

# NIELIT Newsletter

**National Institute of Electronics and Information Technology**

(ISO 9001:2015 Certified Organisation)

An Autonomous Scientific Society of Ministry of Electronics and Information Technology, Government of India





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## Message from the Editor-in-Chief

Dear Readers,

Welcome to this issue of NIELIT Newsletter. It captures the notable activities of the Institute from its 43 centres in different activities such as Digital Literacy, Projects on Capacity building and Livelihood of youths, Certification etc. Many of our centres started advanced courses in areas of Data Science/ Analytics, AI, Machine Learning, IoT, Embedded system, Solar technologies, Cybersecurity, etc. The data [a] quarterly grand trained candidates is 35, 6456, [b] Total accredited institute is above 900 [c] total facilitation centres are above 10,000.



Technological disruption is a chance to change the way we work, and that change is for the better. The recent surge in emerging technologies will witness huge transformations in job roles which will further reshape the future of work processes globally. As per a report of NASSCOM, about 40% of the workforces in India need re-skilling over the next 5 years to keep pace with automation and new requirements. Gartner also forecasts that AI may eliminate old jobs, but will create more new jobs globally with new skill sets under Industry 4.0. As per a report of 'India-Japan Business Partnership Seminar', Japan is looking for 8 lakh of IT experts from India by 2030. The Digitalization in all areas will create more Jobs. Learning foreign languages such as Japanese, Chinese and Arabic are also essential. With the advent of emerging technologies, re-skilling of young professions in future technologies for their new job roles is essential. NIELIT is geared up to re-skill the professionals in future technologies specifically in the area of 3D Printing or Additive Manufacturing, Blockchain Technology and Robotics Process Automation (RPA), Cyber Security, IoT, AI, Data Science, Clouds, Virtual reality etc.

Likewise, we are bringing some Technical articles from staff and students- Applications of AI, theory on 'Flipped Classroom for Re-skilling, Mobile Apps development, ICT on Real-Time, and Off-time pedagogy, Regression Analysis using Excel and Net Neutrality and National & World Aspects etc.

This issue carries detail about NIELIT Imphal of Manipur state. It was started operating in 1988 with a Centre (then CEDTI) in 24 acres. They have courses such as MCA, PGDCA, M.Sc (IT), BCA, Diploma Engineering, O/A Level and around 20 certificate courses at Imphal. They also have hostel facility for boys and girls and one Model CareerCentre. Since 2013, its training is expanded to two extension centre-[1] Churachandpur [2] Senapati.

This Newsletter highlights the noteworthy accomplishments of NIELIT within a span of 3 months (July-September 2019)-Faculty Development programs, Initiative on recruitment drive, grooming and placements of students, several summer trainings, Startup events, R&D publication of staff and students, International visit of our Scientist and Industry links or MoU with (NIT Puducherry, KMCT College of Engineering [Kozhikode], L&T Construction Skills Training Institute [Kolkata], Gautam Buddha University [Noida], Xavier Institute of Polytechnic and Technology [Ranchi] etc.

I hope that the readers would find the articles informative and I take this opportunity to request the readers for their valuable feedback at newsletter@nielit.gov.in

Happy reading!

(Dr. Yumnam Jayanta Singh)

Director/Scientist-F





## News from NIELIT Headquarter

### Ban on Single Use Plastic



In an effort to scrap single use plastic by 2022, Government of India has launched a mass awareness drive against single use plastic products. In this endeavour, NIELIT HQ has issued a complete ban on the use of single use plastic at the office premises. Items such as plastic cups, spoon/forks, plates, straws, small water bottles etc. have been banned from using in office canteen and meetings. In this regard, an awareness workshop delivered by Shri B.B. Dua, Joint Director, NIELIT HQ was organized on 23rd

September 2019 where in the ill effects of using plastic was explained. After the workshop, the employees took part in "ShramdaanDiwas" for collecting plastic wastage generated in the canteen and in and around the campus.



### 'हिन्दी दिवस- 2019'

नाइलिट (मुख्यालय) द्वारा दिनांक 13 सितंबर, 2019 को हिन्दी दिवस 2019 हर्षोल्लास से मनाया गया। इस कार्यक्रम में श्री जनक राज, कुलसचिव, श्री राजीव तलवार, मुख्य वित्त अधिकारी, नाइलिट, श्री जगदीश गोकलानी, संयुक्त निदेशक (हिन्दी), इलेक्ट्रॉनिकी और सूचना प्रौद्योगिकी विभाग, नई दिल्ली, श्री भगवान सिंह नेगी, हिन्दी अधिकारी एवं अन्य अधिकारी एवं कर्मचारी सम्मिलित हुए। कार्यक्रम का शुभारंभ श्री जनक राज व श्री राजीव तलवार द्वारा उनके संबोधन से हुआ। जिसमें, उन्होंने हिन्दी की स्थिति व व्यक्ति विशेष की भूमिका पर अपने विचार व्यक्त किए। इसी क्रम में श्री जगदीश गोकलानी, संयुक्त निदेशक (हिन्दी), इलेक्ट्रॉनिकी और सूचना प्रौद्योगिकी विभाग, नई दिल्ली द्वारा राजभाषा हिन्दी संबंधी नियमों व विनियमों में विशिष्ट रूप से प्रकाश डाला गया। इस पवन अवसर पर विभिन्न प्रतियोगिताओं जिसमें टिप्पण लेखन व अनुवाद के साथ-साथ राजभाषा हिन्दी व इसके प्रावधान



विषय अंतर्गत एक कार्यशाला का आयोजन किया गया था। इन प्रतियोगिताओं में कार्यालय के अधिकारियों एवं कर्मचारियों ने भाग लिया। विभिन्न नाइलिट केंद्र जैसे आइजोल, गुवाहाटी, दिल्ली, कोलकाता ने भी हिन्दी दिवस हर्षोल्लास से मनाया।



## News from Aizawl Centre

### Skill Development in IT & Electronics



Inaugural speech by Shri Robert RomawiaRoyte, Hon'ble Minister of State for ICT & sports, Govt of Mizoram

A one day awareness program on 'Skill Development in IT & Electronics' was organized on 3rd June, 2019 by NIELIT Aizawl. The program was inaugurated by Shri Robert RomawiaRoyte, Hon'ble Minister of State for ICT & Sports, Govt. of Mizoram in presence of Shri Lalmunsanga Hnamte, Director, Labour Employee Skill Development & Entrepreneurship, Govt. of Mizoram. Principals/representatives of Government and private colleges and Mizoram State Students Union also participated in the program.

During the program, importance of Skill Development and role and activities of NIELIT in the field of IT & Electronics skill development was discussed. On this occasion, the specially abled candidates who have successfully completed NIELIT's CCC course were felicitated.

### Fresher's Felicitation

NIELIT Aizawl Centre organized Fresher's Felicitation function 2019 at Dawrpui Multipurpose Centre on 16th August, 2019. The function was graced by Shri Lalrinawma, Hon'ble Deputy Speaker, Government of Mizoram as the Chief Guest.



Shri Lalrinawma, Hon'ble Deputy Speaker delivering the keynote address



Students Choir singing worship song and Dance Group performing CHERAW, the popular mizo traditional dance

## News from Aurangabad Centre

### Job Fair

A job fair was organized jointly by NIELIT Aurangabad, training and placement cell, Dr. Baba Saheb Ambedkar Marathwada University and the District Skill Development, Employment and Entrepreneurship Department of State Government on 22nd August 2019. 36 prominent companies like HCL, Bajaj, Hindustan Global Services, HDFC, Axis Securities etc. participated in the job fair. The job fair was inaugurated by the Vice Chancellor of the University, Dr. Pramod Yeole in presence of Dr. Sanjeev Kumar Gupta, Executive Director, NIELIT Aurangabad. Around 2165 candidates registered out of which 845 candidates were shortlisted.



### Skill Development for retired Army, Navy and Air Force Officials



NIELIT Aurangabad in association with Directorate General Resettlement has been conducting skilling programs for retired Army, Navy and Air force Officials. Officials of our Armed Forces are being provided with complete professional & hands-on- training with the aim to enable them to become self –employable, entrepreneurs and industry ready. Under this program, in August 2019, 55 retired officials have already been trained and another 75 are undergoing training.

### Hon'ble MoS, MeitY reviews NIELIT

Shri. Sanjay Dhotre, Hon'ble Union Minister of State for Electronics & information Technology, Human Resource Development and Communications visited NIELIT Aurangabad on 29th August 2019 and took stock of the activities being undertaken by the Centre.







## Foundation Day



32nd Foundation Day of NIELIT Aurangabad was celebrated on 19-09-2019. Dr. BhagwadKarad, Chairman of Marathwada Development Board was the chief guest at the function. The students presented various cultural programme.

## Workshop on Job Readiness

Model Career Centre(MCC) NIELIT Aurangabad and Training & Placement Cell, NIELIT Aurangabad in collaboration with Rubicon Skill Development Pvt. Ltd. organized Barclays Job Readiness Workshop, 'Connect with Work' for the final year students of Diploma, B.Tech and M.Tech courses from 3-5 September 2019. Various sessions on interview skills, preparation of resumes, corporate readiness values, teamwork, time management etc, were covered in the programme.



## Innovation Workshop

An innovation workshop was organized at NIELIT Aurangabad on 20-09-2019. The objective of the workshop was to encourage building innovative temperament by addressing aspects like conceptualization, models of innovations, converting an idea into business model and bootstrapping for a prototype. The students also got an opportunity to enroll for the prestigious NES innovation awards and interact with reputed industry people. Mr. Sanjay Kaushik of Nataraj Education Society (NES) was the mentor for the workshop.



## Faculty Development Programme



NIELIT Aurangabad in collaboration with Maharashtra State Board of Technical Education (MSBTE) conducted Faculty Development Training Program from 18th to 20th September 2019. A total of 23 faculty members from various polytechnics in and around Aurangabad attended the training program. They were provided training in emerging technologies and related verticals like cyber security, mobile application development, software engineering practices, IoT, PCB designing, industrial automation, embedded systems, etc. Shri. Saurabh Bansod, Sc. 'B', Co-ordinator of the training program distributed certificates to the participants of the program.

## News from Calicut Centre

### MoU with NIC, Puducherry



Dr M.P Pillai, ED, NIELIT Calicut and Dr Sankaranarayasamy, Director, NIT, Puducherry signing the MoU

NIT Puducherry has entered into a MoU with NIELIT Calicut for facilitating academic and research collaboration in an grandeur event at NITPY on 21.09.2019. The core objectives of the proposed MoU are exchange of academic & scholarly resources and to facilitate joint publications, exchange of trainees / students and faculty, jointly sponsor seminars, workshops and other academic events and to host guest speakers/lectures and share lectures over video conference / National Knowledge Network (NKN). The MoU is expected to strengthen academic & research activities of both the institutes.



## MoU with KMCT College of Engineering

KMCT College of Engineering for Women (KMCTCEW), Calicut has entered into a MoU 19 September 2019 with NIELIT Calicut to foster academics and skill development activities.

The Executive Director, Dr M.P Pillai and the Principal C Kuruvilla, KMCTCEW signed the MoU representing both NIELIT Calicut and KMCTCEW respectively at NIELIT Calicut.



## Training Programme - future@33



Shri. Nandakumar R, Sc / E 'D',

A learner-centered training programme titled 'future@33' was successfully organized by the IEEE Student branch of NIELIT Calicut in association with the Model Career

Centre & JCI Mukkom Chapter, on 26th September 2019, at NIELIT Calicut. Around 110 students participated in the programme, which focused on enhancing the participants' learning agility and improving their attitude towards acquiring life skills.

The session was conducted by Dr. Abdul Latheef Kiliyanni, an accomplished national-level trainer from Junior Chamber International (JCI), a non-profit organization of young active citizens with a global presence in nearly 120 countries. The session primarily covered topics on the different pillars of learning, importance of communication skills, and the role of friendship. The interactive session helped the participants reflect on their learning style and strategy and encouraged them to improve their personal effectiveness by acquiring the skills in demand.

## Onam Celebrations

NIELIT Calicut Staff Recreation Club in Association with Students organized ONAM Celebration 2019 – ONAVILLU on 6th September 2019. Various programs and competitions like Pookalamthasaram, Tug-of-War and Thiruvathira were conducted during the event.



Shri. Sasidharan P T, Sc / E E,

## News from Delhi Centre

### नाईलिट केंद्र राजभाषाहिन्दी प्रशंसा पत्र से सम्मानित



भारत सरकार गृह मंत्रालय राजभाषा विभाग के तत्वाधान में गठित नगर राजभाषा कार्यान्वयन समिति (उत्तरी दिल्ली) द्वारा नाईलिट, दिल्ली केंद्र को वर्ष 2018-2019 में राजभाषा हिन्दी के उत्कृष्ट कार्यान्वयन के लिए दिनांक 26 जून 2019 को समिति की छमाही बैठक में प्रशंसा पत्र से सम्मानित किया गया। प्रशंसा पत्र नाईलिट दिल्ली केंद्र के प्रभारी निदेशक श्री शमीम खाँ एवं श्रीमती अल्पना अग्रवाल, संयुक्त निदेशक एवं नामित राजभाषा अधिकारी द्वारा प्राप्त किया गया।

## Project Development during Industrial Training Programme

Industrial Training Programme in Electronics was conducted for Engineering students by NIELIT, Delhi Centre. The students developed a number of working projects like IoT based Smart Trash Barrel, Smart Door Automation, Automation & Segmentation of Fire Vigilance System and Broadcasting through Social Media Platform, Smart Railway Track Fault Detection etc.







## IT Industrial Training for Engineering Students



NIELIT Delhi Centre conducted Industrial training programmes for Engineering Students from various reputed universities on the courses of Big Data & Hadoop, Cyber Security, Python, Digital Marketing and Java Programming, Web Designing and Android. Certificates and appreciation were given to the participants on closing of Industrial Training Programs by Sh. Shameem Khan, Director I/C. Meritorious students were also appreciated with memento.

## SC/ST Job Seekers Scheme of DGE



The one year training programme of the 12th Batch of 'O' level IT Course (NSQF Level 05) and the 8th Batch of CHM-O level course has been started under National Career Service Scheme for SC/ST students sponsored by Directorate General of Employment, Ministry of Labour & Employment. Govt. of India for the session July-2019 to June 2020. A total of 50 students are undergoing training under the same.

## Agreement with University

NIELIT, Delhi Centre signed an agreement with Gautam Buddha University, Greater Noida for conducting 280 hours Advance Certification Course in Big Data Analytics. Agreement was signed by Sh. Shameem Khan, Director, (I/c) NIELIT Delhi and Sh. Bacchu Singh, Registrar of the University.



## News from Gangtok Centre

### Summer Training conducted by NIELIT Gangtok on Internet of Things (IoT)

As a part of its initiative to train students on modern technology under the Digital India initiative of Government of India, NIELIT Gangtok conducted 12 days' intensive Training on 'Internet of Things (IoT) and Python Programming using Arduino and Raspberry Pi devices' for the engineering students during the summer vacation from 28th June to 12th July, 2019.

The training was attended by the students of Centre for Computers and Communication Technology (CCCT), Chisopani, South Sikkim – a polytechnic under HRD, Govt. of Sikkim and other colleges. Fourteen students completed the training and received certificates from NIELIT Gangtok during the valedictory session which was attended by Prof. Deepak Rasaily, HoD, Department of Electronics & Communication, CCCT and other dignitaries. The students



Participants during lab sessions with the faculty members

also demonstrated various innovative applications of IoT devices developed by them. Shri Pawan Kumar Sharma, Ms Anugra Wangchuk Lepcha, Shri Arup Chattopadhyay, along with Dr. Rupam Kumar Sharma from Assam Don Bosco University were the trainers in the above training.

### Workshop on Machine Learning and Big Data Analytics



NIELIT Gangtok in association with the Department of Computer Applications, Sikkim Central University organized a Two Days Workshop on "Machine Learning and Big Data Analytics – Application to Remote Sensing from 19-20 August 2019. The inaugural session of the workshop was chaired by the Sikkim University Vice Chancellor, Prof. Avinash Khare

in presence of Shri Pradipta Kumar Nanda, chairman IEEE Geoscience and Remote Sensing Society (GSRSS), Kolkata, Shri Arup Chattopadhyay, Director-Incharge, NIELIT-Gangtok and other experts and participants. The aim of the workshop was to provide a platform to learn about current challenges in developing strategies and tools to address the issues pertaining to remotely sensed data in addition to providing an opportunity to share and exchange ideas among peers of the respective research community. Director-Incharge, NIELIT-Gangtok, Shri. Arup Chattopadhyay informed about the initiatives of MeitY, (Govt. of India) in generating trained manpower in the state-of-the art IT and IT Enabled services from 41 NIELIT centers at pan India level under Digital India.



## Python Programming Training

A 12 days' intensive Training on Python Programming for was conducted from 15-27 July, 2019 with the aim of training engineering students on modern technology to make them industry ready.

The training was attended by 12 students of Sikkim Manipal Institute of Technology and Siliguri Institute of Technology and other colleges. Shri Rajendra Chhetri, Director, Department of Information Technology (DIT), Government of Sikkim and other dignitaries participated at the certificate distribution ceremony. During the session, the students demonstrated the skills acquired by them in Python programming. Shri Khagendra Sharma, Shri Vivek Thapa, Shri Pawan Kumar Sharma, Ms Anugra Wangchuk



Students along with officials of NIELIT, Gangtok and DIT, Govt. of Sikkim

Lepcha, and Shri Biky Chowhan, participated as resource persons in the above training.

## News from Guwahati Centre

### 3rd PRSG Meeting of Medical Electronics Project

The 3rd PRSG meeting of Medical Electronics project of Silchar Extension Centre was conducted on 19th July 2019 at NIELIT Guwahati under the Chairpersonship of Smt. Krishna Gohain, IAS, Commissioner and Secretary, Department of Health, Govt of Assam. Dr. R K Talukdar, Principal, GMCH; Dr (Mrs.) Jyotismita Deka, SMCH; Shri Rashid Shaban, Scientist D, MeitY; Shri Manab Kalita, Scientist 'E' and Chief Incharge of the project were also present. Under the project, Medical Electronics and R&D Lab have been set up to provide repair and maintenance services of medical equipment in the state.



### Educational Tour of School Student

Three schools of Cachar District visited NIELIT Silchar Extension Centre during 28th August to 30th August 2019 as a part of Educational Tour. Various activities like – presentation on latest IT trend and Cyber Security, practical usage of IT, Quiz Competition/Drawing Competition on 150th Birth anniversary of Mahatma Gandhi, were organized by NIELIT for these students.



### Farewell of Shri K. Baruah

The employees and students of NIELIT Guwahati bid a warm farewell to Shri K. Baruah, then Director, NIELIT Guwahati in a gathering held on 30th of



August, 2019 at NIELIT Guwahati. Shri K. Baruah has served the organisation as the Director of the Guwahati Centre for nearly fourteen years. We, the entire NIELIT family take this opportunity to wish him success in his future endeavor !

## News from Haridwar Centre

### Destination Uttarakhand 2019

NIELIT Haridwar participated in the "Destination Uttarakhand 2019" mega exhibition at Dehradun, Uttarakhand from 18-20 July to 20 July 2019. The exhibit of NIELIT was visited by the public at large comprising of young professionals, jobseekers, school children etc. The Centre was felicitated with Memento by the Event Organizers.







## Joint Secretary, MeitY Visits NIELIT Haridwar



Shri Gopalakrishnan S., Joint Secretary, MeitY, visited NIELIT Haridwar campus in August 2019. Director-in-charge, NIELIT Haridwar, Shri Anurag Kumar apprised him about the progress of the Centre. During his visit, he interacted with the students and planted saplings in the campus.

## Workshop on 'Innovation, Digitalization and Start-ups'

NIELIT Haridwar conducted a workshop on "Innovation, Digitalization and Startups" at Govt. Polytechnic, SIDCUL Haridwar on 05.9.2019. About 30 Diploma students and faculty members attended the workshop.



## Workshop on "Digital Payment Awareness and Information Security"

NIELIT Haridwar conducted workshops on "Digital Payment Awareness and Information Security" at Faculty of Engineering & Technology, Gurukul Kangri Vishwavidyalaya; Government School of Nursing and at Chinmaya Degree College of Haridwar during Aug-Sept 2019. About 370 students attended the workshop and were informed about the best practices in digital payment to minimise the security threats.



## Training on Internet of Things (IoT)



A workshop on "Internet of Things (IoT) and its applications" was conducted by NIELIT Haridwar on 31.8.2019 at Dep. of Computer Science, Gurukul Kangri Vishwavidyalaya, Haridwar demonstrating various applications developed by NIELIT students. More than 70 MCA students of the Vishwavidyalaya attended the programme.

## News from Kohima Centre

### Launch of eNotice App



eNotice Application developed by NIELIT Kohima was launched by Shri Bongkhao Konyak, Hon'ble Advisor of Dept. of Underdeveloped Areas (DUDA), Govt of Nagaland on June 27, 2019 at NIELIT Kohima. Through this App, the faculty and students will get all the notices issued by the centre anytime and anywhere ensuring faster and more efficient dispatch of information.

### Naga Tech Fest



The Chairman, DTE and other officials with the winners of various competitions including NIELIT Kohima students

NIELIT Kohima took part in the Naga Tech Fest held from 21 to 23 August 2019 where its students entered various contests and bagged 3rd prize in debate and 2nd & 3rd prize in Web Designing competitions. The three-day festival was organised by the Department of Technical Education DTE, Govt. of Nagaland, where Students from the six polytechnic institutes showcased their ideas, innovations and inventions among other things.



## Annual Sports Meet

The Annual Sports Meet of NIELIT Kohima was held during September 12-14, 2019 at Indira Gandhi Stadium, Kohima, with great zeal, excitement and an exuberant atmosphere. It began with the Director i/c welcoming the gathering and encouraging them to compete in a healthy sportsmanship spirit. The students entered into the spirit of the occasion with the oath taking ceremony. During the three-day meet, the students competed in a variety of outdoor and indoor games, team & individual sports. Further, friendly matches were also played between the students & faculty members.



## News from Jammu & Srinagar Centre

### Training for J&K Power Development Department

NIELIT Srinagar and Jammu conducted a training programing the field of AutoCAD and Information Security for the technical professionals of J&K Power Development Dept. Govt. of Jammu & Kashmir. A total of nearly 100 Officials were trained at NIELIT Srinagar & Jammu Centre.



### Placement Drive for Women Candidates



NIELIT Srinagar along with NCC(National Career Services) conducted placement drive for women candidates of cyber shikshaa course on 22nd July, 2019. Myasa Network Solutions and Infinity Access Technologies private limited were among the

companies who participated in the event. Around 5 women candidates were placed during the placement drive.

### Industrial training on IoT and Python

NIELIT Jammu conducted Industrial Training on IoT-Internet of Things for 25 students of Jammu University and training on Python for 60 Engineering students from different colleges of Jammu during the month of August 2019 and September 2019.



## News from Kolkata Centre

### DG, NIELIT reviews Kolkata Centre



Director General, NIELIT and Joint Secretary, MeitY, Dr. Jaideep Kumar Mishra visited NIELIT Kolkata Centre during 30-31 July, 2019 and reviewed its activities.

### Workshop on CCS (Conduct) Rules

A Workshop on CCS (Conduct) Rules conducted by Shri Sanjit Choudhury, Deputy Director, MeitY was organized on 29.08.2019 at NIELIT Kolkata to sensitize its employees on Conduct Rules & CCS Rules to facilitate them to work in a fair and rightful manner.



### Visit to Sheffield Hallam University, UK by Dr. Y. Jayanta Singh (Director-Kolkata)



Director, NIELIT Kolkata, Dr. Y. Jayanta Singh visited Sheffield Hallam University, one of the UK's largest and most diverse universities, in Sheffield, South Yorkshire, England on 30.07.2019 for possible joint academic activity (Cyber Security & Blockchain).





## Workshop on e-Waste Management sponsored by Govt. of West Bengal

A one-day workshop on Capacity Building of stakeholders on e-Waste Management Rules & RoHS was organised by West Bengal State Pollution Control Board (WBPCB) in association with NIELIT Kolkata on 12.09.2019 at Durgapur, WB. Mr. Bhaskar Banerjee, Scientist 'C' of NIELIT Kolkata was the resource person for the workshop. The workshop was very interactive and all the stakeholders had lively discussions on e-Waste management rules. 81 nos. of participants attended the Workshop. A one day training was also organized on 20th September 2019 inaugurated by Shri R. Majumdar, IAS, Commissioner (Environment Dept, WB), Shri Rajesh Kumar, IPS, Member Secretary (WBPCB) and Dr. TK Gupta, Chief Engineer (WBPCB) & Dr. Y. Jayanta Singh. The training was attended by 111 participants.



## Scientific Research Visit of NIELIT Officials to Japan

Shri Kalyan Baital, Scientist-C, NIELIT Kolkata completed a research visit to WEN lab for VLSI Test Innovations, Graduate School of CSc and System Engg, Iizuka, Kyushu Institute of Technology (KIT), Japan as a Short Term Visiting Student Fellow during the period 15-28th Sept 2019 under the supervision of Prof. Xiaoqing Wen, Dept of Computer Science and Networks, Faculty of CSc and Systems Engg, Kyushu Institute of Technology upon invitation to carry out research collaboration on power aware design for VLSI and embedded systems. It was a very fruitful research information exchange and discussions that led to two joint



research projects, namely power-aware scheduling and test-task-aware scheduling. This effort will lead to quality research publications in near future.

## Inauguration of Livelihood Projects - Sponsored by MeitY



The MeitY funded Livelihood project titled "Empowerment of SC-ST Youth & Women on Enhancement of Livelihood activities" was inaugurated at Siliguri IT Park on 27.08.2019 in presence of Principal and Assistant Principal of ITI, Siliguri and In-Charge, Webel IT Park among others. The project is led by Shri D. Bhadury, Chief Coordinator (IT for Mass). Total 40 students have registered for this training. The Govt of West Bengal funded Livelihood project titled "Enhancement of day-to-day livelihood activities of local youth using information technology and related tools and simple methodology" was inaugurated at Cooch Behar Polytechnic College, Cooch Behar on 9th September 2019 in presence of Hon'ble District Magistrate, Cooch Behar, Director-NIC, Principal, Cooch Behar Polytechnic College among others. Total 70 students have registered for this training.

## Placement at CTS for SC Students under MeitY funded Project

A placement interview was organised for the students trained under the MeitY funded project titled "Capacity building for the empowerment of SC candidates on ICT at Cooch Behar district of West Bengal" by NIELIT Kolkata on 05.09.2019. Out of 40 candidates appeared, total 17 candidates have got placement in TCS.



# NIELIT CENTRE

Extension Centres: Ser

**E**stablished in 1988 as CEDT, NIELIT Imphal is located at Akampat and is spread over an area of more than 24 acres. It also houses the main Institute building consisting of Administrative Wing, Lecture Halls, Faculty Rooms, Computer Labs, Mechanical Workshop, Electro-medical Laboratory, PCB Lab, Servicing cell and other laboratories. Two Extension Centres of NIELIT Imphal were also established in the Year 2013 in Churachandpur District and Senapati District Under the project "Upgradation of NIELIT Centre in the NE". So far, the Institute has trained more than 25,000 candidates on short-term courses in IECT. Also, more than 35,000 candidates (including formal, non-formal and short term courses) have been trained since its inception in the year 1988.



## COURSES OFFERED

### SHORT TERM COURSES :

a) NIELIT Digital Literacy Courses

b) Certificate Course in :

- Office Automation
- Web Designing
- Desktop Publishing
- Tally ERP 9.0
- System Administration using Windows Server
- e-Governance Applications
- Soft Skills & Communicative English
- Information Security & Cyber Law
- IT Security & Network
- Embedded Systems
- PC Assembly & Maintenance
- Electronics Devices & Circuits
- Repair and maintenance of Home Appliance & Automation Electronics
- Repair & Maintenance of Electronics Products
- Medical Electronic products
- Solar Rooftop Technician
- Set top Box

c) Diploma in Multimedia Content Developer

d) Advanced Diploma in Computer Application Accounting and Publishing

e) Suryamitra

Executive Director : Shri Th. Prameshwor Singh

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### AREAS OF EXCELLENCE

- IT Security & Cyber Forensic
- Electronics Repair & Maintenance
- Multimedia & Animation
- LED Light Repair
- Suryamitra
- DAS Set-Top Box Installer and Servicing
- Solar LED Products Design and Manufacturing
- Installation, Repair and Maintenance of Electronic Home Appliances
- Mobile Phone hardware Repairing

### LONG TERM COURSES :

- Master of Computer Application (MCA)
- Master of Science in Information Technology (MSc.IT)
- Post Graduate Diploma in Computer Application (PGDCA)
- Bachelor of Computer Application (BCA)
- Diploma in Computer Science Engineering
- Diploma in Electronics Engineering
- 'O' Level
- CHM 'O' Level





# TRE IMPHAL

Manapati, Churachandpur



Churachandpur



Senapati



## HIGHLIGHTS & ACHIEVEMENTS

- NIELIT Imphal and Maharaja Bodhachandra College, Imphal signed an agreement on 3rd July, 2019 for conducting Digital Literacy Courses at MB College, Imphal.
- Inauguration of Training of Visually Impaired Persons in Manipur on CCC and Soft Skills was held on 29th July, 2019 at Ideal Blind School, Govt. of Manipur, Takyel, Imphal.
- Shri Th. Prameshwor Singh, Executive Director, NIELIT Imphal briefed Her Excellency, Dr. Najma Heptulla, Governor of Manipur on 1st August 2019 at Raj Bhawan, on Digital Literacy Courses, Cyber Security & other activities of NIELIT Imphal & its Extension Centres.
- Modal Career Centre (MCC) of NIELIT Imphal organized Two-Day MEGA JOB FAIR in collaboration with Ministry of Labour & Employment (MoLE), Govt. of India, on 08th & 10th August, 2019 at NIELIT Imphal which was participated by a total of 29 Companies. A total of 309 candidates registered for the two day mega job fair. A total of 286 were shortlisted for the final round of selection at the respective employer's office. Only two candidates were given on the spot offer during the two day event.
- A special talk on "Role of Youth for the future of our Nation with Special reference to Manipur" by Dr. Dhanabir Laishram, Social Scientist in the presence of Shri Th. Prameshwor Singh, Executive Director, NIELIT Imphal was held on 20th August, 2019.
- A total of 120 candidates were trained and 100 candidates have passed the assessment and 7 candidates have got placement in various job roles such as DAS Set-Top Box Installer & Service Technician, LED Light Repair Technician, CCTV Installation Technician and Solar PV Installation (Suryamitra), under Capacity Building for North East Region. It is a free residential placement linked outcome-based Skill Development program sponsored by Ministry Of Development Of North Eastern Region, Govt. of India for imparting skill training to the unemployed youth of North East Region (NER) under the flagship of Pradhan Mantri Kaushal Vikas Yojana (PMKVY).
- A One-Day State level workshop on "Digital Payment Awareness" was held on 12th September 2019 at NIELIT Imphal. The workshop was attended by 284 participants and 20 invitees. The workshop was graced by Director, Institutional Finance (Govt. of Manipur) Smt. Anna Arambam, Asst. General Manager SBI, Imphal Region Shri Lalkholun Hangshing, SIO, NIC Manipur Shri Kh. Rajen Singh, Director, DIT Manipur Shri Nambam Deben and NIELIT Imphal Executive Director Shri Th. Prameshwor Singh as Chief Guest, Guest of Honours and President respectively.







## Placement of SC/ST/EBC Students



On completion of Second Batch of Free Employability Training under the TCS Affirmative Action Program (TAAP) organised by NIELIT Kolkata for its 25 students from SC/ST and economically backward classes, 20 candidates cleared the written test and 9 candidates were offered jobs.

## MoU with Larsen & Toubro Construction Skills Training Institute

A MoU has been signed between NIELIT Kolkata and Larsen & Toubro Construction Skills Training Institute for imparting joint training and placement of students during month of Oct. 2019.

## Suryamitra & Solar Technology Placement of Students



NIELIT Kolkata has been conducting the Suryamitra Skill Development Programme (600 hrs, 3 months) sponsored by Ministry of New and Renewable Energy (MNRE) for the DIPLOMA/ITI pass out students. The course aims to develop the skills of youth, considering the opportunities for employment in the growing Solar Energy Power Project's installation, operation & maintenance.

Students from 3rd batch of "Suryamitra" skill development program were selected through interview on 20.08.2019 for the Internship Training at M/s Green Energy Solutions, an ISO 9001:2015 certified and MSME registered company, leading supplier and installer of solar power systems for both domestic and commercial sectors, based in Kolkata.

## News from Patna Centre

### e-Governance Workshop for District Officials



Two Workshops on e-governance and Information Security for District officials at Sheikhpura District and Jamui District of Bihar were conducted by NIELIT Patna. Around 100 Officials attended the Workshop at each districts.

### Skill Development Training sponsored by Dept. of Industry



Certificate Distribution Function was Organized on Teachers Day Celebration to the Students of Skill Development Programme sponsored by Department of Industries, Government of Bihar. More batches of training are also likely to be started in Printed Circuit Board Design, Analysis and Manufacturing, Solar-LED Lighting Product (Design and Manufacturing) and Electronic Production Technician.

### Mukhya Mantri Shram Shakti Yojna



NIELIT Patna is Conducting various IT Courses for minority community candidates under the project titled "Mukhya Mantri Shramshakti Yojna" sponsored by Minority Welfare Department, Govt. of Bihar. This is free of cost skill enhancement program for the minority candidates. After Completion of this course, they can use their skill to get employability. The inaugural function of the programme was organized at NIELIT Patna Bihta Campus for various courses such as Advance Diploma in Hardware, Networking & Information Security (ADHNS), Networking Specialist, Advance Diploma in Computer Application Accounting and Publishing, Advanced Diploma in Java Enterprise edition, Certification Course in Data Entry and Office Automation and Certified Course in Web Designing. Mohd. S. I. Faisal, IRS Special Secretary Cum Director, Minority Welfare Department attended the function as the Chief Guest and Md. Muizuddin Ansari, MD, Bihar State Minorities Financial Corporation attended the function as the Special Guest along with Smt. Nupur, Assistant Director, Bihar State Minorities Financial Corporation.





## News from Ranchi Centre

### Agreement with Xavier Institute of Polytechnic



NIELIT Centre Ranchi and Xavier Institute of Polytechnic Technology, Ranchi (XIPT Ranchi) signed an Agreement to collaborate and create a synergy for conducting various short & long term NSQF compliant courses in the niche areas of Electronics and IT. The Agreement was signed between Keny Thomas Lucas, Principal, XIPT Ranchi and Shri Tapas Trivedy, Director-in-Charge, NIELIT Ranchi on 4th September, 2019. In the first phase of the training, 66 nos of students of XIPT Ranchi are being trained in NIELIT Ranchi for the course titled Solar Panel Installation, Operation and Maintenance (NSQF level 4) of duration 80 Hours.

### Free Book Distribution to SC/ST Students

NIELIT Ranchi has commenced the 12th Batch of 'O' Level IT Course for and 8th batch of CHM-O level course for SC/ST job seekers at the Centre and distributed free books to the SC/ST Job Seekers students, sponsored by Directorate General of Employment (DGE), Govt. of India. The event was attended by Dr Ranjit Kumar Mandal, Sub-Regional Employment Officer, National Career Service Centre for SC/ST, Ranchi.



## News from Shillong Centre

### Capacity Building for Meghalaya Government

BasicIT training was conducted at NIELIT Shillong for 24 Officials nominated by Government of Meghalaya Community & Rural Development and Mission Director State Rural Employment Society, Meghalaya. The 10 (ten) days program was held over a span of two weeks commencing on the 5th August 2019. Similarly, one week training on Advanced Excel was conducted for the officials of the Directorate of Economics and Statistics Department, Government of Meghalaya during 26-30 August 2019. The training programme was well appreciated by the candidates.



Certificate distribution by Smt I R Sangma, IAS, C&RD, Government of Meghalaya

## TRAINING SUMMARY : APRIL - SEPTEMBER 2019

NIELIT plays an important role for skilling of people in the area of information, electronics and communication technology (IECT). Number of candidates skilled/trained in various courses during April 19 to September 19 are as follows :

S. No.	Course Category	Number of Candidates Trained/Skilled
1	Formal Courses (M. Tech/BCA/MCA/3 Years Diploma etc.)	2251
2	Non-Formal Courses (O/A) Level in IT/Hardware/Multimedia etc. of one year duration or more)	3255
3	Short Term Courses (Including all short term courses less than one year duration; excludes Digital Literacy Courses)	9765
4	Digital Literacy Courses	341185
Total (Updated by Academic Section)		356456

## TECH वार्ता

### 1. Applications of AI in e-Waste Management:

Electronic waste means electrical and electronic equipment, whole or in part discarded as waste by the consumer or bulk consumer. It includes electrical and electronic equipment, including their components, consumables, parts, and spares. Electronic Waste also includes waste generated during manufacturing or assembling of such equipment. Electronic wastes are broadly categorized into two categories, namely: IT & Telecommunication Equipment & Consumer electrical and electronics equipment.

Electronics waste is composed of ferrous metals, non-ferrous metals, glass, plastic & others. Plastic is present in all electronic products, and it takes more than 500 years to decompose. Electronics Waste management is a challenge not only in India but also everywhere, including the U.S and China. Electronic Waste streams are illegally dumped worldwide. Recycling of this e-waste is carried out by widespread informal sector in a manner that is very harmful to the health and environment. Recycling of e-waste leads to the extraction of useful materials like Gold, Copper, and Aluminium which are reused. Remaining waste materials that cannot be recycled are sent to landfills or incinerated. Electronic waste management involves various steps which include the collection of e-waste, segregation, dismantling, sorting, storage, transportation, processing (mechanical/chemical) and disposal. All the steps in e-waste management require manual intervention for proper handling, which is tedious compared to the volume of e-waste that is generated across the country. Formal Electronic waste recycling is therefore, very less as most of the e-waste lands in the hands of the informal sector. Some of the significant challenges in e-Waste management are the lack of awareness, lack of e-waste bins and lack of proper collection and disposal mechanism. Technological intervention is therefore required for proper handling and disposal of e-Waste.

Artificial Intelligence, Machine Learning, Image Processing and Robotics are the technologies that can be used for proper e-waste management across the country. AI and various sensors including RFID tags are used to develop intelligent dustbins for sorting of e-waste. AI robots have been designed for waste management that can sort tons of e-waste on daily basis. AI and Machine Learning can be used to automate the process of sorting and disposal and to handle e-waste more effectively.

Machine Learning is a field of study that gives the computer to self learn without being explicitly programmed. Machine learning focuses on the creation of computer programs that can develop, grow and change whenever they are needed to for self-learning. Supervised Learning is one of the learning techniques where algorithms are prepared utilising checked information where the information and yield are known. Training of the model from data is carried out using a known data set and suitable adjustments are made to the model based on the data characteristics to fetch accurate results. For example, if we want to train the e-waste category detection model, we use a set of images of various categories of e-waste to train the model. We split our data set randomly, and use a part to train the model and a portion to test or evaluate the model. We may check the trained model using other images to find out whether our model predicts accurately the different categories of e-waste like a laptop, computer, printer, mobile, LED bulb etc.



(Fig. Robotic e-waste sorting system. Source: [www.nbcnews.com](http://www.nbcnews.com))

Some of the initiatives taken worldwide for efficient management of e-waste using technology are highlighted as below:

Name of the Country/ Company / Product	Initiatives
Baidu (Chinese Company)	Developed a new app that can sell old electronics for cash
South Korea	Usage of RFID tags for garbage collection
Bin. E	It is an intelligent bin that sorts waste materials. It uses sensors, image recognition and AI techniques to recognise objects like glass, plastic or paper
Trash Bot by Clean Robotics	It is a smart trash robot that uses AI to sort recyclables from landfill waste.
L-VIS from CP Manufacturing	It provides accurate colour and size separation of small particles and is suitable for segregation
Zen Robotics	Developed a robotic waste sorting system that uses computer vision, machine learning and AI to sort and pick recycled materials from moving conveyor belts.

India is still in the initial stages as far as an automated waste management system is concerned. Recently, many





Indian companies like Namo e-Waste, Revive Electronic Waste, Attero Electronics, Let's Recycle, Karo Sambhav, Cerebra and E-Parisaraa are working on e-waste management and recycling solutions. Electronic waste management systems at present are unable to efficiently deal with the massive amounts of e-waste generated every day. Automated sorting and disposal techniques using AI and machine learning would help in handling e-waste more effectively in future.

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## 2. Re-Skilling Youths using the 'Flipped Classroom' methodology

**1. Need for 'Re-skilling' as per the current Job market of ICT :** As per a report of NASSCOM, about 40% of the workforces in India need re-skilling over the next 5 years to keep pace with automation and new requirements. Gartner also forecasts that Artificial Intelligence (AI) would eliminate existing jobs, but will create new 2.3 million jobs globally with new skill sets under Industry 4.0. As per the report of 'India-Japan Business Partnership Seminar', Japan is looking for 8 lakh of IT experts from India by 2030. The Digitalization in all areas will create more jobs. Learning foreign languages such as Japanese, Chinese and Arabic are also essential. There is a requirement for hybrid professionals who are good in the Domain, Technology, and Soft Skills. This re-skilling problem is too large to be handled, and thus, a 'Flip class' is recommended [1-6].

**2. Why Flipped Class :** In the traditional classroom model students are usually passive-mostly they listen and watch. In a Flipped class, the students engage with materials online followed by in-class activities that involve peer learning or small-group work. An instructor may choose to flip among several activities are possible-discussions, debates, clicker questions, Q&A, demonstrations, simulations, peer tutoring and feedback, and role-playing etc. Aaron Sams and Jonathan Bergmann are behind the birth of the flipped model during 2007 with the idea of broadcasting lectures so the students could have full access to the contents missed in class either on the bus or home via the internet [7-10].

### 3. How to do the Flip: require items

1.	Lesson plan, Content provider/developer/selector Proper lesson plan and approved learning contents to be provided as the responsibility of the institute.	
2	<u>Setup lab and internet access</u> <ol style="list-style-type: none"> <li>PC/Smart Phone loaded with the above materials. The facility of rating, searching and raising Questions.</li> <li>The material is provided (mainly the videos) in advance to students along with related information. This helps to gain a basic level of knowledge on the topics before a class.</li> </ol>	 1. At Home: study the contents.
3	<u>During and after a Flipped Class</u> <ol style="list-style-type: none"> <li>The classroom time can be used to practice and apply concepts and ideas through interaction with peers and teachers and Q&amp;A.</li> <li>After the class, students reflect upon the feedback they have received and use in further learning.</li> <li>In confusion, help is available from a teacher or peers</li> </ol>	 2. In a Flip Class: <ol style="list-style-type: none"> <li>one collaborative setup is provided</li> <li>The Teacher and peers addressed the doubts of the candidates</li> </ol>
4	<u>Assessment: Impact of such study.</u> <ul style="list-style-type: none"> <li>✓ Objective and some information are known before the class, so deeply concentrated in the study.</li> <li>✓ Candidate, peer and Team performance, and Time is taken to understand a topic</li> <li>✓ In different Job roles (if any). Activity to be concluded after all members practices at least one role.</li> </ul>	
5	<b>Instructor:</b> A person who can get a sense of where students are having difficulty with the course material or have questions or misconceptions about concepts (possibly through an online assessment, discussion forum) before they come to class. The expected Q&A is well prepared in advance.	



#### 4. Sample cases study at NIELIT Kolkata or by its staff

##### a. ICT project of Sunderban Island:

NIELIT Kolkata is developing several learning materials to train the local youth in their dialects. Two mini Lab is set up with Solar power, (as no Electricity available there).

##### b. Spoken tutorial:- A project by IIT Bombay.

In this, the author had acted as a facilitator for converting many ICT courses to many Local languages of North East state: Manipuri [nos.of videos 266], Assamese/Asamiya [590], Nepali [413], Khasi [497], Bodo [42], etc. These FREEdownloadable materials can be used for starting this Flipped Class. Many are benefited so far. This Project is about teaching and learning a particular FOSS (Free & Open Source Software) like Linux, Scilab, LaTeX, PHP & MySQL, Java, C/C++, LibreOffice etc. via an easy Videos, printable material, sample Q&A. It is a friendly online forum, with lots of replies from its experts. Website: <https://spoken-tutorial.org/>

India is digitally empowered with the lowest data price. Our youths have access to the Digital World with Smartphone and PCs. This Digital infrastructure will help in a useful Flip class towards the Re-skilling of youth either by attending the direct classroom or flipped methodology. Some of the prestigious universities and their connections who support the quality courseware for free are-Texas at Austin, University of Waterloo, MIT, Stanford University, Princeton, University of Pennsylvania, University of Michigan, Harvard, North Carolina State University, University of Washington, Khan Academy, Coursera, edX, TED, Youtube etc.

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### 3. Mobile App or Mobile WebSite

Being one of the largest and fast-growing markets for digital consumers, Digital Technologies, including Cloud Computing and Mobile Applications, have emerged as a mechanism for swift economic growth and citizen empowerment. The use of digital technologies is increasing by leaps and bounds not only in the routine lives of ordinary people but also in commercial organisations, business centres, retail stores and even government working. With the availability of fast speed internet connectivity across the country, digital technologies are spreading very fast, and its effect is visible in improvement of services & increasing capabilities of organisations in almost every sector of the economy.

In this digital world, the next step is moving further towards the mobile world. Every business organisation is poised to run its activities from Website to mobile apps. A prime question in the minds of persons is whether to promote business through the mobile website or using the mobile app. Earlier this debate was on the use of online media or offline media, for example, on the use of newspaper or online website. Now the discussion has moved to decide which of the two digital online media should be used-Mobile Apps OR Mobile Websites.

Before choosing between the two, the difference between these two should be looked upon. Both these technologies use a smartphone, but this does not mean that they are same. Let us take a note on the critical differences between these two technologies.

- A mobile web site is a browser- based technology, and it opens in any web browser provided in mobile. It does not need any separate software for downloading or to view the content of the website. On the other hand, mobile apps need to be downloaded from the GooglePlay Store or AppStore depending on the type of software-android or ios base.
- Another difference is the representation of content for the users. Mobile apps use more impressive way to show the content as compared to the mobile website.
- Mobile apps and mobile web sites are developed in an entirely different environment. When the data or content is updated for the Website or mobile app, they behave differently. Mobile web sites update data automatically means that the user does not have to download any extra software for seeing the updating data. But apps should be updated by the update version provided by the app developer.





Even after comparing the main differences between these two technologies, it is challenging to choose the platform for business promotion. Before deciding the platform, ask yourself some of the following questions. The answers to these questions will give us the idea about selecting a platform.

1. The first question is frequency of visit of a customer for your product. If the product needs more frequent visit of customers, then mobile app wins. For example food ordering, hiring of cab or booking of tickets are the example of sites where customers visit often to avail the services. Here, the customer simply needs to open the app, select some choices and go ahead. But in case of website customer has to fill all the details again and again.
2. Another question is the volume of users, the business needs. A mobile website reaches more users than the mobile app. According to a survey done by Google, approximately 10% of users reach through mobile app and 80% of users reach through the mobile web site.
3. Does your product need to access basic features of smartphone i.e. camera, sensors etc? Of course, there are some ways that websites can use smartphone features, but that is limited to specific content. For example, if the product is a mobile game then it should be a mobile app.
4. Will your product be used offline? Internet connection may not be available all time to users, e.g. travelling time, remote areas and while travelling abroad. If you want that your product can be used in these situations, then the mobile app is the best option to choose.
5. The last but not the least question is about the budget. How much budget is required for the development of the app and website? If a fully functional mobile app is developed, then it will be costlier than a mobile web site.

The conclusion is that, unless yours is a mobile-only business, a website is the way to go. There are several examples of startups and companies that have first launched their website. Instead of paying a considerable amount in developing an app, you can consider making your website more user-friendly and work on making it visible to the target market.

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#### 4. Information Communication Technology on Real-Time and Off-Time Pedagogy

In this era of Information Communication Technology (ICT), new styles of learning have a new impact, but we fail to simplify enough to raise much enthusiasm in a diversified social construct. Moreover, yet it is a vital component of education as a whole, [2] this article pays special attention to the interaction between socio-cultural requirements and the potential of ICT in developing a learning community. [1] The effectiveness of the input process must ascertain via 'user-friendly, easy accessibility' and 'mobilizing the inner resources' of each institution. It can become an add-in rather than an add-on to the system. Real-time platforms can be useful as an integral support system. Recent advances in real-time ICT tools and culture-specific pedagogy have made it possible to integrate significant contributions in the form of the 21st-century learning community. The innovation of ICT marked a growing internal realization, which brought a substantial change in learning styles and that is how pedagogy does evolve. Our range of activities has therefore been more extensive than "Interactive Technologies" [2] but, also "Contributory Technologies". We interpret our processes to cover not only the learning itself but also any related activity that interacts with the socio-cultural process. [2] Such an endeavor has thrown up some central issues and influenced our thinking in several critical areas in the role of an education process in an intelligent real-time/off-time system. [2]

The foremost thing that comes into our mind is the urgent need for simplification of already customized innovative applications in the nation, which are very inclusive. Such as SWAYAM PRABHA, [4] this is an MHRD [8] initiative massive open online course (MOOC) platform in collaboration with different ministries and institutions like IITs. Doordarshan broadcasts this in their special frequencies. It provides an e-platform and virtual platform for the learners in such a way that it fulfills more individualized, more economy and more enhancing the process. Similarly, E-Pathshala [6] is also available with very rich e-facilities. MHRD implements this initiative through the National Council of Educational Research and Training (NCERT) [6] to reach the masses with no cost among the learners. The availability of its mobile app has proven the strong existence of ICT integration in the process. Google classroom and Chrome book are other examples. R.I.E. (NCERT) Bhopal [7] has experimented with these tools by doing the official Memorandum of Understanding (MOU) with Google. Google chrome book works as an interface where an individual follows self-paced learning with minimum assistance. Google apps like those that docs, sheets, excel, map, scholar and translate, etc. are supporting real-time administrative and learning systems. One can adapt YouTube channels also, which has already proven in the field, e.g., Khan Academy. [9] Many institutions have started using web-based real-time online forums where off-time forums may too conduct integrally. It is very beneficial in the blended learning model



Figure 1. 3PD Instructional Model for blending ICT in Education  
(Index: A = Academician; D = Developer; ED = Educational Designer)

and the Flip-classroom model. With regards to Social Networking Sites, it is already an integral part of the individual system as mentioned by Bornferberner[6] in his Bio-Ecological theory of Human Development. Smartphones are not merely a communication device; it has become a basic need for an individual manifesting into a culture. Once it has become a culture than our efforts are to bring progressive social change. EdX–MOOC is one of the largest and innovators in developing virtual learning arena. One can customize it like done by SWAYAM PRABHA. By following [https://docs.edx\[5\]](https://docs.edx[5]) thoroughly we can design our own MOOCs, Moodle, Classcentral, Edmodo, etc. Online Free Educational Resources (OFERs) like NASA's program can be excellent too.[3] Adaptation of such a model can be exemplary for the first language basic IT literacy and advance Computer-Aided Instruction (CAI), popularly known as NASA Materials for the Classroom under the STEM project. Furthermore, a paradigm shift in education also emerged known as "Animated Pedagogical Agents". PandoraBots, PikkuBots, ChatBots, etc., in association with a simulation "Holodeck", are generation-x's integration of Artificial Intelligence (AI). PandoraBots are AI "minds" or "ChatBots" which can be created or customized using a free open-source-based website enabling the development and publishing of these ChatBots anywhere on the web, including 3D VLEs like Second life (Virtual Reality) and they can be trained to provide particular sets of questions and answers. It supports AIML 2.0 as their knowledge content markup language. PikkuBots are bots' entities created and installed on a dedicated server for Second Life, which one can operate automatically even when

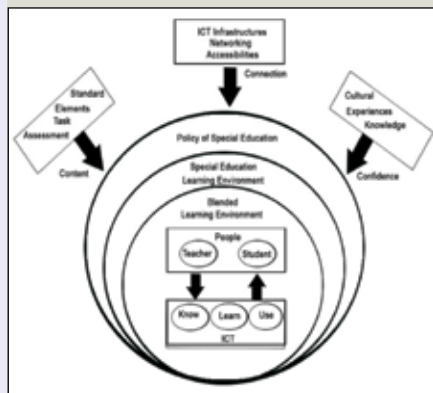


Figure 3: ICT Blended model of learning

the user is not at the computer.

### CONTEXTUALIZATION AND PEDAGOGY

Besides all the above available or upcoming resources, in a training institution, we can realize its significant possible role only after its appropriate implication of the approach. Let us see few examples in the following models:

**3PD Model:** The following figure is one of the Technological and Pedagogical Blending Model, which has to keep in mind whenever any new ICT integration takes place in the educational instructional situation.

**Technological Pedagogical and Content Knowledge (TPCK) Model** is an excellent model where ICT integration takes place in a true sense. ICT is not merely using ICT as an aid but the learning outcome reflects inclusively with technology. In simpler form, **ICT mediated learning models** are also implemented in many institutional teaching-learning processes.

**ICT the blended learning Model** is widely in practice without considering its philosophical backgrounds. Figure 3 is a simple representation of this model to understand the flexibility and adaptability of this model.

In brief, a rapidly emerging technological dimension is known as the third web of social change. From the above discussions, we may conclude that the relationship between the tools and society is from prehistoric times and will go hand in hand forever. The Concern is CONSCIOUS USE of technology or ICT. The mentioned above platforms and models do have high adaptability to any socio-cultural contexts. If NIELIT can customize with the framework of the above tools, platforms, and models, this may bring a noteworthy positive impact of the taken responsibility. Customization would bring a strong linkage between the learning process and the cultural background of the learners. For the inclusive growth & development of all kinds' learners including ETHNIC CULTURE, we the NIELIT can use the available technological resources at its optimal level. NIELIT being a central agency, her role must set a progressive and noble example in our society. Collaboration with NITTTR, DRDO, ISRO, NCERT, etc. may bring COLLECTIVE WISDOM. In the end, entire efforts have to sink into the community and the Nation at large.

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## 5. Simple Regression Analysis Using Excel

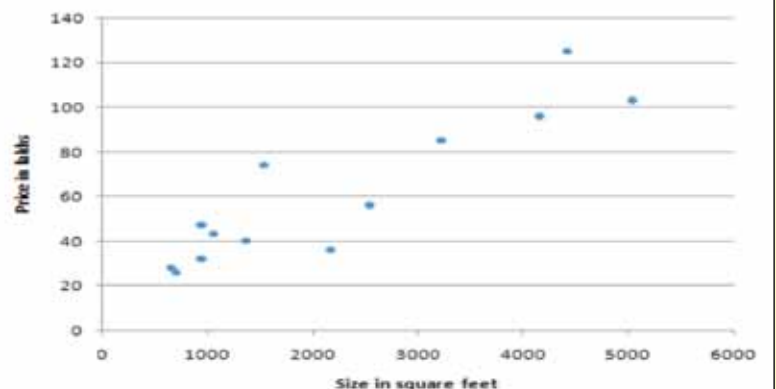
There are various situations where we have to predict the outcome of some process using data already known. Whether it is for prediction of business sales, weather prediction, prediction of inflation, stock market prediction, etc., we can use statistical modelling for solving such a problem. Regression analysis is one of the statistical processes which find out the relation between two or more variables and to find a line or curve to fit the model. The main factor that we try to understand and predict is the dependent variable, and another factor that influences the dependent variables is known as the independent variable. Regression analysis is basically of two types: simple linear regression which produces a best-fit regression straight line and non-linear regression analysis which produces a best-fit regression curve. In machine learning, regression analysis is also used for classification where we get a linear or non-linear classifier (or a decision boundary) to classify the dataset.

Let us consider a simple housing price prediction where we have to predict the price in relation to the size of the house. Simple linear regression is represented as  $y = \beta_0 + \beta_1 x + \epsilon$  where  $y$  is the dependent variable,  $x$  is the independent variable,  $\beta_0$  is the y-intercept,  $\beta_1$  is the slope and  $\epsilon$  is the error or the residual which is the difference between the actual dependent variable and the predicted value. The goal of simple regression is to create a linear model that minimizes the sum of squared error (SSE). Here, the dependent variable is the price that we have to predict and the size of the house is the independent variable that influences the cost.

Figure: (a) Table of housing price in lakhs and their corresponding sizes in square feet

Size in sq.ft	Price in lakhs
932	32
1052	43
652	28
1524	74
5024	103
3215	85
934	47
2157	36
2534	56
4152	96
4415	125
700	26
1356	40

(b) Scatter chart of housing price with respect to the size of the house.



From the given dataset, the goal of regression is to find a linear line that best fits the model. Let us see how this can be easily done in excel.

- 1) Open Excel, click on the **Office Button**, click on **Excel options** at the bottom.
- 2) Select **Add-ins** on the left sidebar, make sure **Excel Add-ins** is selected in the Manage box, click **Go**.
- 3) In the Add-ins dialog box, tick off **Analysis Toolpak**, click **Ok**.
- 4) Enter **data** in your excel sheet and select them all.
- 5) On the insert tab, choose the **scatter graph**.
- 6) Right-click on any scatter points and choose **Add Trendline** from the context menu.
- 7) On the right pane, select the **Linear trendline**, and check **Display Equation on Chart** to get regression formula.

The distance between each sample point and the regression line is the error or the residuals. An error is squared to emphasize a more significant deviation. All the square error is again added. Even though we may get different lines for prediction, a best-fit model is achieved which has the minimum sum of squared errors (SSE).





## 6. Net Neutrality-National & World Aspects

Internet, the universal platform comprising Telecommunication and Information Technology Infrastructure has developed to be a public resource with availability to all. As we all know, the internet has transformed the world and the society unprecedentedly and is fostering innovations. In India, its penetration is rapidly growing consequent to the adoption of mobile telephony after being affordable to masses. Also, this resulted in a paradigm shift from traditional voice services to data services with an abrupt surge in network capacity demand.

The advent of various Over the Top (OTT) services after getting a suitable environment for innovations was already known. OTT application services such as media services, e-Commerce services, cloud services, social media etc. are being offered to end-users using the network infrastructure created by TSPs. OTT communications services based upon Voice over IP (VoIP) are a real time person to person telecommunication services similar to services provided by the licensed telecom service providers (TSPs) but are offered to the users as applications carried over the internet using the network infrastructure of TSPs. TSPs, facing competition in voice communication from unlicensed application platforms (OTT), started exploring new revenue model with users and the content providers such as charging higher data tariffs for VoIP services, providing the content free to users (called 'zero rating' plans). Apprehensions have been raised that new emerging business models may impinge on the inherent (Open and non-discriminatory) character of Internet.

The fact that control over network traffic has a big value and competitive conflict between Network Operators & Applications Providers has given birth to the concept termed "Net Neutrality". The debate on Net Neutrality to preserve and protect the open nature of the public Internet has now taken a shape of big discourse world-wide. Internet.org is a partnership between Facebook and few companies (Samsung, Ericsson, MediaTek, Opera Software, Reliance and Qualcomm) that planned to bring affordable access of selected internet services to less developed countries with different business model new to the developing worlds for Internet access provisions. It has been criticized for violating Net Neutrality principles and favouring Facebook's own services over its rivals. Content service providers have become very evolved and complex over time. They have devised new ways to reach the customer to give a better experience while accessing the content. At the same time, some large organizations with market power have started creating closed ecosystems which protect their business model in the long run. Also new business models are being devised by large organizations to increase their user base, but unfortunately some of these initiatives are considered non-competitive, restrictive and in conflict with Net Neutrality principles.

Professor Tim Wu coined the word "Net Neutrality" and explained it as "Best defined as a network design principle. The idea is that a maximally useful public information network aspires to treat all content, sites and platforms equally. This allows the network to carry every form of information and support every kind of application" It means equitable treatment to data being communicated over network irrespective of content, application, service, device, sender's address, and receiver's address.

Under this view, data is transmitted on a "best effort" basis, with limited exceptions. The practice of Network Management like protection from attacks, traffic management, compliance of legal obligations, maintaining acceptable level of Quality of Services (QoS) for some real time services may or may not be acceptable from the Net Neutrality point of view.

While an opposing view to Net Neutrality comes up with a firm stand that the bandwidth of the Net is limited and generally lags behind its demand. Different applications have the requirement for different QoS- Skype or YouTube needs a lot of bandwidth and that too on priority as compared to email and should pay a higher price. Technically, data packets of different applications have different characteristics, TCP vs UDP - and need different type of treatment. The formula "One size fits all" may not be appropriate as networks are inherently designed to differentiate between different types of data packets so that they can be treated differently. "Net is Neutral" view has practical limitations and it does not work in the real world. Overall principles of Net Neutrality must have space for exceptions.

The world can be categorized in three groups of countries on the basis of measures undertaken on Net Neutrality:

- i. Countries having belief that existing mechanism are sufficient and no specific measures is required- Australia, Republic of Korea, New Zealand
- ii. Countries with light-touch regulatory measures e.g transparency, lowering switching barriers, minimum QoS - European Commission, Japan, UK
- iii. Countries having specific legislative measures to enforce Net Neutrality principles (no blocking, no discrimination etc) subject to reasonable traffic management and other exemptions - Brazil, Chile, France, Netherlands, Singapore, USA - FCC rules.

Chile was the first nation to enact Net Neutrality principles into law in July 2010. Federal Communications Commission (FCC), USA, the regulator declared a set of regulations for an open Internet in 2010 to address disputes that arose between ISPs and application service providers. In Feb 2015, FCC adopted three bright line rules on Net Neutrality: (i) "no blocking" and "no throttling"; (ii) "no paid prioritization"; (iii) Reasonable network management practices for engineering aspects of network and not to promote business practices; (iv) ISPs to publish consumer friendly information about their practices.

In 2018, FCC under the chairmanship of Sh. Ajit Pai, the Chairman has repealed the earlier 2015 decision on net neutrality. No discrimination, no blocking, no throttling, not any type of prioritization paid or unpaid, substantial freedom of access, reasonable traffic management and support for innovation, transparency, prescription of QoS etc. are commonly accepted principles by various countries. While on zero rating and VoIP, countries have taken widely varied position.





Majority of the countries are grappling to find a balance between competing positions and interests in Net Neutrality leeway for larger public goals.

India does have a balanced view inter alia based on principles: Innovation and infrastructure both to be promoted simultaneously and no inhibition to innovation abilities; Facilitating affordable, quality and universal broadband with ensured user rights on the Internet; adequate disclosures on traffic management policies, tools and intervention; Content Distribution Network (CDN) commercial practices to be covered under law related to unfair trade practice; suitable exceptions for managed services in the Net Neutrality context; Tariff plans conforming to the principles of Net Neutrality; Content and application providers (even if it is for an ostensible public purpose) cannot violate core principles of Net Neutrality; security related requirements from OTT service providers, need to be worked out separately.

Regulators are to ensure that the internet continues to remain an open and neutral platform for expression and innovation. Any content or application provider or any TSP/ISP which can have potential or is able to exercise any ability to contemplate user choice, can introduce some distortion in consumer markets and/or control preferences significantly based on either market dominance or its gatekeeping roles. So far, the world has majorly no view on concerns related to Search-Neutrality. But scenarios are compelling for vast consultation on Search Neutrality too. Be ready to welcome and to participate in such public discourses, so that decisions are taken leeway in public interest.

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## Publication list from NIELIT staff and students from August – October 2019

### NIELIT Aurangabad

1. Nilesh Magare, Prashant Pal, "IoT Based Industrial Level Sensor Data Acquisition & Monitoring", Int. Research Journal of Engineering and Technology, Vol6(07), July2019
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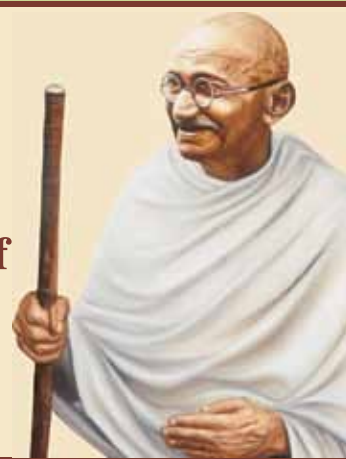
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