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IEEE News@UoJ

Newsletter of the IEEE Student Branch, University of Jaffna

Annual Newsletter 2021 - Vol. I

Blockchain

Waterfall vs. Agile

Switch from IoT to IoV

Graphene field effect Transistor

Benvenuto 2021

**Winner of 4
IEEE Boost Awards 2021**



University of Jaffna
Student Branch



University of Jaffna
Student Branch

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Newsletter Designer

Mr. Nageswaran Thileepan
Department of Computer Science, UoJ



The Counsellor



Dr. Amirthalingam Ramanan
Senior Lecturer,
Department of Computer Science,
University of Jaffna.

The IEEE Student Branch of the University of Jaffna (IEEE-SB-UoJ) was established in September 2018 and the "Power and Energy Society" student branch chapter was formed in December of the same year. During 2018/2019 and 2019/2020 the cooperation received from all the executive committee members is highly appreciated and made the IEEE-SB-UoJ as one of the vibrant student branch across the country.

IEEE as a society is more popular for the volunteerism opportunities it provides to each and every individual member. The IEEE-SB-UoJ has always been keenly organising activities in the areas related to technology and professional development of an individual even this pandemic situation. The sincere involvement of our student members made them volunteer this year in contributing to the IEEE national-level projects, namely, SLInspire, Innovation Nation Sri Lanka (INSL), SL SYW Congress, and Young Professionals Sri Lanka (YPSL).

Some highlights of activities of the IEEE-SB-UoJ would include webinars in important areas in computing and engineering, industrial collaborations for techTalks, coding competitions among students, workshops on personality development. Moreover, during this period 2020/2021, the branch has formed two student branch chapters and an affinity group, and are respectively named "Computer Society", "Robotics and Automation Society", and "Women in Engineering". In addition, the student members have also been tripled while retaining its previous members.

On behalf of the student branch, I thank all the authors for their contributions to this newsletter and making it magnanimous. We look forward to contributing our best efforts and delivering the most important information annually to all the members through the newsletter 'IEEE-News@UoJ'. Let us all work together to have another fruitful year for IEEE-SB-UoJ.

flourish!

The Senior Treasurer



Dr. Manivannan Siyamalan
Senior Lecturer,
Department of Computer Science,
University of Jaffna.

It is my great pleasure to extend my heartfelt greetings to the IEEE Student Branch of the University of Jaffna for releasing this first newsletter.

The IEEE Student Branch of the University of Jaffna is one of the very active student branches in Sri Lanka. Even in this pandemic situation various events such as techTalks, webinars, workshops, and competitions were organized by this student branch for the betterment of the students. The release of this newsletter is going to be another milestone in the history of this student branch.

I would like to congratulate and sincerely thank the committee members of this IEEE student branch for their commitment and dedication towards this successful achievement.

The Chairman SL Section



Dr. (Mrs.) Maheshi B. Dissanayake
Chairperson,
IEEE Sri Lanka Section (2021/2022).

On behalf of IEEE Sri Lanka section, I wish to congratulate you, the IEEE Student Branch of University of Jaffna for publishing your first newsletter. It is a great achievement for a student branch. I am sure that this is a moment of great pride and excitement for everyone involved with the process. On the launch of your first newsletter, I commend the hard work, dedication and enthusiasm of the editorial board and the executive committee for making this possible. I sincerely hope your members will enjoy reading the technical articles as well as the event reports in the newsletter. It will be a source of information and encouragement for the current as well as future members of your student branch. We, the IEEE Sri Lanka section, wish you all the best and mark your achievement with great happiness.

The Chairman IEEE-SB-UoJ



Mr. Nayananga Muhandiram
Final Year Honours Degree Student,
Department of Computer Science,
University of Jaffna.

IEEE Student Branch of the University of Jaffna is one of the unique student societies in the University of Jaffna which facilitates students to attain highest achievements by developing their skills. Throughout the past two and half years it has been able to continue this duty as its priority and also bringing more exposure to the university by conducting various events at the sectional level and even regional level intend to improve its operations beyond the university level. This would never be possible without the help of our past and present Counsellors and student committee members. This first issue of IEEE Student Branch of the University of Jaffna Newsletter showcases how active and talented this society is and what are its capabilities. As the current chairman of the IEEE-SB-UoJ, I thank you for giving your attention to this newsletter and wish you all good health and happy volunteering!

The Secretary



Ms. Ajanthy Jayarajan
Final Year Honours Degree Student,
Department of Computer Science,
University of Jaffna.

It is a matter of great pride and satisfaction for us to bring out the first Newsletter "IEEENews@UoJ" released by the IEEE Student Branch of the University of Jaffna. During the past year despite the pandemic, various webinars, workshops, TechTalks, industrial collaborations and competitions were organized by the IEEE Student Branch of the University of Jaffna for the betterment of the students. The important motive of these events is to prepare the students to best fit into the Tech-industries and academia. In addition, some programs were also organised solely to create awareness on the psychological, hard and soft skills development of the students. I thank our Branch Counsellor and all our lecturers for the guidance provided throughout the year, our volunteers and keynote speakers to make the IEEE-SB-UoJ a successful society. We hope this will continue further with the same motive and volunteerism of our fellow students.

Student Representative



Ms. Warunika Hippola
Student Representative,
IEEE Region 10.

Being the smallest Organizational Unit of IEEE, Student Branch is the place where any volunteer is born and built. Every prominent leader was once a student branch volunteer.

If you grab the opportunities lying around you right, the capabilities of a student branch are endless. I am really happy that, as the IEEE Student Branch of University of Jaffna, you have taken initiatives to launch this newsletter, which will provide more visibility to your efforts and set an example for other student branches as well. You should not limit your activities to a particular frame, you can do various activities and projects which are really impactful. Collaborate with other Student Branches and organizations as well. Identify the requirements and measure your success by the quality of the work not the quantity. Support the potential leaders within your SB and give them the necessary recognition so that they can volunteer at higher levels which will give them better experience. Stay connected with the section, region and global IEEE news, and grab the opportunities available. An opportunity may come in different forms, be vigilant to recognize them. I would like to wish the SB of University of Jaffna, all the best and may you create more and more leaders to the IEEE community and outperform as a Student Branch within the globe.

Newsletter Joint-Editors



Mr. Rupeekshan Maheswaran
Ms. Divya Varatharajan
Honours Degree Students,
Department of Computer Science,
University of Jaffna.



On behalf of the IEEE Student Branch of the University of Jaffna, we are happy and delighted to announce that our first issue of the Newsletter "IEEENews@UoJ" is finally in our hands. Months of dedication, determination of the hardworking pillars made this issue a successful one.

In this first issue, we have published the reports on various events organized by the student branch, its chapters and affinity group – ranging from webinars, workshops, membership drive meetings, coding competitions, contests, industrial collaborations, and launching of affinity group and society chapters during the year 2020/2021. Moreover, this issue includes articles to disseminate information on some of the technological advancements in computing and engineering. Also this newsletter includes all the achievements and recognition earned by our student branch and members volunteering at sectional level and regional level projects. Our branch has been the root for our members to shine in their volunteering journey. At this juncture we would sincerely thank our Branch Counsellor Dr. A. Ramanan for initiating this newsletter by providing tremendous support and encouragement in its development process. our special thanks to Mr. N. Thileepan, who has taken this newsletter to another level with his design. We also wish to sincerely thank Ms. J. Ajanthy, Mr. Nayananga Muhandiram and Mr. Heshan Nayanajith for their hard work and the authors contributed with articles in making this newsletter to this stage. We are proud to see our student branch has finally reached another milestone. We wish this should continue and benefit our members in their future endeavours.



IEEE Student Branch - University of Jaffna

Introduction

The IEEE Student Branch of the University of Jaffna (STB11373) was formed in September 2018 with 12 IEEE student members becoming Sri Lanka's first university with two separate IEEE Student Branches: IEEE Student Branch Vavuniya Campus and IEEE Student Branch University of Jaffna itself. Even though it has gone through numerous challenges and barriers from past to present, IEEE Student Branch has got the attention in both local and foreign tech fields as one of the active student branch in the Sri Lanka section. When it reaches its third anniversary, the IEEE Student Branch University of Jaffna has laid a strong foundation for itself by obtaining university senate approval as a legal student society in the university, forming three student branch chapters and one affinity group and improving its membership count to 184 with a growing trend of active members. For the past three years, the Student Branch has

been able to conduct more than 30 events under various categories by not limiting them to awareness programmes, techTalks, awareness sessions, coding competitions and fun activities to encourage our students to improve their academic, practical and professional skills. IEEE Student Branch University of Jaffna is a key opportunity for students to grow themselves as many of them are now active volunteers in the IEEE Sri Lanka Sectional level and even at the IEEE Regional level. IEEE Student Branch University of Jaffna marked its rapid growth with the contributions made by past branch counsellor, chairmen and their respective committees and now it is aiming to become a remarkable student branch dedicated to empower technological leaders by encouraging and facilitating students to attain highest achievements by developing their skills.

Vision

Become a remarkable student branch dedicated to empower technological leaders by encouraging and facilitating students to attain highest achievements by developing their skills.

Mission

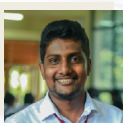
Foster technological innovation and excellence for the benefit of humanity and promote the theory as well as the practice of all aspects of Computer Science, Computer Engineering, Information Communication Technology, Electrical and Electronics Engineering.

IEEE-SB-UoJ Website

The then Webmaster Mr. Dilshan Dilip Udara and the present Webmaster Mr. Avishka Weebadde revamped the main website for the IEEE Student Branch University of Jaffna. The website contains upcoming events, news, list of IEEE publications made by its members, Information about our IEEE student branch chapters, affinity group, and a photo gallery of events. The website provides necessary information and allows outsiders to reach the committee for further information.

<http://society.jfn.ac.lk/ieee>

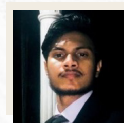
Volunteering in Regional-level



Mr. Heshan Nayanajith
IEEE Young Professionals
Graphic Designer



Ms. Mayuri Rajakaruna
Social Media Admin - IEEE Brain



Mr. Indushan Senavirathna
Member of Student Young
Professional Transition Working Group of
IEEE PES Young Professionals

Members selected for National-level Projects

The IEEE Sri Lanka Division works to enforce the institutional objectives of the IEEE on the island of Sri Lanka. IEEE Sri Lanka Section is divided into several main projects like IEEE Sri Lanka Section Student/YP/WIE Congress, IEEE Techno Meetup Sri Lanka, IEEE Innovation Nation Sri Lanka, IEEE SLInspire and also there are other several projects like IEEE StudentPro Career Fair, IEEE YP LETs Talk, Code with WIE, WIE Symposium and other Student/YP/WIE initiatives. They renew annually and call for volunteers from all university students islandwide. This year, students from the University of Jaffna were also selected for IEEE national projects. This will be a memorable opportunity for volunteering and earn recognition for the immense dedication, all while serving for the betterment of fellow IEEEians and the community at large.



Mr. Heshan Nayanajith
Lead Member of Public Visibility Sub
committee of Student Activities Committee



Mr. Rupeekshan Maheswaran
Member of Program Team of
IEEE SLInspire



Ms. Chamodi Hansika
Student Representative/ Provincial Coordinator
of University of Jaffna of IEEE Innovation Nation
Sri Lanka (INSL)



Ms. Mayuri Rajakaruna
Member of Secretariat Team of IEEE
SLInspire



Mr. Dilendra Tennakoon
Member of Program Team of
IEEE Sri Lanka Section Student/YP/
WIE Congress



Mr. Vimukthi Randika
Committee Member - Designer
of IEEE Young Professionals Sri Lanka



Winners of Sparklers Summit 2021 of Region-10 Young Professionals




Ms. V. Divya

- Talent Hunt - 1st Place
- Best Cluster - 1st Place


Mr. W.J. S. Nirmal Fernando

- DIY Challenge - 1st Place

Section Ambassadors of IEEEExtreme 15.0



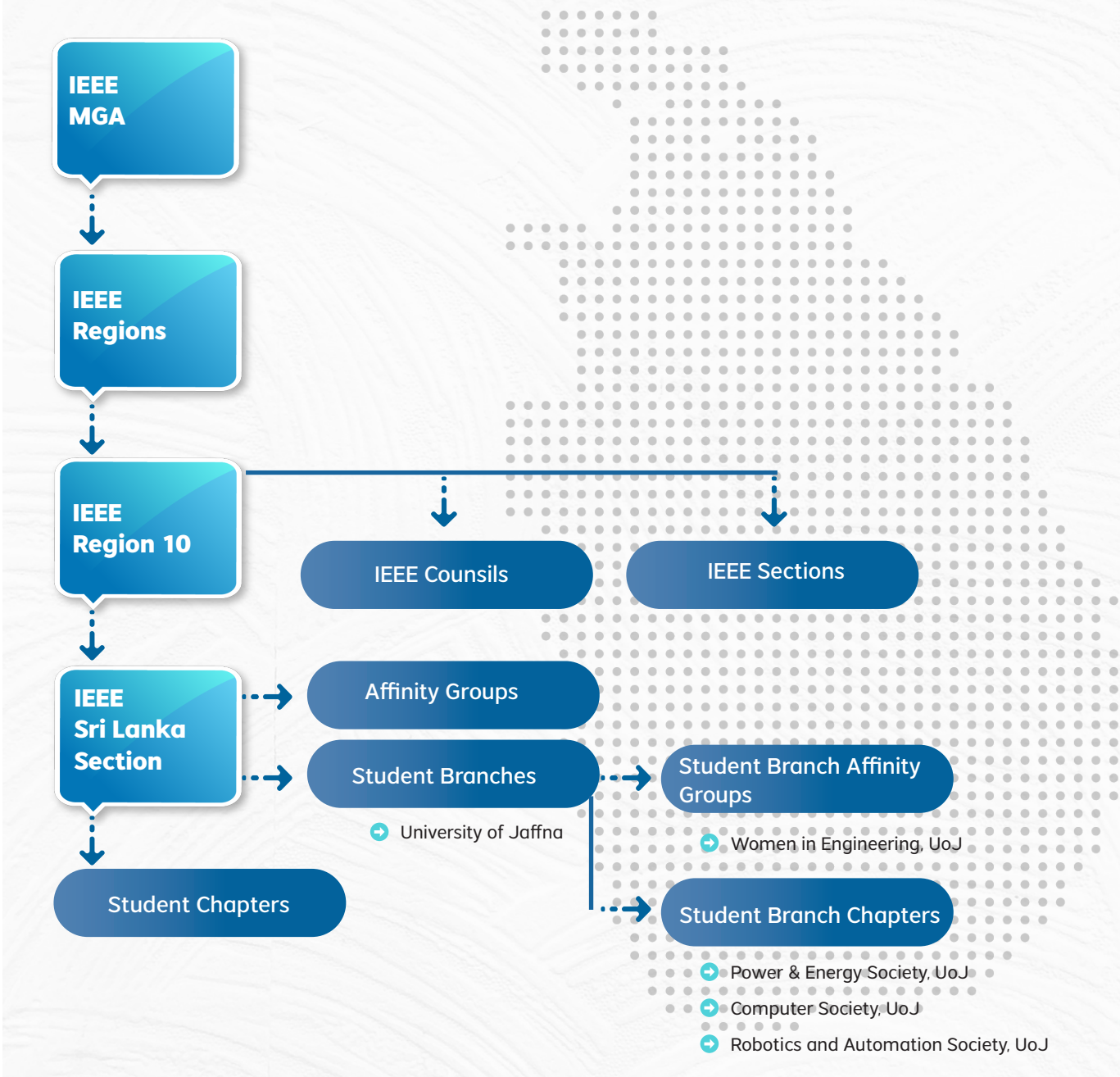
Mr. A.J. Nickson Joram



Mr. M. Rupeekshan

IEEEExtreme is a global challenge in which teams of IEEE Student members contest in a 24-hour time period against each other to solve a series of programming tasks, coached and proctored by an IEEE member and endorsed by an IEEE Student Branch. The IEEEExtreme Student Ambassador program allows the Ambassadors to collaborate with a worldwide group of enthusiastic volunteers in spreading the joys of coding at IEEEExtreme. This time, there are 761 Ambassadors all around the globe and 26 Ambassadors in the Sri Lanka Section.

IEEE ROADMAP





PES Chapter IEEE-SB-UoJ



The Advisor

Eng. Ragupathyraj Valluvan
Lecturer,
Department of Electrical & Electronic Engineering,
University of Jaffna.

It is my great pleasure to write this message to the IEEE University of Jaffna Student Branch newsletter as the advisor for IEEE Power and Energy Society University of Jaffna Student Branch Chapter. Since its beginning in 2018 the IEEE UoJ Student Branch has conducted many activities. It has been a catalyst in increasing IEEE student memberships and Student Branch Chapters of various technical societies. I am very glad to see it has paved way to increased student volunteer activity in technical societies. Our student members have went on to win regional accolades through the opportunities created by IEEE Student Branch of our University and Student Branch Chapters of technical societies.

The founding chair of IEEE PES UoJ Student Branch Chapter, Mr. Dev Sugandika has been a great example and inspiration for fellow students on demonstrating the opportunities and benefits IEEE brings to young and aspiring professionals. He went on to become Country Representative of IEEE PES Day 2020, Regional representative for IEEE PES Young Professionals and Regional Lead for IEEE day 2020. I am looking forward to see many members follow suit.

IEEE PES UoJ Student Branch Chapter has conducted many useful activities for the benefits of fellow students and members of the community even among this challenging times. Technical Talks and webinars conducted in relevant state of the art technological advances in the field have greatly benefitted the participants. I am sure this trend will continue further with innovate ideas going forward. I take this opportunity to congratulate the IEEE UoJ Student Branch and all Student Branch Chapters of technical societies for their tremendous achievements and wish them the very best for another great year!



The Chairman

Mr. Ishara Mahanama
Final Year Honours Degree Student,
Department of Electrical & Electronic Engineering,
University of Jaffna.

I am humbled by the opportunity to serve as the chairman of the IEEE PES Student Branch Chapter University of Jaffna. We are blessed with many dedicated volunteers who care deeply about our discipline, it's standards and contributions in a fast-changing environment. I gladly appreciate the committee and the members of IEEE PES Student Branch Chapter University of Jaffna for their precious collaboration. This chapter has been established in order to foster technological innovation and excellence for the benefit of humanity and for the advancement of technical professionalism. Our aim is to provide fellow students with opportunities to learn, share and innovate in the different fields of science and technology.

Annual General Meeting 2021

The AGM of IEEE PES Student Branch Chapter of University of Jaffna was successfully conducted with about 60 participants on 10th April 2021. The AGM was conducted via Zoom and it was also a fruitful meeting with lots of new ideas shared among PES members.



If something is important enough, you should try. Even if - the probable outcome is failure.

– Elon Musk CEO, Tesla

EVENTS

Clean Energy Revolution

IEEE PES Student Branch Chapter of the University of Jaffna organized a Guest talk on "Clean Energy Revolution" by Prof. A. Atputharajah, Dean, Faculty of Engineering, University of Jaffna and Mr. U. Anuraj, Lecturer in Department of Interdisciplinary Studies, Faculty of Engineering, University of Jaffna. This session was conducted with regard to the PES Day 2021. The main objective of this session is to give knowledge to students on renewable energy sources and energy revolution. The targeted audience of this event was undergraduates at University of Jaffna who are interested in field of renewable energy. Other than that, the session was open to anyone interested in joining the session. The event was successfully conducted having about 60 participants via zoom.

Applications of Power Electronics in Electric Vehicles

IEEE PES Student Branch Chapter of the University of Jaffna organized the second event, a guest talk on "Applications of Power Electronics in Electric Vehicles" by Eng. Prashanth Atputhakumar, Electronic Engineer in Power Electronics and Embedded Systems at Vega Innovations. The main objective of this session is to give knowledge to students on applications of power electronics in electric vehicles. In this event he provided a brief introduction about power electronics and electric vehicles and talked about the applications of power electronics in electric vehicles, battery management system in electric cars and modern technologies of electric vehicles. The targeted audience of this event was undergraduates who have an interest in electric vehicles. Other than that, the session was open to anyone interested in joining the session. The event was successfully attended by more than 60 participants.



IEEE COMPUTER SOCIETY

CS Chapter IEEE-SB-UoJ



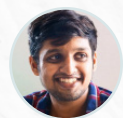
The Advisor

Dr. S. Mahesan
Senior Lecturer,
Department of Computer Science,
University of Jaffna.

It is my pleasure to write this message to the first release of the Annual NewsLetter of the IEEE Student Branch, University of Jaffna, on the request of its present Secretary. The branch, empowered by motivated minds, was formed in 2018 with the vision of becoming a remarkable branch dedicated to empowering technological leaders by encouraging and facilitating students to attain highest achievement by developing their skills. With the right guidance and enlightenment of dutiful counsellors, the Student branch has successfully created three student branch chapters and an affinity group. To get on to the mission of achieving the goals of their vision.

More than 100 Science students and around 75 Engineering students are members in the Branch with an Executive committee of active, energetic and dutiful members. The branch conducts various activities ranging from social to cultural to recreational to technical activities in view of keeping social harmony among the students while developing their technical skills in Computer Science and Engineering related subjects. As a part of their activities, they are releasing a Newsletter to mark their achievements, creations and future plans for their mission.

It is my earnest belief that they will achieve their goals of vision in high spirit with the present and future members from various disciplines of studies. I wish them all the best to achieve their goals.



The Chairman

Mr. Mathanraj Sharma
Final Year Honours Degree Student,
Department of Computer Science,
University of Jaffna.

It is with great pleasure that I learned about the Newsletter of IEEE Student Branch Chapter, University of Jaffna and I am humbled to write to this first edition as the Chairman of the IEEE Computer Society Student Branch Chapter of the University of Jaffna.

The Chapter was established in January 2021, with immense support from all the Student Branch and the Computer Society members of the University of Jaffna. We are established as the local representation of the IEEE Computer Society, to advance the theory, practice and application of computer and information processing, science and technology, and the professional standing of our members.

As computer science leaders we endeavor to empower and inspire people to raise the bar both for technology and for themselves through various activities and collaborations. We are young but we have started to work towards our goals. Initially, we have started to conduct a series of TechTalks for the members and are planning to hold more webinars, competitions, career development, and networking activities for our members. We are happy to be part of the family of IEEE-SB-UoJ and looking forward to growing together with it. On behalf of IEEE Computer Society Student Branch Chapter University of Jaffna, I wish the Student Branch as well this newsletter all success.

Inaugural General Meeting 2021

The IGM of IEEE Computer Society Student Branch Chapter of the University of Jaffna held on 14th of May 2021 from 6.00 p.m. - 7.00 p.m. via Zoom Cloud meetings. The maiden committee of the Student Branch Chapter was elected at the meeting and there were 60 participants in attendance.

EVENTS

Preparing an effective CV and maintaining a good LinkedIn profile

This was the first ever event by the newly established IEEE Computer Society Student Branch Chapter of the University of Jaffna. The session was held on 14th of June 2021 from 3.00 p.m. - 4.00 p.m. via Zoom. Ms. Dinuka Tharangi Jayaweera a Business Analyst at Sysco LABS was the speaker for the event. The session was focused on educating students to create better and effective CVs' and maintaining good LinkedIn profiles to get an edge at job interviews and have better opportunities available for them. The event was well attended by around 150 participants.

Let's talk about Solid principles

The second session organized by the IEEE Computer Society Student Branch Chapter of the University of Jaffna was "Let's talk about Solid principles" which was held on 21st of June 2021 from 6.00 p.m. - 7.00 p.m. via Zoom. Mr. Dhanushka Chandana (Associate Tech Lead at Cambio Software Engineering, Lead at Facebook Developer Circle: Colombo) was the speaker and the session was on Solid principles in object-oriented programming, and writing clean and optimized code. The session was well attended by around 70 participants.



RAS Chapter IEEE-SB-UoJ

The IEEE Robotics and Automation Society joined the IEEE Student Branch of the University of Jaffna in July 2021, as its third technical committee. The society has adopted the mission from its parent IEEE RAS.

The Vision is to be the most active student chapter of IEEE Robotics and Automation Society.

The Mission is to foster the development and facilitate the exchange of scientific and technological knowledge in Robotics and Automation that benefits members, the profession and humanity.

The IEEE RAS Student Branch Chapter - UoJ intends to conduct webinars, workshops, industrial visits, competitions and collaborative events in fields related to robotics and automation to aid the career development of its members.



The Advisor

Eng. S. Sangar
Lecturer,
Department of Electrical & Electronic Engineering,
University of Jaffna.

It is my great pleasure to write this message to the IEEE student branch of the University of Jaffna newsletter as the advisor of the Robotics and Automation society of the branch. Our branch is one of the active branches in Sri Lanka. The IEEE student branch of University of Jaffna has organized several events. These events created a platform to discuss and exchange the ideas and experiences among all the members. It will definitely help our students to excel in the ever-evolving technical world. Further, our students show their leadership, self-motivation and inspiration through this society. I expect this trend to continue.

This first newsletter of the branch is a showcase of our branch activities. It is my great pleasure to thank all the members and volunteers for their dedicated work in publishing such an informative newsletter.



The Chairman

Mr. W. M. P. Indushan Bandara Senavirathna
Final Year Honours Degree Student,
Department of Electrical & Electronic Engineering,
University of Jaffna.

It gives me immense pleasure to write this message for the first-ever issue of the Newsletter of IEEE Student Branch Chapter, University of Jaffna, as the founding chairman of its youngest member chapter, the IEEE Robotics and Automation Society.

IEEE RAS-SBC-UoJ was established in July 2021. The RAS is interested in both applied and theoretical issues in robotics and automation. Robotics includes and is not limited to intelligent machines and systems while automation includes the use of automated methods in various applications to improve performance and productivity. The Society strives to advance innovation, education, and fundamental and applied research in Robotics and Automation.

As of date, the IEEE RAS-SBC-UoJ has successfully held its first event, the IGM, and intends to hold numerous events in the days to come to enhance the Robotics and Automation knowledge and skills of the undergraduate students of the University of Jaffna. This includes workshops and tutorials, competitions, webinars, guest talks, and many more exciting activities. I would like to invite all of you to join hands with us in exploring the world of robotics and automation.

Inaugural General Meeting 2021

The IGM of IEEE RAS Student Branch Chapter of the UoJ was held on 31st of July 2021 via Zoom online platform, with the presence of Dr. K. Pirapaharan (Dean, Faculty of Engineering) as the Chief Guest, Prof. Ruwan Gopura, (Immediate Past President of IEEE Sri Lanka Section) as the Guest of Honour, Mr S. Sangar (Advisor of IEEE RAS UoJ), and the IEEE members of IEEE-SB-UoJ. Mr Dimuthu Anuraj, (Founder Chairperson of the IEEE-SB-UoJ), and Mr Dev Sugandika (Founder Chairperson of IEEE PES UoJ) attended the event as Special Guests. The Chief Guest, Guest of Honour and the advisor of IEEE-RAS-UoJ addressed the gathering. The Guest of Honour spoke about the activities that can be carried out by the newly established student chapter while emphasising the opportunities that are now open for the members of IEEE RAS UoJ. Then came the revealing of the official logo of IEEE-RAS-UoJ. The new executive committee of IEEE-RAS-UoJ for the year 2021/2022 was elected and the action plan for the year 2021/2022 was presented by the newly elected chairperson Mr. Indushan Senavirathna. The event concluded by inspiring many IEEEians to join hands with the IEEE-RAS-UoJ.

EVENTS

Path to Robotics with IEEE-RAS-UoJ Series

The first session of the "Path to Robotics with IEEE-RAS-UoJ Series" was held on 27th of August 2021 at 6.00 p.m. IST via Zoom. The keynote speaker of the event was Prof. Thrishantha Nanayakkara (Director of the Morph Lab, Dyson School of Design Engineering, Imperial College London, UK). Dr. (Ms.) Marwa Eldiwiny (Host of IEEE RAS Soft Robotics Podcast) addressed the gathering as the special guest. This session focused on Soft Robotics and recent research outcomes of Morph Lab, Dyson School of Design Engineering, Imperial College London. The session also provided an awareness of the benefits and opportunities available for the members of the IEEE RAS Student Branch Chapter - UoJ.



WIE Affinity Group IEEE-SB-UoJ



The Advisor

Dr. (Mrs.) Barathy Mayurathan
Senior Lecturer,
Department of Computer Science,
University of Jaffna.

On behalf of the IEEE Women in Engineering Student Branch Affinity Group of the University of Jaffna (IEEE WIE-SB-AG-UoJ), it is my great pleasure to extend heartfelt greetings to the readers of the first issue of the newsletter from the IEEE Student Branch of the University of Jaffna.

IEEE WIE is the largest international professional organisation dedicated to promoting women engineers and scientists and inspiring girls around the world to follow their academic interests to a career in engineering. Especially women have a lot of barriers in society and we need to develop their confidence level and make an awareness about the opportunities they have. When women are empowered with access to equal rights and opportunities, it results in the improvement of prospects for present and future generations. IEEE WIE-SB-AG-UoJ dedicates to inspire and empower young females to use their diverse talents, in achieving the technical eminence with proper maintenance of work-life balance, and to innovate for the betterment of humanity.

Multiple events have been organized by the IEEE-SB-UoJ to enhance the skills of young girls and women engineers. I am honoured to associate myself with IEEE WIE to continue this flagship event to encourage our female students. I congratulate the commitment and hearty dedication of our students and staff members involved with the IEEE-SB-UoJ.



The Chairman

Ms. T. Methusha
Final Year Honours Degree Student,
Department of Computer Science,
University of Jaffna.

It is a pleasure to witness the first newsletter of the IEEE-SB-UoJ. Since the day the student branch was born it has conducted remarkable events and proven its activeness. The branch has attracted many student members and I believe it will continue to do so. Accordingly, the team work in releasing this newsletter is very much appreciated. The hard work has taken the student branch to a new height, and congratulations on your first release.

IEEE Women in Engineering is one of the largest international professional organizations dedicated to promoting women engineers and scientists and inspiring girls around the world to follow their academic interests to a career in engineering. IEEE Women in Engineering (WIE) Student Branch affinity group of the University of Jaffna was formed in June 2021 with the aim of empowering women in engineering to follow their passion. The speciality of the WIE is this is the organization where men and women try to empower women in engineering to follow their passion. To follow this aim IEEE WIE-SB-AG of University of Jaffna is built with 120 total members.



"I learned to always take on things I'd never done before. Growth and comfort do not coexist."

– Ginni Rometty, Former CEO, IBM

Inaugural General Meeting 2021

IEEE Student Branch University of Jaffna received the approval to establish the IEEE Women in Engineering Student Branch Affinity Group on 09th of June 2021 from IEEE. As the first event, the Inaugural General Meeting was held on the 29th of June 2021 to elect the office-bearers for the year 2021/2022. The Chairperson of the IEEE Sri Lanka Section Dr. (Ms.) Maheshi B. Dissanayake graced the IGM as the Guest of Honour.

EVENTS

TechTalk on Machine Learning Applications for Mining Complexes

The IEEE WIE-SB-AG University of Jaffna conducted a TechTalk on "Machine Learning Applications for Mining Complexes" on 2nd of July 2021 via Zoom. Dr. (Mrs.) Mehala Balamurali (Research Fellow, Australian Center for the field of Robotics, University of Sydney, Australia) served as the speaker for this event. The main objective of this talk is to provide knowledge to students on machine learning applications for mining complexes and the session was open to all.

"STEP UP" WIE Awareness Session

The IEEE WIE-SB-AG University of Jaffna conducted a WIE awareness session "STEP UP" on 20th of July 2021 via Zoom. Ms Warunika Hippola (Student Representative of IEEE Region10, Student Activity Chair of IEEE WIE Sri Lanka, Treasurer of Young Professional Sri Lanka) served as the speaker for this event. The objectives of this talk is to provide an awareness about WIE and beverages of being a WIE member, attracting new members to WIE, and encourage WIE-SB-AG members to use WIE resources for their growth. The session was intended for students of University of Jaffna.

IEEE Membership Promotion Campaign 2020

IEEE Student Branch of the University of Jaffna was established in 2018 and slowly reached a membership of 68 by the beginning of the year 2019. At the time the membership of the student branch comprised of the students of the Department of Computer Science in the main campus and the Faculty of Engineering in the Kilinochchi premises.

With the rise of the Coronavirus pandemic around the world many changes took place and many things were affected including the planned activities of the IEEE-SB-UoJ. However, IEEE-SB-UoJ initiated the "Future50" campaign to promote its membership. New memberships and membership renewals were given a 50% discount till 31st of December 2019. The Executive Committee of the student branch appointed a committee for a membership promotion campaign to increase its own membership and to reach more undergraduate students. The members of the promotion campaign committee consisted Ms. Mayuri Rajakaruna, Ms. Sangameera Sreeskantharajah, Ms. Sulojana Gnanasegaran and Mr. Dilendra Tennakoon. This committee took several steps to make sure that the students were well informed about IEEE and believed that once they learn and understand what IEEE is they would be naturally inclined to take membership. Measures taken to achieve this were as follows.

- ▣ Sharing flyers that contain important information regarding IEEE
- ▣ Sharing short videos of personal experiences and personal benefits gained by prominent members of the student branch
- ▣ Conducting an IEEE awareness session with then IEEE Sri Lanka Section student representatives as the Guest Speakers

Furthermore, the committee provided much needed assistance to prospective members in signing up for an IEEE account and then to the new members in completing their membership through their subscription. As a result of more than 10 days campaigning, the IEEE-SB-UoJ received an overwhelming positive response from undergraduate students to join IEEE. The membership count increased from 68 to 184 members. With the increase in membership, the student branch then consisted of 110 males and 74 females, out of which 103 were from the Department of Computer Science, 74 from the Faculty of Engineering, and 7 from the Faculty of Science.



Membership Development Project 2021

The IEEE-SB-UoJ is conducting a membership campaign from 1st of August 2021 to 30th September 2021. The Student Activities Committee of the IEEE Sri Lanka Section is the main advisor for this project and gave guidance for all student branches to conduct a membership campaign.

We believe that these initiatives will provide students with the ability to engage with the Student Activities Committee when executing student branch-level programs and also will get experience in organizing an event. The main purpose of this campaign is to increase the number of IEEE members in the IEEE-SB-UoJ.

We planned to do several activities for this purpose. They are,

- ▣ Video series for experience sharing
- ▣ Conducting a Talent Show
- ▣ Providing offers to the students
- ▣ Flyer series to illustrate details and benefits of IEEE hosting puzzles and riddles
- ▣ Hosting an interactive Q&A session in native languages
- ▣ Guiding students to take membership
- ▣ Organizing an IEEEExtreme awareness session
- ▣ Conducting a series of technical sessions
- ▣ Forming a volunteering team consisting of IEEE and non-IEEE students as the organizing committee for this project

This is a great opportunity for the members to experience volunteering in drafting proposals, report writing, and developing professional skills, teamwork, and leading events.

So far we have publicized puzzles and riddle contests and flyer series with details and benefits of IEEE. Also, a talent show and video series for experience sharing, an interactive Q&A session in native languages, conducting a session related to a trending topic are currently being held.



“ Try not to become a man of success, but rather try to become a man of value.

— Albert Einstein

Annual General Meeting 2020



The Annual General Meeting of the IEEE-SB-UoJ was held on 26th of September 2020 to assign new committee members for the upcoming year 2020/2021. The meeting commenced with the welcome speech by Mr. Muaz Niwas (then President of the IEEE-SB-UoJ). In his speech, he thanked all the previous members and the branch Counsellor for their support in organising events. Thereafter, Mr. S. Suthakar (Head of the Department of Computer Science) delivered his special address by advising the branch to have a subcommittee that can help to run more events successfully under the guidance of the main committee and also encouraged to organize fundraising activities. Dr. (Mrs). B. Mayurathan (then Counsellor of the IEEE-SB-UoJ) delivered her speech, in which she appreciated the work done by the previous committee and mentioned opening an official bank account for the IEEE-SB-UoJ. Then Mr. Bhatiya (Then Secretary of the IEEE-SB-UoJ) read the secretary's report. In his report, he highlighted the competitions and sessions hosted by their committee such as IEEE Xtreme 13.0, Welcome to IEEE, SL Inspire Career Compass, Lockdown coding competition, and Webinars on IEEE Xplore, WIE, and Introduction to Game Development. The financial report was read by Mr. Nayananga Anuradha Muhandiram (then Junior Treasurer of the IEEE-SB-UoJ). He concluded that the funding for this AGM is partially sponsored by the staff of the Department of Computer Science and he mentioned that the bank account will be maintained from this year onwards. Thereafter, the Second anniversary celebration of the IEEE-SB-UoJ was held. Following the celebrations, the new committee of the IEEE-SB-UoJ for the year 2020/2021 was appointed. Dr. A. Ramanan, the newly appointed Counsellor of the IEEE-SB-UoJ addressed the audience by appreciating the previous two committees for their tireless effort in bringing the branch upto this status. He mentioned that the newly elected committee will work to collaborate more with the IEEE members in the Faculty of Engineering in Kilinochchi and Faculty of Applied Sciences in Vavuniya. Followed by his speech, Dr. M. Siyamalan (Senior Treasurer of the IEEE-SB-UoJ) stated his ideas on how the new committee can progress and suggested conducting coding classes, competitions, and workshops. Finally, the vote of thanks was delivered by Mr. Nayananga Anuradha Muhandiram, the new Chairman of the IEEE-SB-UoJ.



WEBINARS

Confidence in AI Systems

A webinar titled "Confidence in AI systems" was organised by the IEEE-SB-UoJ held on 16th of February 2021 from 8.30 a.m. to 9.30 a.m. via Zoom. Prof. N. Asokan (Cheriton Chair, University of Waterloo, Canada; Adjunct Professor, Aalto University of Finland; Fellow member ACM & IEEE) was the speaker for the event. 54 students from IEEE Student Branches of the University of Jaffna and Vavuniya Campus participated in this event. Prof. Asokan talked about how to evaluate AI-based systems according to their effectiveness and performance. Then he discussed the challenges in making AI trustworthy. The speaker also touched on machine learning models, how they work, what are the challenges faced by them in identifying entities, and gave examples of machine learning systems.



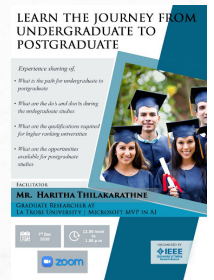
Graph Representation Learning with Deep Learning

A webinar titled "Graph Representation Learning with Deep Learning" was organised by the IEEE-SB-UoJ held on 26th of March 2021 at 3.30 p.m. via Zoom. Dr. (Ms.) Saatviga Sudhahar (Machine Learning Scientist, Healx Limited, Cambridge, UK) was the speaker of the event. Students from IEEE Student Branches of the University of Jaffna and Vavuniya Campus participated in this event. Dr. Saatviga spoke about why graph representation is important for machine learning and for what applications it is important. She explained how graph representation in machine learning can be used in community detection, node classification, link prediction and network similarity, and graph embedding. She spoke about knowledge graph completion, graph representation learning, KGC methods and also about GraphSAGE, deepwalk, and Graph convolutional networks. She has presented details about KGBERT and Anything bottom-up rule learning (AnyBURL). She ended the session by explaining the challenges in KGC.



Learn the Journey from Undergraduate to Postgraduate

The IEEE-SB-UoJ arranged a session on "Learn the Journey from Undergraduate to Postgraduate". This was a useful session to learn about the path to become a postgraduate, the required qualifications to enter higher ranked universities, from the experience gained by the speaker Mr. Haritha Thilakarathne who is a graduate researcher at La Trobe University, Australia. He shared his story of how he became a postgraduate in a well-recognised foreign University. He shared some of his knowledge and experience for the questions which were asked throughout the session. It was a helpful session for the students who were planning to develop their career and education through world's higher ranked universities.



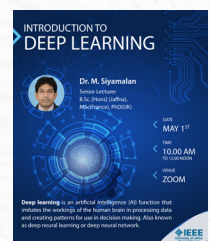
Trends of Internet of Things in 2021

Stocks data approximately how they are used and their surroundings wherein they operate. IEEE-SB-UoJ organized a webinar on "Trends of Internet of Things in 2021" on 22nd of May 2021 via Zoom which was open to all the enthusiasts in IoT. The speaker, Mr. Miller Alexander Rajendran, CEO of SenzAgro and also an alumni of UoJ, has given an Introduction to IoT and where the IoT is being used. He talked about current applications and trends of IoT. He further described the development of the IoT field during the Covid-19 period with the increasing usage of smartphones. He also talked about the competitive advantage over companies that have IoT and market potential of IoT. He has given very informative descriptions about trending IoT areas such as Manufacturing, Healthcare, Agriculture, Transport and Logistics, Personalization, and Smart cities.



Introduction to Deep Learning

IEEE Student Branch of University of Jaffna presented a webinar called "Introduction to Deep Learning", which was held on 1st of May 2021 via Zoom platform with the purpose of giving basic ideas of deep learning to the students. Dr. M. Siyamalan who is a senior lecturer at University of Jaffna was the resource person for this webinar. He discussed the deep learning applications, basic concepts of machine learning, types of machine learning then slightly moved to the deep learning part. Then he discussed some classifiers and algorithms and also gave a brief introduction about neural networks.



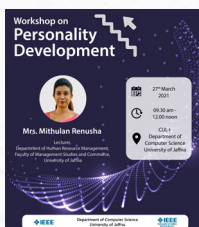
Demystifying CNN for Medical Diagnostic

IEEE Student Branch of the University of Jaffna organized a webinar, "Demystifying CNN for Medical Diagnostic" on the 12th of August 2021 at 2.30 p.m. via Zoom. The keynote speaker of this event was Dr. (Mrs.) Maheshi B. Dissanayake (Senior Lecturer in Electrical & Electronic Engineering, University of Peradeniya; Chair of the IEEE Sri Lanka Section). The students of the Department of Computer Science, University of Jaffna participated in this session. She started the session by explaining how we recognize objects. Here, she defined how do our brain categorizes and organizes the data, how the object is captured by the human eye and the camera, and how we can replicate human recognition with machines. Then she explained the basic Image analysis for recognition. She mainly revealed the template matching and gave some examples of that. Then the speaker described what is Convolutional Neural Networks and pointed out how to find the patterns, how does CNN handles color images, also generalized the layout of a CNN and how the flatter works. Finally, she demonstrated the application of the medical domain. She specified the Automatic Tuberculosis Screening System based on Deep Learning, and also Classification and Segmentation on Brain tumor using Faster R-CNN.



WORKSHOPS

Workshop on Personality Development



Personality development is an important part of human life. Mrs. Mithulan Renusha (Lecturer in HRM, Faculty of Management Studies and Commerce, UoJ) was the resource person for the workshop on "Personality Development" which was held on the 27th of March 2021. The first session started with an icebreaking activity. The session was divided into two parts, one about personality development as an interviewee and personality development as an employee. Under the interviewee part she discussed interview preparation, Do's and Don'ts in the interview. As for the employee, she explained about table manners, why those things are important, and 10 important rules of table manners etc. 40 students from the final year of the Department of Computer Science participated in this in-person event.

How to cope with stress in online learning during the COVID-19 pandemic situation?

A webinar titled "How to cope with stress in online learning during COVID-19 pandemic situation?" was organised by the IEEE-SB-UoJ and held on 30th of December 2020. Ms. Rasini Bandara (Psychologist at Mindheals, Visiting Lecturer, Public speaking and Personality Development Coach) was the resource person for this webinar. The session was mainly conducted by interactive question-answering. She also shared her journey and experiences with the IEEE over the past years.



CODING COMPETITIONS

IEEEXtreme 14.0



IEEEXtreme is an intellectual sport where coders race each other to solve the most algorithmic problems within a limited amount of time. They are all about your algorithmic problem solving skills, data structures knowledge, and implementation skills. Scoreboards update in real-time, and participants feel exhilarating when they solve a difficult problem and jump ahead of their competitors. IEEEXtreme 14.0 was held on 24th of October 2020. There were 17 teams representing the University of Jaffna. Seven of the teams from UoJ were able to keep their ranks within the top 100 teams in Sri Lanka.

Google Hash Code 2021 - Virtual Hub

The IEEE-SB-UoJ organized a virtual hub for Google Hash Code 2021. There were over 20 teams registered for the virtual hub of our student Branch. The online qualifications round was held for a duration of 4 hours from 11.00 p.m. of 25th February to 3.00 a.m. the next day. Since the event was required to be held as a virtual event due to the Covid pandemic situation globally, we provided Zoom cloud meeting links to facilitate team communication. We also provided a mentor for all the teams. Ten teams participated in the day of the event and out of them the three teams "Time Succeeders", "Aurora" and "Sharpshooters" performed very well and were able to receive certificates for the qualification round from Google.



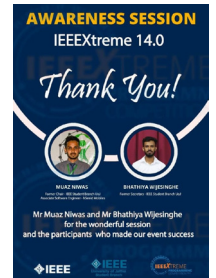
Celebrating IEEE Day 2020

"Celebrating IEEE Day" was conducted as a webinar by the IEEE-SB-UoJ on the 6th of October 2020. The event commenced with an introductory speech by Mr. Nayananga Muhandiram (Chair/IEEE-SB-UoJ). Thereafter, Mr. Dimuthu Anuraj (Founder Chairman/IEEE-SB-UoJ) gave an overall idea and benefits of IEEE. He also gave an introduction to how the IEEE-SB-UoJ was initiated. He highlighted the benefits of participating in IEEE Conferences and Congress, and using IEEE Xplore, IEEE DataPort and IEEE Collabratec. After that, he shared his ongoing journey with IEEE.



IEEEXtreme 14.0 Awareness Session

An awareness session for IEEEXtreme 14.0 was conducted as a webinar organized by the IEEE-SB-UoJ on 17th of October 2020. The event started with the introduction speech by Mr. Nayananga Muhandiram (Chair/IEEE SB-UoJ). Mr. Muaz Niwas (Former Chair/IEEE-SB-UoJ) gave an overall idea about IEEEXtreme. He then mentioned how we can face this challenging competition. Thereafter, Mr. Bathiya Wijesinghe (Former Secretary/IEEE-SB-UoJ) explained about major aspects of IEEEXtreme. Both of them gave a brief idea about data structures and how it can be used with some sample program codes. Finally, they motivated the members for the IEEEXtreme 14.0.



IEEE Awareness Session

IEEE-SB-UoJ organized an "IEEE Awareness Session" on 24th of December 2020 through online to disseminate knowledge about IEEE to students, fostering an interest in IEEE and its related privileges for its members. Mr. Chamika Sudusinghe, the Student Representative of IEEE Sri Lanka Section gave an understanding of what IEEE does and why should students take IEEE membership. This awareness session was a subgoal of attracting more student members towards the IEEE-SB-UoJ.



IEEE ANDAHARAYA 2021

IEEE Student Branch of the University of Jaffna collaborated with the Student Activities Committee of IEEE Sri Lanka Section and organized 'IEEE Andaharaya' Awareness session with the theme "Ganapathi Wannama" a praising of Lord Ganesha, the God of wisdom, prosperity, and good fortune. This session was held on 07th of August 2021 via Zoom with the keynote speaker Miss Ayomi Gunasekara (Former Co - Chair IEEE Techno Meetup Sri Lanka, Former University Ambassador at IEEE SLInspire). The Student Activities Committee of the IEEE Sri Lanka Section was the main organizer of all "IEEE Andaharaya" events conducted simultaneously in all the Student Branches of Sri Lanka and offered advice, guidelines, and guidance for Student Branches to organize the event in their own Student Branch. The students of the Faculty of Engineering and the Faculty of Science of the University of Jaffna participated in this session. There were 226 participants from both faculties for this event.



At first, Miss Ayomi Gunasekara gave a brief introduction to IEEE and the IEEE Student Branches in Sri Lanka. Then she introduced about the "IEEE Andaharaya" awareness session which was being held all over Sri Lanka at that moment. Then the speaker shared her volunteering experiences which she gained from working with IEEE. She pointed out Academic Resources and career guidance, IEEEXtreme, Awards and recognition, and also mentioned why we should volunteer for IEEE. Finally, the speaker discussed the national-level projects of IEEE and also how we can get IEEE student membership. Towards the end, an interesting Kahoot session was conducted to get a reminder about IEEE and to inspire students.

IEEEXtreme 15.0 Awareness Session

IEEE-SB-UoJ organized an "IEEEXtreme 15.0 Awareness Session" on 5th of September 2021 via online to give ideas about this global coding competition to our branch members. Mr. A.J. Nickson Joram, who is the Sri Lanka section and IEEE-SB-UoJ ambassador for IEEEXtreme 15.0 was the speaker for this session. He gave insights about the past IEEEXtreme competitions and also explained our members about the procedure to take part in the competition. He further encouraged our members to take part in this largest coding competition and gain more skills.



Learn with IBM

A webinar on "Learn with IBM" was held on 28th of December 2020 via Zoom. The session was facilitated by three speakers: Ms. Melissa Sassi (Global Head of IBM Hyper Protect Accelerator, Chair of IEEE's Digital Intelligence Working Group), Ms. Phila Phungula (IBM Z Developer Advocate), and Ms. Lella Halloum (IBM Student Hub Senator & ZAmbassador). Ms. Phila Phungula described the project management of IBM and Enterprise Computing. She described about how to walk on the path of Enterprise Computing. Ms. Lella Halloum introduced details about creating an account in IBM and registering for a mainframe computing course. Ms. Melissa Sassi described building a personal brand. She explained about engaging with industry peers, and building unique and emotional connections.

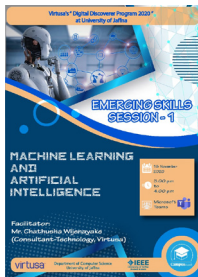


Digital Discoverer Programme - Virtusa

The Virtusa Campus Team partnered with the IEEE-SB-UoJ and CompSoc of the University of Jaffna and launched the Digital Discoverer Programme 2020. A series of awareness sessions was conducted to improve the students' core skills, soft skills and emerging skills. This collaborative programme attracted over 200 students participants from UoJ.

Introduction To Quality Engineering

Quality Engineering is the discipline of Engineering concerned with the principles and practice of product, and service quality assurance and control. To understand the importance and the fundamentals of Quality Engineering, this session was conducted by Ms. Rangika Perera (Senior Manager - QA, Virtusa) on 25th of November 2020. She covered the session by speaking about what is quality assurance and quality engineering, how is the work happening in the quality assurance team, and test design techniques. She gave a real example of the quality assurance process used in Virtusa.



Artificial Intelligence and Machine Learning

Artificial Intelligence (AI) and machine learning (ML) are terms that have created a lot of buzz in the technology world and for good reason. They are helping organizations to streamline processes and uncover data to make better business decisions. They are advancing nearly every industry by helping them to work smarter, and they are becoming essential technologies for businesses to maintain a competitive edge. The session was held on 18th of November 2020. Mr. Chathusha Wijenayake (Consultant-Technology - Data Science, Virtusa) was the resource person.

Project Management Methodologies

Project management is the process of leading the work of a team to achieve goals and meet success criteria at a specified time. A session on "Project Management Methodologies" was held on 30th of November 2020 and Mr. Lahiru Rathnapala (Senior Manager - Delivery, Virtusa) served as the resource person. This session was helpful to the students to structure, organize methods and offer a unique opportunity to perceive new skills. The speaker mainly focused on the areas that are project management, importance of project management, project management process, project life cycle, and essential skills of a project manager.



User Interface/User Experience (UI/UX) Design

A session on UI/UX Design was held on the 7th of December 2020. The Webinar was conducted by Mr. Rasika Gunasena (Architect, UI/UX - Specialist, Virtusa) with Mr. Udana Ekanayake (Senior Consultant - Specialist UX, Virtusa). Mr. Udana Ekanayaka covered the UX design part and explained the UX Design process, creation of wireframes, UX tools, and other UX development-related topics. As a second part of the session, Mr. Rasika Gunasena covered the UI development part by focusing on the UI development process, UI development frameworks, and the use of Web Accessibility Evaluation (WAVE) tools.

Introduction to Docker and Kubernetes - IFS

Docker is a containerization platform, whereas Kubernetes is a container orchestrator for container platforms like Docker. The IEEE-SB-UoJ collaborated with IFS and presented a two-day webinar "Introduction to Docker and Kubernetes" on 3rd & 4th of June 2021 via Zoom. Speakers for the event are Mr. Mario Fernando (Cloud Platform Engineering Architect, Kubernetes, DevOps, SRE, MultiCloud, Technology Evangelist) and Mr. Kasun Kulathunga (Senior DevOps Engineer at IFS). Nearly 250 participants attended these sessions.



Waterfall vs. Agile: Which one should you choose for software development?

Dr. Manivannan Siyamalan
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University of Jaffna.

Agile and waterfall are two popular software development approaches that are used in software industry for developing software. This article aims to briefly explain these approaches, their advantages and disadvantages, and discuss in which scenarios one is more suitable than the other.

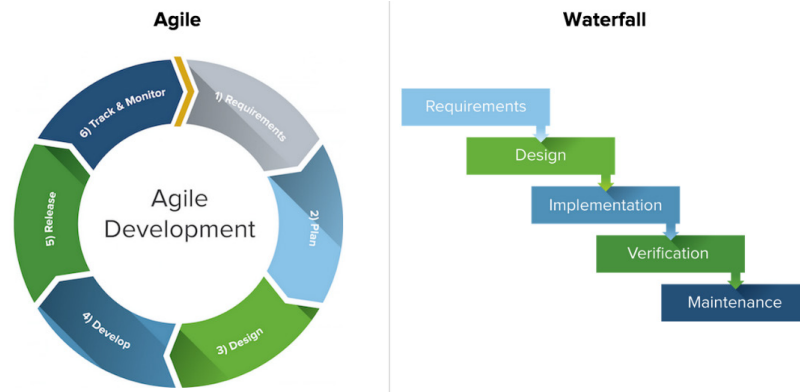


Figure 1. Waterfall and Agile approaches for software development

Waterfall Model

Waterfall is one of the oldest approaches for software development [1], and it was first introduced by Dr. Winston W. Royce in a paper published in 1970 [2]. Waterfall model is easily understandable by software developers and testers as it has a rigid structure and well-defined phases. This model is called the "waterfall model" because the software development using this model systematically progresses from one phase to the other like the water flows in a waterfall. This model is also known as *plan and documentation driven* model, as all the requirements must be well understood, and all the activities must be well planned before starting the project development. In addition, after completion of each phase the deliverables of that phase must be documented, and the documents must be approved by signing as completed. You can't move to the next phase until its previous one is completed. Therefore, once you have progressed going back and making changes in previous phases is difficult and costly as it requires changes in the documents which are already approved and signed off as completed.

There are mainly five well defined phases in this model (Figure 1), which includes planning, design, implementation, testing, and maintenance. The planning phase includes requirement gathering, feasibility study and project planning (cost estimation, determining milestones, assigning members to teams, etc.). In this phase the clients and the development team agree on the requirements, constraints and the deliverables, after that there is almost no correspondence between them until the system is delivered in its entirety at the end of the project. In the design phase, the development team analyses the requirements and come up with a system architecture which depicts the design of the system. In the implementation phase this architecture is divided into components and these components are implemented as software. Some unit testing is also conducted in this phase to ensure correctness of these components. After that, these components are integrated as a system and then the entire system is tested to ensure proper functioning. Finally, the system is deployed at the client side and maintained. Maintenance includes user training, fixing bugs which are identified after deployment, and minor changes requested by the clients to the system.

Waterfall model provides several advantages. This is a well-suited model for projects where requirements are very well understood and fixed. As this model has a rigid structure, fixed requirements, and well-defined milestones the development team just follows the plan, and hence, project development and management are much easier. In addition, proper documentation is produced at the end of each phase, which provides a way of communication between different teams and allows dispersed teams - requirements could be gathered in one part of the world by a particular team, and the requirement specification document could be sent to the other team which is in a different part of the world for design. Once the design is completed, the system design/technical specification document can be sent to another team for implementation and so on. This also allows software companies to outsource some of their work, thanks to the documentations and fixed requirements.

However, various issues also exist with this model. It is costly to change or refine requirements which are finalized at the planning phase. Since the user is removed during the project development, he/she can't see the progress, and has no idea about how the final system will look like. If the users have not much knowledge on information systems, they may not explain their requirements properly and fully. This will lead to a less usable system and higher user dissatisfaction. In addition, more focus and time is given to planning and documentation than to user satisfaction.

Agile Software Development

Before the year 1990 developers thought that the best way to develop better software systems was through careful project planning, and therefore, Waterfall model remained popular. However, as discussed in the previous section, Waterfall model has many limitations, including, lack of user interaction, difficult to accommodate requirement changes, significant overhead due to planning, designing and documentations. Due to dissatisfaction with the plan-driven models, by 1990's software companies started exploring lightweight models that allow more flexibility and less overhead in planning. Several new software development methodologies such as Scrum, Rapid Application Development, and Extreme Programming were introduced in this line. These are iterative approaches, which support to change of requirements, early and frequent software delivery. These approaches are known as the earliest methods in the history of Agile, although at that time there were no notion about "Agile methods". In 2001, a group of seventeen software developers met at a resort in *Snowbird, Utah* to discuss these lightweight development methods in order to speed up development process and they published the "Agile Manifesto" [3], and Agile comes into focus.

In plain English, Agile is a term which refers to adaptive processes. The Agile Manifesto laid on four values and twelve principles [4]. Unlike the Waterfall model, Agile values and principles give more emphasize on working software, flexibility (welcoming and responding to changes), supporting frequent and early delivery, customer collaboration and satisfaction, etc. Basically, Agile is not a methodology, but it is a set of values and principles. "Agile software methodologies" is an umbrella term which refers to the methodologies which follow the values and principles of Agile. Under this umbrella, Extreme Programming [5] and Scrum [6] are well-known examples for Agile development and project management techniques respectively.

Agile software methodologies have several advantages. They don't require all the requirements upfront, and allow evolving requirements. Only little planning is enough to start the project. As they are iterative approaches, each iteration focuses on adding features to the final system. At the end of each iteration user will get a chance to go through the system and allowed to test and refine his/her requirements. In this way, the final system will meet user requirements and user satisfaction also will be achieved.

However, Agile methods also have various limitations. Change of requirement over time adds complexity to the system design and development. As there is no proper planning, the structure of the system tends to degrade over time, and hence, accommodating additional functionalities to the system will be harder and harder. Some Agile approaches such as Extreme Programming try to refactor the system time to time to improve the maintainability of the system, which will require additional time and cost. Project management is difficult as the requirements are changing and there are no well-defined milestones. There is no end date of the project, particularly, when the user is changing the requirements time to time. User involvement is necessary to get the feedback of the system over time. Agile requires co-located, high skilled developers as they have to work on all the phases of the system from gathering requirements to system delivery. As there is no proper documentation, maintainability of the system becomes difficult over time.

Which one should you choose?

Each software project has unique requirements and challenges, and different development methodologies have different advantages as well as limitations. Therefore, there is no single methodology which can be suitable for all the software projects. The methodology should be selected based on the circumstances, which include, the type of requirement (fixed or adaptive), the size of the project (small, medium or large) and its complexity, whether user involvement is necessary or not, whether user is available to get continuous feedback about the system or not, time to market the project, the type of development team (high skilled or not), whether the development team is co-located or not, etc. For example, Waterfall would be the better choice when the requirements are fixed, the project is large and complex [7], the user is busy so it is difficult to get his/her feedback time to time about the system releases, the development team is mixed with both low to high skilled developers, the team is dispersed, etc. On the other hand, Agile is more suitable when the initial requirements are fuzzy and keep changing over time, the size of the project is small to medium, the development team is a high skilled one so that the team can work on all the phases of the system development, including requirement gathering, design, implementation and testing, the team is co-located so that they can brainstorm the problem and come up with solutions, etc.

References

1. *Eight Models of the System Development Life Cycle*, <https://www.innovativearchitects.com/KnowledgeCenter/basic-IT-systems/8-DLC-models.aspx>, available online, Accessed on 08/09/2021
2. *Waterfall Model: What Is It and When Should You Use It?*, <https://airbrake.io/blog/sdlc/waterfall-model/>, available online, Accessed on 08/09/2021
3. *The History of Agile*, <https://www.planview.com/resources/guide/agile-methodologies-a-beginners-guide/history-of-agile> available online, Accessed on 08/09/2021
4. *Manifesto for Agile Software Development*, <http://agilemanifesto.org/>, available online, Accessed on 08/09/2021
5. *Extreme Programming: A gentle introduction*, <http://www.extremeprogramming.org/> available online, Accessed on 08/09/2021
6. *What Is Scrum Methodology? & Scrum Project Management*, <https://www.digite.com/agile/scrum-methodology/>, available online, Accessed on 8/09/2021
7. *Agile vs Waterfall: What's Best for Your Projects?* <https://www.forecast.app/blog/agile-vs-waterfall>, available online, Accessed on 08/09/2021

Graphene field effect transistor

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 University of Jaffna.

Graphene is a single layer of carbon atoms arranged in a uniform hexagonal lattice consisting of sp^2 hybridised C-C bonds. Extremely thinner structure and unique electronic properties made it as one of the most studied material in the first decade of the 21st century. Due to its single layer structure, it was really difficult to make graphene until 2009. The process for extraction of graphene monolayers from bulk graphite using simple mechanical exfoliation method along with the first graphene field effect transistor (GFET) was first reported in 2004 (Novoselov et al., 2004). However, graphene has been studied theoretically for over 70 years due to its unique 2D structure with atomic layer thickness (Wallace, 1947). Figure 1 (a) illustrates the hexagonal graphene lattice. We knew that every C atom has four electrons in its outer orbit. As in Figure 1 (b), three of them will be shared with the adjacent C atom and the fourth one will be left alone (filled in the 2pz orbit) in the lattice.

This fourth electron will be placed perpendicular to the graphene plane and this electron (which is referred to as the π -electron), is responsible for the high electron densities, electrical conductivity and extremely high electron mobility of graphene. Due to the lattice symmetry the electronic band structure for graphene at low energies has a linear conical shape, as shown in Figure 1 (c). The density functional theory predicts that the conduction and valence bands of graphene are cones meeting at the Dirac points. Hence, intrinsic graphene can be considered as a semiconducting material with zero band gap. Experimental and theoretical studies demonstrated that the electrons and holes at the Dirac point have zero effective mass. Due to lower effective mass, they can travel distances upto a micrometre (which is 40 times greater than copper) without scattering in a graphene lattice. This phenomenon is called ballistic transport and is the reason for the extremely high electron motilities of graphene (about $200,000 \text{ cm}^2\text{V}^{-1}\text{s}^{-1}$) at room temperature (Bolotin et al., 2008).

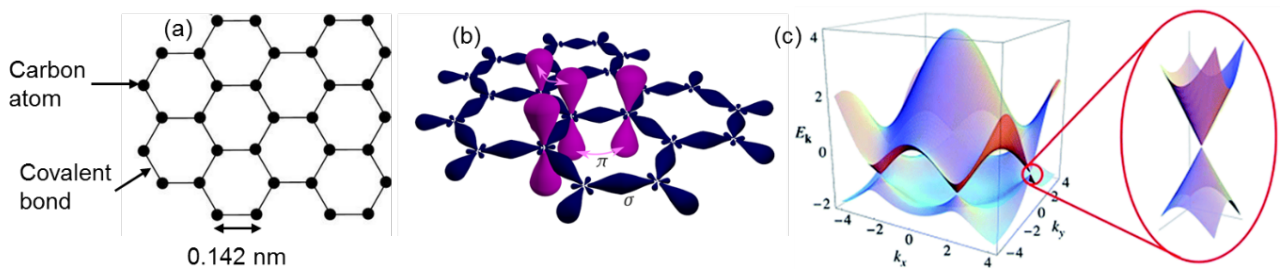


Figure 1: (a) The honeycomb graphene lattice (b) electronic bonds in a graphene lattice along with σ and π electrons, (c) electronic energy dispersion in the honeycomb lattice and zoom-in of the energy bands close to one of the Dirac points

The Graphene FET (GFET) consists of single layer of graphene as a channel between source and drain electrodes as shown in Figure 2 (a). Generally, the substrate isolated by a dielectric (mostly thermally grown SiO_2) material will be the gate terminal in the electrode. Graphene FETs are highly sensitive to their immediate environment and tethered probes when they are gated using an electrolyte and are widely used as biosensor platform (Murugathas et al., 2020). Particularly, the uniform 2D channel eliminates the device to device variation, which is a drawback in the CNT network FETs. Due to the zero bandgap of graphene, typical GFETs exhibit ambipolar behaviour. Ambipolar means, the FET shows both n-type and p-type behaviour with the gate voltage. The transfer characteristics is the variation for source drain current (I_{ds}) under fixed source drain voltage (V_{ds}) and variable gate source voltage (V_{gs}). By changing the gate voltage, the carrier density of the graphene will be modified, and hence, the current through the graphene will be modified. This will subsequently control the Fermi level of the graphene. The Transfer characteristic of a typical GFET is illustrated in Figure 2 (b).

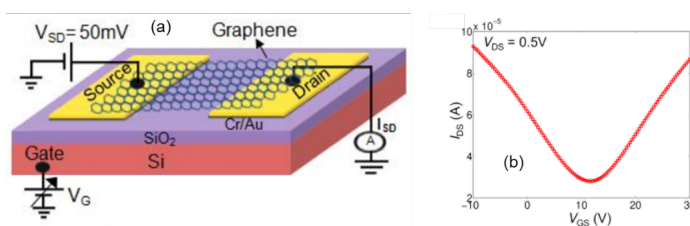


Figure 2: Schematic of (a) GFET devices with external connections for transfer characteristic measurements and (b) transfer characteristic of typical graphene FET.

Figure 3 illustrates the transfer characteristics of a GFET and the position of the Fermi level in different regions. In region 1, the Fermi level is below the Dirac point, and hence the conductivity (or current I_{ds}) is hole-dominated. The conductivity reaches the minimum point where the gate voltage is referred to as the Dirac voltage, and at this point, the Fermi level is at the Dirac point. When the gate voltage increases further, the Fermi level will be shifted up, and the electron concentration will increase, and they become the majority carriers in region 2. Due to massless charge, and extremely high mobility carriers, the current at the Dirac point is also considerably high for graphene FETs. Hence, the on-off ratio of monolayer graphene FETs are much lower and generally between 1 and 10. Theoretically, the Dirac point of an intrinsic graphene FET must be zero voltage as the band gap of graphene is zero.

However, the Dirac voltage of a GFET can be shifted positively or negatively due to the dopants and charged molecules on the graphene surface. Generally, the GFETs on a SiO_2 surface with a channel open to the environment show a positive Dirac voltage. This is due to the adsorbed oxygen and water molecules from the atmosphere. The oxygen species, including O^- , O_2^- , and O^{2-} trap the surface electron from the graphene and shift the Fermi level below the Dirac point. Metals such as Ti, Fe and Pt on graphene can shift the Dirac voltage negatively by doping the graphene with electrons.

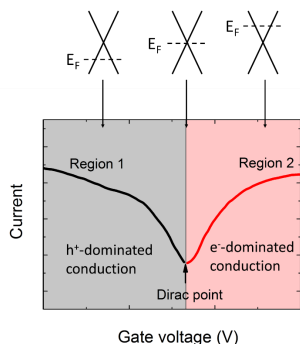


Figure 3: Schematic of transfer characteristic of typical graphene FET and the band structure for each section (E_F denotes Fermi level)

The application of GFETs are widespread due to the unique π electron and the uniform monolayer structure. GFETs are widely used in Biosensor applications as the π electrons can be used to immobilise the biomolecules including DNAs and proteins on the graphene surface and the conductivity of the graphene can be modulated by the electronic changes occurred in the biomolecules. In university of Jaffna, we are working on exfoliating graphene from Sri Lankan graphite for field effect transistor applications. We successfully fabricated a monolayer GFET and further works are going on characterising the GFETs.

References

- [1] Bolotin, K.I., et al., Ultrahigh electron mobility in suspended graphene, 2008, *Solid State Commun.* 146, 351-355.
- [2] Murugathas, T., et al., Evaluating insect odorant receptor display formats for biosensing using graphene field effect transistors, 2020, *ACS Appl. Electron. Mater.* 2, 11, 3610-3617.
- [3] Novoselov, K.S., et al., Electric field effect in atomically thin carbon films, 2004, *Science* 80, 306, 666.
- [4] Wallace, P.R., The band theory of Graphite, 1947, *Phys. Rev.* 71, 622-634.

5G makes the future

- Mr. Gihan Chathuranga

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In this globalizing world, 5G telecommunication would be the next huge improvement. 5G is the fifth-generation technology in mobile networks. It is designed to provide extraordinary data capabilities, prodigious data broadcast, and unhindered call volumes. This advancement will entirely change our lifestyle and will give a splendid dimension to our lives. As per GSM Association's prediction, they expect to have more than 1.7 billion subscribers worldwide for 5G by 2025.

During technological advancement, the jump from 3G to 4G networks was pretty enormous. 4G to 5G enhancement is much greater and quite difficult to comprehend. 5G is advanced based on the following points:

- ▣ High increased peak bit rate,
- ▣ High system spectral efficiency,
- ▣ Lower battery consumption,
- ▣ Better connectivity, and
- ▣ Large capacity.

This enhanced technology will provide following benefits:

- ▣ High resolution,
- ▣ Provide homogeneous, unceasing persistent connectivity,
- ▣ Confer huge broadcasting data, and
- ▣ Support diversified services.

Thus many sectors will be developed. But there are some shortcomings in 5G.

- ▣ Privacy and security issues
- ▣ Development of infrastructure costs high
- ▣ Most of the old devices wouldn't be commensurate with the 5G network.

If we fix those issues, 5G will conquer the world.

As 5G has the feasibility to connect 10 to 10,000 devices and 1000 times greater bandwidth per unit area than previous networks, our whole world will be a Wi-Fi zone in the future. Till to date the United States, South Korea, and China are the countries that lead in building and deploying 5G technology. Hopefully around 2025 the whole world will be using 5G. Anyhow the fact that 5G will change the way we consume information, entertainment, and communications between people.



Switch From Internet of Things (IoT) to Internet of Value (IoV)

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Blockchain technology brings an evolutionary growth in the tech world. Most of the experts believe it will be the next era of the internet. After the COVID-19 pandemic everyone started to talk about blockchain technology. Even some

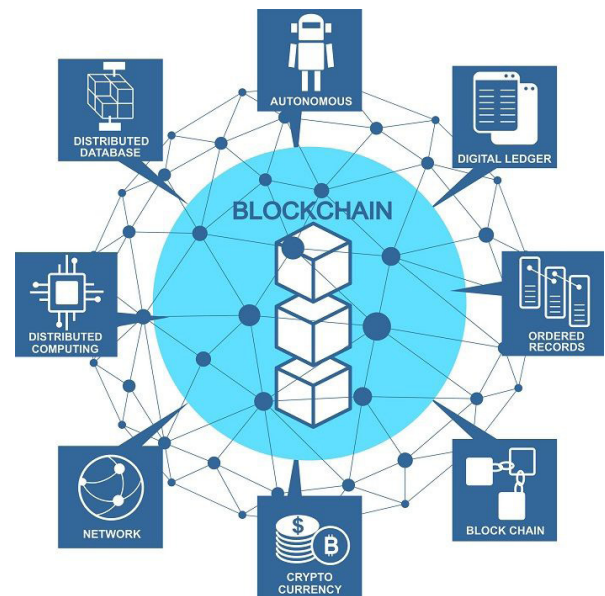
industries and business personalities started to invest in Bitcoin after witnessing how much attention it was receiving on news. Blockchain was introduced by Satoshi Nakamoto in his Bitcoin crypto currency paper in 2008. He believes it will overcome the challenges caused by the centralized banking system.

The design of the blockchain technology allows us to completely cutout the middleman and carry out the transactions directly with other peers available at the blockchain network. This is extremely efficient and significantly reduces the cost and saves time, whilst vastly improving security. Despite this, there are still some relatively significant barriers that are preventing our adoption of the technology. Most of these problems are centered around the interoperability, scalability and usability of the blockchain.

Among these issues there is a most urgent need in increasing the interoperability of the blockchain. Interoperability of the blockchain allows us to transfer the digital asset between different blockchain. This will ultimately improve scalability more easily and vastly increase our progression towards the Internet of Value (IoV). The IoV simply enables us to exchange any asset of value within another person. IoV is simply an online space, where people can transfer their digital assets between each other, eliminating the need of a middle man. The digital asset includes currency, assets, stocks, intellectual property (IP) rights, scientific discoveries and even a vote in election. The founder of IoV Ripple says, "The Internet of Value (IoV) is an internet where value is transferred as easily, cheaply and reliably as data is transferred now.

Blockchain technology supports this vision by facilitating access to value transfer infrastructure". It sounds similar to the Internet of Things (IoT). In IoT, the devices communicate with other devices and transfer their data via a centralized cloud. The digital assets moving via the central server bring a middle man's interference on the transferred digital assets. The person at the middle server can access, alter, sell data to the data brokers without our knowledge. It also slows down the transaction process incase of settlements. The IoV brings a solution by incorporating blockchain technology. It increases the transparency, and accountability of the transaction of digital assets. However, the emerging IoV is not without risk.

The first risk identified by the researchers is system risk. System risk refers to the risk of failure of an entire system or a malfunction of a single node that will collapse a whole system. The second risk is governance, this is associated with accountability, responsibility and ownership which becomes a critical challenge for the viability and structure of the entire IoV. The third risk is social culture. It concerns the culture of well-being of the entire society. Even though IoV is transforming the global economic landscape by reducing search and transaction costs, which are particularly beneficial in emerging economies, how exactly those who are not fully connected to the Internet would reap these benefits remains unclear. The last risk in IoV is privacy risk which is associated with the uncontrolled disclosure of personal information. Therefore, it is believed that IoV is essential in building the new digital economy to work together to build an open, accessible, and secure IoV for an equitable global economy with minimal risk.



Elevation to IEEE Senior Member Grade

IEEE Senior Membership is an honour bestowed only to those who have made significant contributions to the profession. In this regard,

- ☑ Dr. A. Ramanan (Counsellor/IEEE-SB-UoJ) and
- ☑ Dr. M. Siyamalan (Senior Treasurer/IEEE-SB-UoJ)

got elevated to the grade of IEEE Senior member by mid of this year.

BENVENUTO 2021

Members of the IEEE-SB-UoJ wanted to show their skills and volunteer in branch activities. So IEEE-SB-UoJ came up with an interesting idea, "Benvenuto 2021". It is a team competition that was organized as a weekly contest at the end of January 2021 among all the branch members of the University of Jaffna to identify their talents and skills in content writing, video editing, flyer designing and website creation. This is a platform provided by the student branch as an ice-breaking event for the members. One of the aims of this event is to create strong connections within members and identify volunteers for creativity works.

Contests conducted in Benvenuto are:

- ▣ Designing a flyer for introducing their team members
- ▣ Technical writing on trending technologies in Information Technology
- ▣ Video creation for introducing their team members
- ▣ Kahoot - IEEE Awareness
- ▣ T-shirt designing for IEEE-SB-UoJ
- ▣ Website designing for IEEE-SB-UoJ
- ▣ Riddles to gain extra points



Selected Articles: Benvenuto 2021

CLOUD COMPUTING

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What is Cloud Computing?

Cloud computing often referred to as "the cloud" is a service which allows people to use online services that are generally available through any device with an internet connection. This means that the user does not need to be at a certain location in order to access certain data. From computing and analytics to secure and safe data storage and networking resources everything can be delivered within a very short time. The goal of cloud computing is to deliver those services over the internet in order to offer faster innovation, flexible resources and economies of scale. It saves you a lot of money and time. The user does not have to buy any machinery or install any kind of software. Everything will be handled by the cloud platform which is running these applications.

Future of Cloud Computing

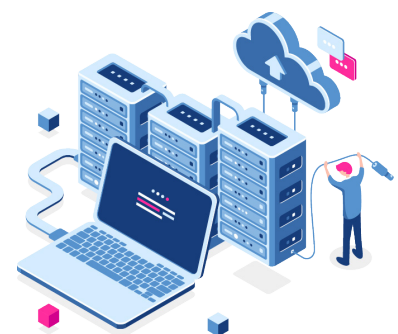
Due to the increasing number of cloud consumers in future there will be a huge demand for more secure data storages. Therefore, cloud providers should be able to provide more data centers at a lower price. There will be AI based cloud computing systems due to usage of more complex software which makes it easy to process with. Apart from that there will be a considerable risk of security of data. To avoid that situation there will be more defensive firewall systems. If we are more optimistic we will eventually be able to get the world at the user's fingertips.

Types of Cloud Computing

Cloud computing is mainly divided into two types: Deployment and Service models, where the deployment model consists of the cloud computing services are Public Cloud, Private Cloud, Private and Hybrid Cloud. Cloud deployment model is defined according to where the infrastructure for the deployment

resides and who has control over that infrastructure. Each cloud deployment model satisfies different organisational needs, so it is important that you choose a model that will satisfy the needs of your organisation.

There are three main service models of cloud computing, they are: Infrastructure as a Service (IaaS), Platform as a Service (PaaS) and Software as a Service (SaaS). There are clear differences between the three and what they can offer a business in terms of storage and resource pooling, but they can also interact with each other to form one comprehensive model of cloud computing. IaaS is the most common service model of cloud computing as it offers the fundamental infrastructure of virtual servers, network, operating systems and data storage drives. PaaS is where cloud computing providers deploy the infrastructure and software framework, but businesses can develop and run their own applications. SaaS cloud computing solution involves the deployment of software over the internet to various businesses who pay via subscription or a pay-per-use model. By using cloud computing, all users can access software and applications from the desired party, which is hosted by an external party. So without any fear, use cloud computing today, and try to get into the world of new technology.



WHAT IS BLOCKCHAIN?

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- Mr. W. M. P. Indushan Bandara Senavirathna

Final Year Honours Degree Student, Faculty of Engineering, University of Jaffna

Blockchain is known as a specific type of database management technology. It is an integration of data structure, networking and cryptography concepts available in the Computer Science paradigm. It differs from the conventional database in the way it stores data or information. The conventional database is a collection of data that is stored electronically on a computer system as it is. But in the blockchain, data is stored in the form of block and chained with the previous block via hash of the previous block (encrypted string) which is known as distributed ledger. When a new transaction is initiated by the node in the blockchain it first reaches the mempool (the transactions that haven't been written to the block-chain yet and kept in the volatile memory). The mempool is a pipeline which contains a newly arrived transaction. Then miners pick up the transaction from the mempool and solve the puzzle attached with it. The miner who solves the puzzle first, receives reward and that person owns that transaction. Once the transaction is authorized by the miner it will broadcast to other nodes in the blockchain. If all nodes accept the transaction, then it will add into the ledger as a new block. The blocks are connected as a chain in a chronological order since it is hard to temper. Through this architecture blockchain achieved immutability and decentralized properties.

Bitcoin is an oldest crypto currency based transaction platform which was introduced by Satoshi Nakamoto in 2008. He is known as an anonymous founder of the Blockchain technology. Bitcoin (BTC) is the crypto currency used at the Bitcoin network. Ethereum is a second generation blockchain that was introduced in 2013 by Vitalik Buterin, et al. Smart contract is a key feature available at Ethereum. It encourages users to develop distributed ledger applications on top of the blockchain. The applications like healthcare to manage medical data of the patients, cross-border payments as an anti-money laundering tracking system, supply chain management to track the manufacturing process of the products like wine, medicines,

etc., can be implemented on Ethereum blockchain and they can manage their access control via smart contracts. Smart contract is a piece of code implemented using a high-level programming language known as Solidity. Then it will compile through Ethereum Virtual Machine (EVM). It will provide a bytecode of the smart contracts and a unique address (Contract Address). After that, the bytecode of the contract will be stored on the blockchain network with the Contract Address. Like other blockchain nodes' accounts, smart contracts also have an account with Ether (ETH). Ether is a cryptocurrency used for the transaction at the Ethereum blockchain network.

However, blockchain technology has limitations in-terms of memory allocation, processing time, processing power, etc. Every transaction on the blockchain needs to be mined by the miner. Verification of the transaction depends on the processing power of the miner's machine. Still it is not an efficient one to store or process large amounts of data like medical images (X-ray, scanning reports), dynamically changing data (stock market details, social media user's profile updates), etc. In addition to that, blockchains are vulnerable for cyber attacks like ransomware, money laundering, and Ponzi attacks on Ethereum networks. Nowadays, these attacks raise questions on Bitcoin investments since most of the investors lost their Bitcoins from the wallet. The attackers used the victim's private keys to transfer their Bitcoin to their wallet. Also, the system developed on top of Ethereum opens a back door for cyber criminals through smart contracts. The bugs available at the smart contract became a loop for the cyber attack. Therefore, the research on blockchain technology mainly focuses on security improvement at the blockchain network.

Dear young innovators! If you are passionate about the new tech world, blockchain technology will bring that opportunity. You can apply your amazing ideas on blockchain technology and get ready to face the new era of the internet.

AUGMENTED REALITY IN BUSINESS

- Mr. G. M. S. D. Perera

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What is Industrial Augmented Reality?

Augmented reality (AR) is a highly visual method of presenting relevant digital information in the context of the physical environment and it is emerging as one of the key drivers of the tech economy. Industrial augmented reality gives a better way to create and deliver easily useful work instructions by overlaying digital content onto real-world work environments. The following are some of the best cases for Industrial AR technology that are set to emerge in the future.

Design Interior AR empowered interior design applications that are very helpful to make the right decision about the size and style of a new piece of furniture. It makes buying decisions easier by enabling us to "try on" their pieces in your room, enabling us to take photos and videos of the result. You can even see the textures.

In fashion and retail, the customers will interact with AR within the walls of the store. The customers don't have to leave their homes to have an experience, instead virtual fitting rooms help them to choose the correct size and colour of their choice. It allows customers to try virtually to pick a favourite model and sellers to select the right size of the box for a product by overlaying an image of a box over merchandise.





In addition, AR is used for various purposes, for example, a variety of industries are exploring AR solutions for faster and more effective learning. In tourism industry, AR presents a big opportunity for travel agents to provide potential tourists a more immersive experience before they travel. In the medical field, researchers are exploring the ways to perform complex surgeries with AR technologies such as NuEyes and AccuVein.

IEEE BOOST

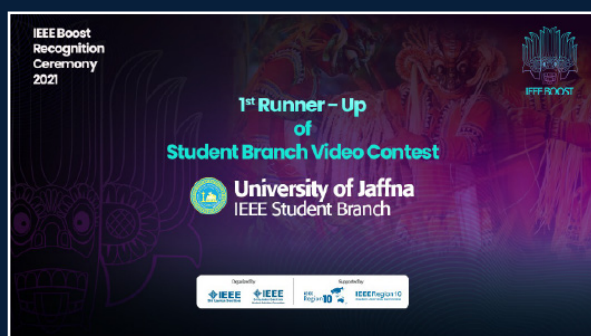
Recognition Ceremony 2021

We are extremely pleased and excited to inform you that the IEEE Student Branch of the University of Jaffna (IEEE-SB-UoJ) has been rewarded with majority recognition at the "IEEE BOOST Recognition Ceremony 2021" which was organized by the Student Activities Committee of the IEEE Sri Lanka Section and held on 29th of August. Since the inception of the IEEE-SB-UoJ in the latter part of 2018, this is the first time to receive awards and we are proud to receive the highest number of recognitions (i.e., four out of the nine recognitions) in the ceremony.

The recognitions are,

-  Best Emerging Student Branch Recognition
-  First Runner-up of Student Branch Video Contest
-  Best IEEE Andaharaya Event
-  Winner of the Proposal Contest for Membership Development Fund

Our warmest congratulations and heartiest gratitude to all members who worked hard & deserve this achievement.



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