staff members from the Faculty of Information Technology were present at the event, which was an immense encouragement to the participants.

Covered by **Yasas Sri Wickramasinghe**





The students of the Faculty of Information Technology have yet again exhibited their diverse academic expertise by qualifying to the local finals of the CFA Research Challenge 2015, which was held on 6th of November 2015 at Ramada, Colombo. The team consisted of five third year undergraduates from the Faculty of Information Technology.

The team was led by Anoukh Jayawardena, who is reading for his B.Sc. (Hons) in Information Technology & Management and part qualified in CIMA. The rest of the team comprised of Senuri Wijenayake, Cherani Liyanage and Janath Thilakasiri, who are currently reading for their B.Sc. (Hons) in Information Technology and qualified in CIMA, and Yashoda Liyanage who is reading for her B.Sc. (Hons) in Information Technology & Management, also part qualified in CIMA. The faculty advisor of the team was Mr. Isuru Manawadu, lecturer in the Department of Interdisciplinary Studies, Faculty of Information Technology and the industry mentor of the team was Mr. Deshan Pushparajah, CFA, and Head of Investment Banking at Capital Alliance Limited.

The CFA Institute Research Challenge is an annual global competition that provides university students from all over the world with hands-on mentoring and intensive training in financial analysis. This year, the local challenge required students to research and analyze Textured Jersey Lanka PLC (TJL), a leading fabric manufacturer in Sri Lanka, to produce a comprehensive research report with an investment recommendation. The students got the opportunity to meet face-to-face with company management and a tour of TJL's production factory

situated in Avissawella, to get first hand exposure to the company's performance. The competition carried on for a period of three months, commencing from July 2015. The competition comprised of two rounds, where the teams were requested to submit an Initiation Coverage Report, based on which four teams were shortlisted and selected for the final presentation round, where they were asked to defend their analysis to a panel of industry professionals.

It was a great exposure for the faculty participants, since University of Moratuwa was the only team at the finals to be coming from a technical background. The team treasures the opportunity received, to meet the industry experts and expand their knowledge on corporate finance, as well as to receive intensive training and exposure in new fields of knowledge.

Covered by  
**Pavani De Silva**



**A**rtificial Intelligence (AI) has been used for a wide range of fields including medical diagnosis and treatment, robotic production, law enforcement, scientific discovery and also for the Air Operations Division (AOD).

The application of artificial intelligence in aeronautics is commonly known or the perception is largely confined to the autopilot systems that have

been developed upon the initiative taken by the Sperry Cooperation as a rule based expert system. The system was operated upon the Flight Management System and it's in a cooperated database which consisted of the data retrieved from the on-board flight data measurement units. But, the scope for Artificial Intelligence in aviation has been wider which however is not very popular in Sri Lanka.

The importance of having a highly sophisticated AI based autopilot system was tested to its limits in the recent incident of Qantas Flight Number 32, an Airbus A380, running the second leg of Sydney to Heathrow from Singapore's Changi Airport, when it faced an uncontained engine failure due to breakage in a stub pipe resulting in multiple system failures including turbine disc disintegration, damages to the nacelle, wing, fuel system, landing gear, flight controls, the controls for engine number one and an undetected fire in the left inner wing fuel tank.

The flight with 440 passengers and 29 crew members were saved due to the efforts of the flight





# Developments in the Applications of Artificial Intelligence in Aeronautics & Aerospace Industry

By Shakthi Weerasinghe



Different areas of aeronautics have being improved using AI which could possibly remove accidents due to human errors. The possible advantages were seen significant in various different areas which had led to numerous developments as described below.

crew and more importantly with the assistance of the most sophisticated auto-pilot system in an aircraft. The autopilot was capable to maintain the attitude,

altitude and flight path of the aircraft without losing the controls, although it had already lost most of the systems. This prevented a possible aircraft catastrophe in the form of a dive, a sustained rolling due to change of centre of gravity or even a blast due to damages.

Due to such incidents and increasing concern in flight safety, different areas of aeronautics have being improved using AI which could possibly remove accidents due to human errors. The possible advantages were seen significant in various different areas which had led to numerous developments as described below.

AOD uses artificial intelligence in the form of Rule Based Expert Systems. Hence, it has used AI to surrogate operators for combat and training simulators, mission management aids, support systems for tactical decision making and post processing of the simulator data into symbolic summaries. Especially, the use of artificial intelligence

## Featured Article

in Flight Simulators is proving to be very useful because pilots and trainee pilots can be tested with real life scenarios with the minimal level of resources. Airplane simulators use artificial intelligence in order to process the data retrieved from such simulated flights. Hence, it should be noted that multiple aircrafts are needed to get a good approximation for some calculations so computer simulated pilots can be used in highest accuracy.



Other than simulated flying, the Simulated Air Warfare enhanced by the computer's ability to create strategies, placements, size, speed and the strength of the forces and counter forces, facilitates the required assistance to pilots in facing tense real world scenarios to improve the pilot's capacity in facing battle situations. The artificial intelligence programs can also sort the information and provide the pilot with the best possible manoeuvres, so the pilot can easily avoid those shouldn't be performed. Simply, this enable the airframe to achieve its maximum performance levels.

Even though the early warfare simulations were sophisticated physical models, they lack the tactical knowledge required, in which case, one model was developed for the study of close combat in which the opposition team stays within the range of 20 nautical miles and another model was used to study medium range combats where the engagement is beyond the visual range.

Hence, tactical concepts being introduced to the system as decision trees were the main culprit as scenarios such as multi aircraft engagements with large trees would be difficult to track or modify the computer coded decision process.

The systems used by the AOD in order to measure performance are the Interactive Fault Diagnosis and Isolation Systems (IFD & IS). They are rule based expert systems put together by collecting information. The performance system was also used

to replace specialized workers. The system allowed the regular workers to communicate with the system but avoided any possible mistakes and miscalculations.

In 2003, NASA's Dryden Flight Research Centre and many other companies created a software that could enable a damaged aircraft to continue flight until a safe landing zone can be reached. This is a natural extension for the automatic pilot and automatic thrust combined together, as the Differential Engine Thrust System where a complex algorithm allowed the flight to maintain auto pilot for a damaged aircraft with manoeuvres being performed independent of hydraulic control systems but with the thrust. The software compensates for all the damaged components by relying on the undamaged components. The neural network used in the software proved to be effective and was marked as a triumph for artificial intelligence.



Currently, with a combination of military funded development programs and the availability of commercial off the shelf (COTS) technology, the military services are beginning to implement AI methods in new generations of weapon platforms such as Unmanned Aerial Vehicles (UAVs) and the Autonomous Submersible to perform unmanned surveillance in shallow waters.

The development of Cruise missiles in particular, which practices self-navigation using a geographical mapping system and heat seeking missiles are classic examples of AI being used in weaponry.



The AOD also uses artificial intelligence in Speech Recognition. The Air Traffic Controllers (ATC) would be giving directions to the artificial pilots and the AOD would require the pilots to respond to the ATC's with simple responses. The development of the utility of Speech Recognition as a mode of input and output for simulators used for training purposes was carried out with the motive to reduce the staffing requirements in handling these simulators.



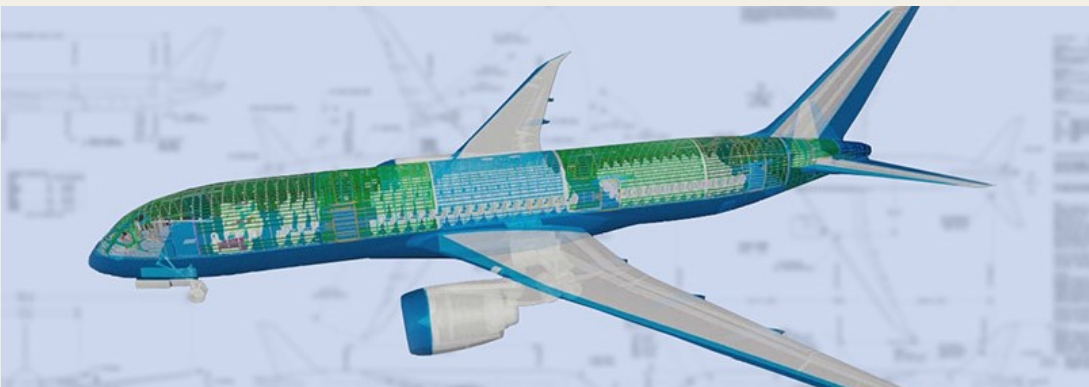
The AUSTOWER Air Traffic Control Tower Cabin Simulation creates traffic moving in real time under a variety of real life conditions. The simulator includes simple responses to complex scenarios from the autonomous pilot to ATC commands such as "Go around" - declaring re-attempt for landing which is achieved through the repertoire being included with all standard operational and emergency procedures.

The Verbex 7000, the advanced speech recognition system currently used by many ATCs still has plenty of room for improvement because the ATC



use very specific dialog. For example, the 'pattern matching' being constrained by the grammar. But, significant advancements in such speech recognition systems can only be achieved through increasing the capability in natural language processing which should be leveraged by computational linguists, plan recognition and speech act theory rather than pattern matching.

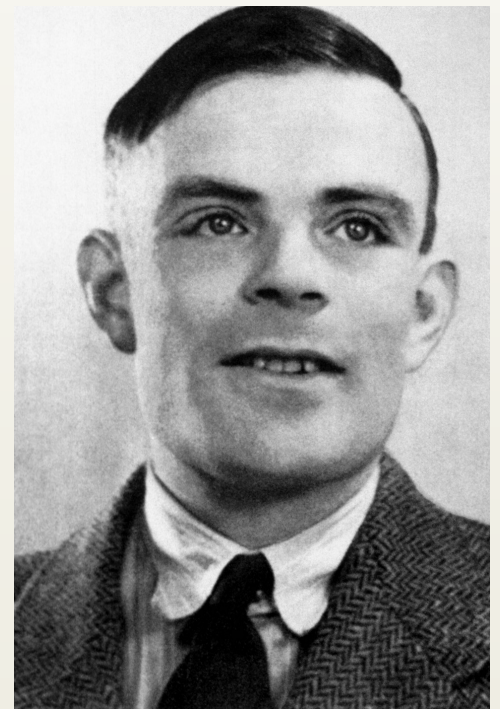
The Artificial Intelligence supported design of Aircraft or AIDA is used to help designers in the process of creating conceptual designs of aircrafts. The AIDA again uses a rule based expert system to compute its data where these programs allow the designers to focus more on the design itself and less on the designing process. The software also allows the user to focus less on the software tools.



## Featured Article

“I believe that at the end of the century the use of words and general educated opinion will have altered so much that one will be able to speak of machines thinking without expecting to be contradicted.”

- Alan Turing



Therefore, in summary, the Aeronautical and Aerospace industry pertains a larger scope for further improvement with the incorporation of Artificial Intelligence as described above in this article. Hence, for a humanity reaching beyond the boundaries of Earth for colonizing in other habitable planets require a large amount of automation for flight and research purposes from which the Industry of IT or AI could involve in immensely, thus describing how IT could assist in the development of Technology.



# INTECS Outreach Ratnapura 2015



The annual school visit program, titled “INTECS Outreach” made its way to Ratnapura this October, visiting Ferguson High School and Sumana Balika Vidyalaya Ratnapura on the 21st and 22nd respectively. Having visited two schools in Monaragala in July this year, the visit to Ratnapura benefited from the experience gained, and was able to leave a hint of inspiration amidst 500+ students in both schools.

It was quite evident from the feedback collected at the end of the sessions that the school children were indeed grateful for the visit. The Advanced Level students were given a direction to follow in life with the sessions on “Career Guidance”, “University Course Selection” and “A guide to pass your A/Level”. The Ordinary Level ICT students were quite grateful for the practical sessions conducted, mainly because of the approaching G.C.E. Ordinary Level Examinations this December, while the Advanced Level ICT students were given the opportunity to clarify any doubts they had regarding subject material in addition to the practical and theoretical sessions conducted on Python, Database Management Systems and Networking.

It was a pleasant sight for the faculty undergraduates, who were accompanied by two faculty lecturers – Mr. Harshana Gunasekara (Dept. of IT) and Ms. Thilini Weerasuriya (Dept. of IDS) to see the enthusiasm and dedication of the students towards learning. The level of interest shown by the students towards Information Technology was

undeniable and by the end of the day, the next generation of students were inspired to pursue their higher education. Another notable experience worth mentioning was the hospitality extended by both schools, which was not expected but welcomed with delight. The next Outreach is already being planned, with numerous requests from schools island wide.



One could highlight “fit2school” as a buzzword that very recently surfaced from its brief and shallow slumber. This was due to the structural changes that took place with regard to the operations of fit2school itself. The revamp of “fit2school” was spearheaded by Rajitha Bandaranayaka and Sandarekha Ramanayake, both final year (Batch 11) students of the faculty. Of course this wouldn’t have been successful without the steadfast loyalty and devotion of one of the founders of fit2school – Kanchana Gunathilaka (Batch 09).

The new structure of “fit2school” saw segregation of responsibility to four “blocks” – Alpha, Bravo, Charlie and Delta, each of which consists of a set of article writers, article translators and article reviewers overseen by their respective block heads. A “technical team”, separate from the four blocks take responsibility of maintaining and updating the website. The new structure of “fit2school” streamlines the process of publishing an article, starting from the article selection phase, right up to the publishing of the article.

With a vision to prepare the future generation to be competent leaders, fit2school has taken many strides in providing quality learning material in local languages. Nearing the completion of the A/L syllabus, the next phase of the project is to complete the O/L syllabus and to make “fit2school” the only learning source a student would need in tackling their GCE examinations.

# FIT SIXES 2015



Once again the FIT family reunited in the year 2015, bigger and stronger than ever. FIT SIXES, the friendly six-a-side cricket tournament organized by the Faculty of Information Technology of the University of Moratuwa, brings together the past, present and the future of the IT industry to one platform and facilitates the atmosphere to create new bonds among the IT masterminds of our time.

This year FIT SIXES came out with a new appearance on the 22<sup>nd</sup> of August 2015, packed with fun and excitement in the form of a carnival fiesta. The excitement of a quality cricket match, the joy of a marvelous carnival, all wrapped together with the bond of one big family; the perfect combination of events kept every participant, player and organizer mesmerized till the end. The fun was spread continuously throughout the event with a nonstop DJ and symbolic papare music that pumped up the cricket atmosphere.

The main objective of organizing this event is to bring the IT undergraduates and the IT professionals together. Doing so, the undergraduates were given the opportunity to bond with the industry pioneers and display their numerous talents to depict the all-round performance of the faculty as a whole. IT professionals also got a chance to identify the raw talent within the faculty and give them career guidance to get a better output from the faculty in the future. This bond created has led to the wide driven

success of the Faculty of Information Technology throughout its history.

FIT SIXES 2015 was a huge success because of the dedication and motivation of the level 4 students, well supported by the entire faculty as one family. Their skills in organizing and professionalism were clearly visible by the amount of partners who joined hands and provided the needed facilities to make this event possible.



Another indicator of the success of FIT SIXES 2015 was the amount of participating teams. This year it was a record of 27 industry giants competing for the FIT SIXES trophy, among which Millennium IT procured the Platinum partnership while Virtusa assisted with the Gold partnership.

Out of many rounds of exciting matches between the many teams, four teams were selected as the semi finalists. The first semi final was held between Virtusa A vs Crowderia while the second was held between Batch 13 vs Unicorn teams. After a very tough competition between the teams the finalists were selected, which led to a wonderful game



of cricket between the finalists, Virtusa A and Batch 13 where team Virtusa A emerged victorious as champions of FIT SIXES 2015.

This year's event came to an end with a rocking after party with plenty of food and music giving the final touch of the day, leaving unforgettable memories in everyone's minds.



Covered by  
Aeshana Shalindra Udadeniya



# Frater Night 2015

Covered by Nilushika Gamage



By the end of year 2014 the FIT family welcomed yet another batch of future IT intellectuals with the new recruitment of batch 14, which paved way to expanding and strengthening the future of the faculty as well as the IT industry.

The new batch was warmly welcomed to the FIT family by the students of batch 13 with the fabulous fresher's welcome themed "FRATER NIGHT 2015", which was held in Chanara Reception Hall, Piliyandala on 15<sup>th</sup> of November 2015 with the participation of the academic staff and nearly 500 students from the faculty.

The event was enlightened by special guests of the night Mr. Nadeeka Guruge, an extraordinary musician of the era, Mr. Peshala Manoj, a lecturer in the Aesthetic University of Sri Lanka and a popular tabla artist, Miss. Vinu Siriwardana, a talented actress and Mr. Soorya Dayaruwan who is also a popular figure in the music industry.

The proceedings of the event began with a drama by batch 13 which was followed by a speech made by Mrs. Dilini Kulawansa, Senior Lecturer of the Department of Computational Mathematics of the faculty.

Towards the night, the event was filled with wonderful items which depicted various talents of both batches. It included dramas, game quests, beauty pageants and also stunning dancing and musical performances which added extra glamour to the event. All students actively participated in the items with extreme joy and pleasure as it was a better platform for them to show their talents. Finally the



event came to its end with an amazing DJ session.

"FRATER NIGHT" was an immense success in welcoming the new batch to the faculty and to the university experience. The event successfully contributed to enhancing the bond and friendship between the students of the faculty and to strengthen the relationship between the staff and the students which is expected to lead to the success of the faculty as one unified family.





The annual career fair organized by INTECS of Faculty of Information Technology was held on 22nd of September, 2015 at the faculty premises with the objective of providing a platform for the students to explore a wide range of employment opportunities, while enabling the industry to recruit potential employees for their job openings.

This year, the career fair was held with the participation of 32 leading IT companies and with the participation of over 200 students.

Brandix i3 and MIT took the responsibilities of the strategic sponsor and the platinum sponsor for the event respectively. Other sponsors were Crowderia, Bodyline, Virtusa, IFS, Octopus, Eguardian and Codegen. Readme joined the event as the digital media partner.

The students were given the opportunity to face job interviews in the companies that they desire. The companies considered this as an opportunity to illustrate the available employment opportunities and the benefits of being employed by them and attract the most outstanding undergraduates.

Along with the job interviews, panel discussions, technical awareness sessions and speed mentoring sessions were conducted, adding more value to the event. Panel discussions were conducted by a group of leading figures in the IT industry namely Surangana Sarathchandra (VP Software Development, Brandixi3), Sampath Tilakumara (Software Architect, MIT), Peter Sjögren (Chairman, Crowderia), Thushara Hettihamu (Manager HR Campus Reach Initiatives, Virtusa), Ahmed Irfan (Director Insight and Innovation, MAS Bodyline), Nuwan Perera (Senior Manager Software Engineering,

IFS) and Thisun Buddika (Technical Team Lead, Codegen).

During the panel discussions the panel provided an overview of the industry and briefed the undergraduates on what companies expect from them, dos and don'ts when working in the industry as well as the importance of having entrepreneurial skills.

Speed mentoring sessions were conducted by Brandix i3 on the titles "Where You Fit in the Tech Industry" and "So You Think You Deserve More?" discussing the wide range of job opportunities available in the IT industry that you could fit into and the right attitude expected from IT professionals. Technical awareness sessions or "Tech Talks" were conducted by Mr. Shihan Annon (Director, Eguardian), Mr. Lilan Priyashantha (Software Architect, MIT) and Mr. Niklas Wörmann (Head of Game Development, Crowderia) on cyber security, future web trends and game development, respectively, giving a heads-up for the future IT

# FIT FUTURE CAREERS



professionals on where the IT industry is heading.

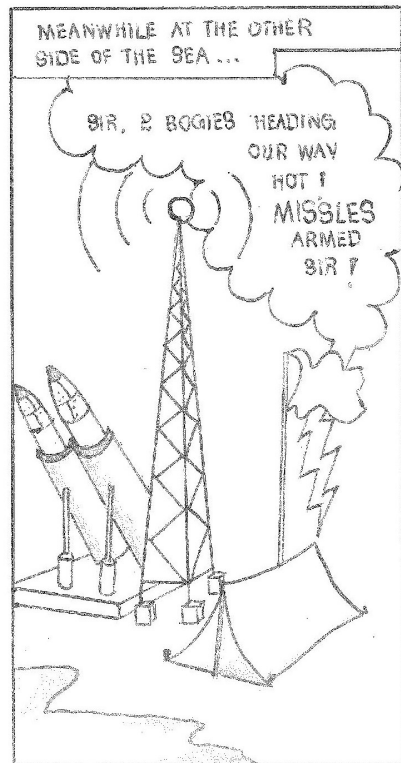
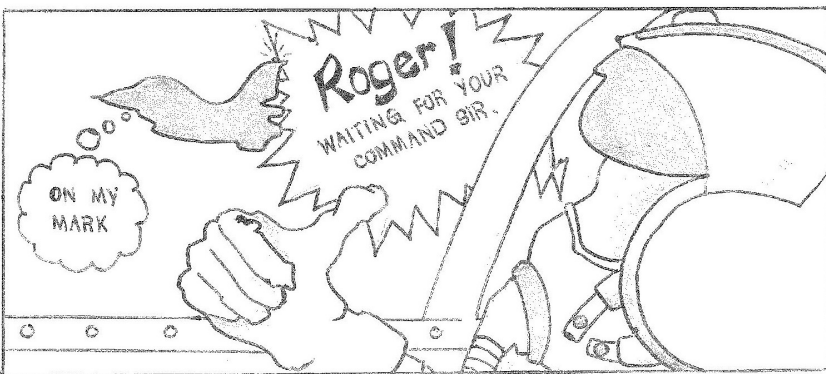
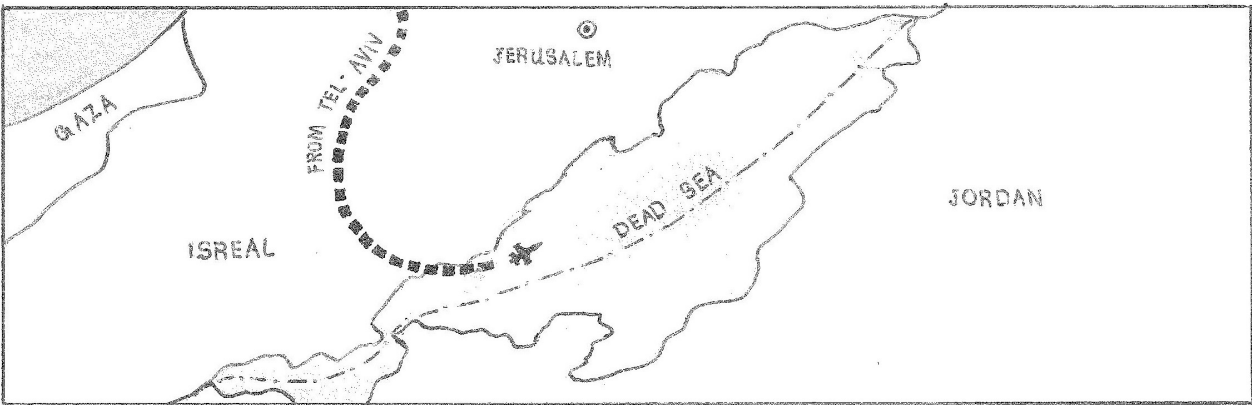
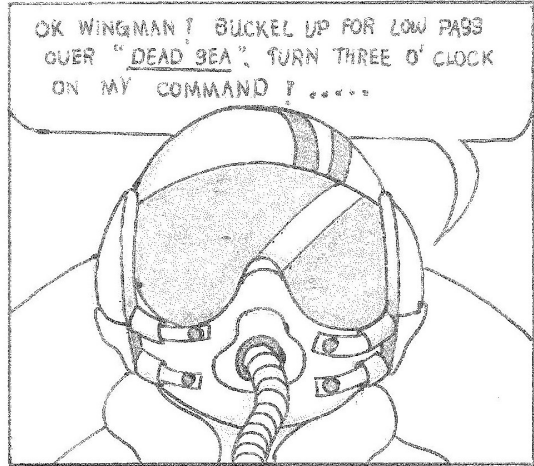
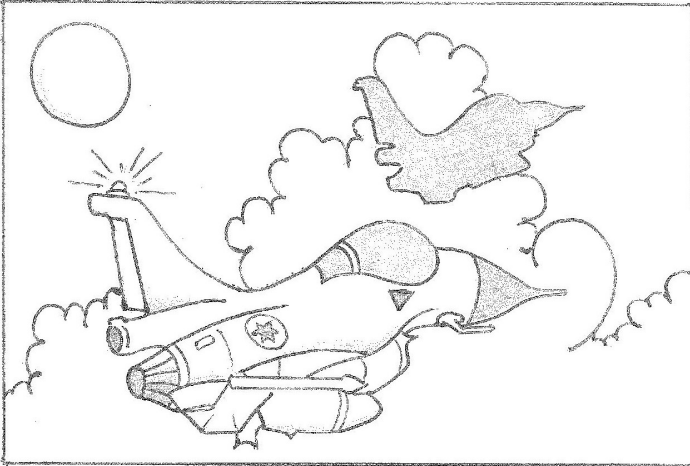
At the end of the day, the event concluded successfully while enabling a majority of the participating students to secure job positions in leading IT companies of Sri Lanka.

Covered by **Cherani Liyanage**

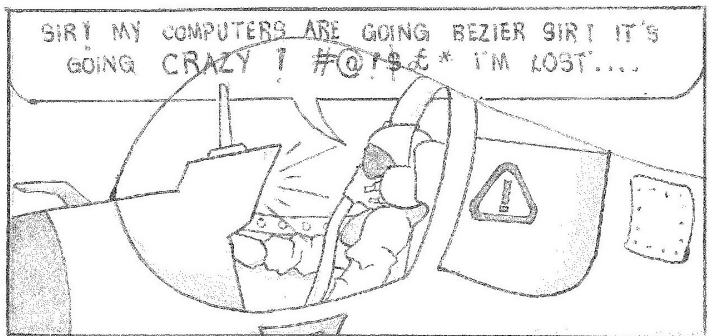
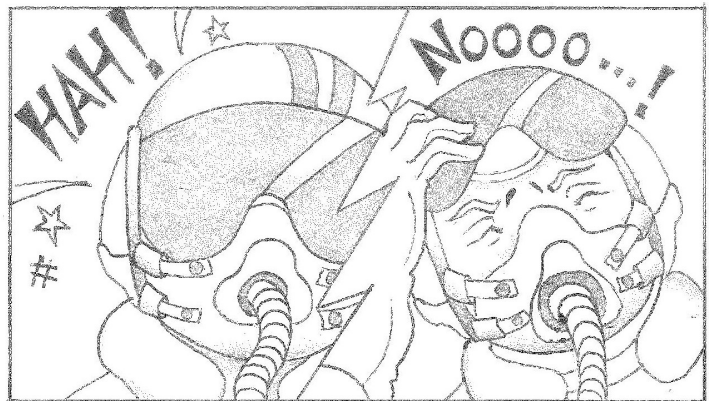
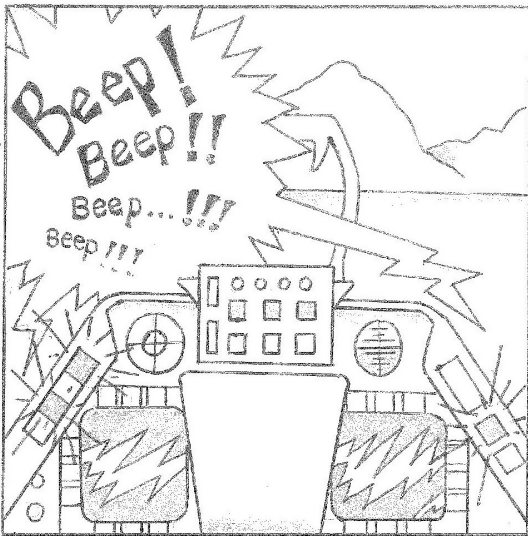
# Cartoon

## ATTENTION ! SOFTWARE DEVELOPERS

By Shakthi Weerasinghe







MEAN WHILE, EXPERTS FROM MOTOROLA ARRIVE AT THE SCENE. ALL F-16'S SUFFERED THE SAME PROBLEM OVER DEAD SEA BUT, THERE WAS NOTHING WRONG....

