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

HIGH LIGHTS

- ◉ **FutureSkills PRIME**

- ◉ **MoU with Nagaland Government**

- ◉ **MoU with BSF**

- ◉ **Tech-वार्ता**
  - ❈ Cryptokitties
  - ❈ Bioinformatics Short Communication
  - ❈ Artificial Intelligence Chatbot

Message from the Editor-in-Chief

Dear Readers,

Warm Welcome to yet another issue of NIELIT Newsletter. This issue highlights the notable activities of our NIELIT Centres such as Upskilling/Reskilling programme under FutureSkills PRIME, various capacity building programmes, signing of MoUs for undertaking skilling activities and some interesting technical articles.

There is a good demand for 'Edge computing' to enable the devices to process data at their sources. It is a distributed computing framework. It brings applications closer to data sources and allows processing and analyzing data at the Edge. Usually the Mobile and associated devices generated vast volumes of data. This may increase with 5G networks facilities. If the data are not clean at the proper unit or phase, then needlessly, it consumes the storage devices, connecting means and processing units. Poor quality data gives complexity to all latest algorithms-AI, ML etc. Many emergency services-S&T, security and health, cannot bear longer waiting time; it requires the output in real-time for immediate uses. Such real-time apps demand response times in a fraction of a second. It is most achievable if data are processed at the local level device/server. The benefits of Edge Computing are faster insights, improved response times and better bandwidth availability. 'Edge analytics' is another subtopic that is beneficial for real-time analytical services. 'Federated learning' is a new form of learning that enables analyzing and utilizing the locally generated data in a decentralized way at the edge (without requiring uploading data to a server). A successful 'Edge processing' requires a combined technologies-processing component, ingestion, preparation, delivery, discovery and visualization of data etc.

Many Industries or firms are started adopting 'Edge computing', 'Edge analytics' and 'Federated learning' and expanding their businesses. Researchers and Graduate can plan a career in this field.

I am hopeful the readers find the news updates and information that this issue carries forth enriching and interesting and take the opportunity to request the readers for their valuable feedback at newsletter@nielit.gov.in

Enjoy reading!

Dr. Yumnam Jayanta Singh,
Director

What is Inside

FutureSkills PRIME

NIELIT is implementing Futureskill PRIME Programme for Reskilling / Upskilling of IT Manpower for Employability) programmewhich is jointly conceived by Ministry of Electronics and Information & NASSCOM. NIELIT Centres are involved in the training as a Lead or Co-Lead Centres for various emerging technologies.

NIELIT Kolkata

NIELIT Kolkata has been identified as the Lead Resource Centre for Blockchain Technology and Co-Lead Centre for Big Data Analytics and Virtual/Augmented Reality.

+ Under the program, NIELIT Kolkata conducted a training program for trainers. A total of 17 participants from NIELIT Srinagar/Jammu Centre, NIELIT Patna and CDAC Hyderabad were trained.

◔ NIELIT Kolkata also conducted the Govt Officers Training (GoT) from 17th December 2020 to 6th January 2021. Participants from Maulana Abdul Kalam University (formerly WBUT), RCCIIT West Bengal and Urban Development and Municipal Affairs Department, Kalyani District, WB attended the training.

+ Further, a 10-day Training of Government officials on Big Data Analytics was conducted during 8th to 23rd February 2021 and a total of 31 participants were trained in the training programme. Participants from different states & central government offices (namely Jadavpur University, Govt. of WB, Commercial Tax, Govt of WB, PSC, Govt of WB, Kolkata Police, Govt of WB, BoPT, Govt of India etc.) attended the training programme.

+ Also, a 10-day Training of Government officials on AR/VR (Augmented Reality/Virtual Reality) Technologies was conducted during 8th to 22nd March 2021 and a total of 15 participants were trained in the programme. Participants from different states & central government offices (namely Ministry of Agriculture & Farmers Welfare, STPI Kolkata, CDAC Kolkata, Kendriya Vidyalaya , RCC Institute of Information Technology, Kolkata attended the training programme. The examination of all the participants has been done.

NIELIT Calicut

NIELIT Calicut has been identified as the Lead in 3D Printing / Additive Manufacturing and Co- Lead Resource Centre in Internet of things and Artificial Intelligence.

+ NIELIT, Calicut, conducted an awareness program in Additive Manufacturing for government officials under "FutureSills PRIME 3D Printing and Additive Manufacturing" technology. The 40 hours duration program was offered through

online mode. The program was conducted between 22nd February 2021 and 19th March 2021. An assessment through proctored mode was also conducted and all officials who have attended have successfully cleared the assessment tests.

⇥ NIELIT Calicut has successfully conducted Government Officials Training on Internet of Things (IoT) for 30 Hours in Online Mode from 18th to 29th January 2021. The Sessions were planned in mix of Live and Recorded mode to enable flexible learning. A total of 51 Participants from Various State and Central Government Departments attended the Training. Many organizations nominated their officials for the training such as Airports Authority of India (AAI), National Informatics Centre (NIC), Kerala Police Cyber Crime PS, Govt. Eng. Colleges, Polytechnic Colleges, Kendriya Vidyalaya. All the 51 officials completed the assessments and were provided certificates.

⊕ NIELIT Calicut has successfully conducted Government Official Training (GoT) in Artificial Intelligence (AI) from 19th to 29th January 2021 for 40 hours duration. The course was delivered in online mode through a Learning Management System(LMS). The officials were trained and assessed.

NIELIT Patna

NIELIT Patna has been conducting training on "Cyber Security Essentials" & "Blockchain Technology" for 57 professionals from Kerala Police Cyberdome (Centre for Excellence for Kerala Police in Cyber Security)under FutureSkillsPRIME Project.

NIELIT Aurangabad

NIELIT Aurangabad in collaboration with Maharashtra State Board of Technical Education conducted the 30 Hrs Training Program for Government Officials on IoT from 22nd February to 5th March 2021. A total of 46 faculty members of Government Engineering Colleges and Polytechnic Colleges in Maharashtra participated in this training program.

Through this online training program faculty members were apprised and given skilling in emerging areas of Internet of Things (IoT). Out of the total 46 participants, 44 participants have passed the assessment. NIELIT Chennai conducted the assessment after completion of the training.

NIELIT Kohima

NIELIT Kohima imparted training to Govt. Officials from Department of T& C Govt. of Nagaland on Cyber Security Essentials under Future Skills Prime Program from 8th to 19th March 2021.

NIELIT Imphal

9 (Nine) Days Govt. Officials Training on "Big Data Analytics" under Future Skill Prime Project was conducted during the month of January & February, 2021 at NIELIT Imphal. Altogether, 33 Govt. officials from 12 different State Govt. & Central Govt. Departments/Institute attended the training.

Chennai Centre

Tamil Nadu and Scotland – Partnership opportunities in transition to EV's

Participants in the Roundtable discussion with UK and TN Stakeholders

Dr. Pratap Kumar S, Director, NIELIT Chennai took part in the Roundtable discussion with United Kingdom (UK) and Tamil Nadu Stakeholders on Electric Vehicles transition held on 17th March 2021. The meeting was chaired by Lord Tariq Ahmad, Minister for South Asia and the Commonwealth, UK; Oliver Ballhatchet, Deputy High Commissioner Chennai; and other panelists included Dr. Ashok Jhunjhunwalla, Professor, IIT Madras & Founder IIT Madras Research Park; Fraser Crichton, Corporate Fleet Operations Manager, Dundee City Council; Ian Hill, Strategic Lead for Innovation, St. Andrews University, UK; Owain Mortimer, Technology & Innovation Manager Society of Motor Manufacturers and Traders; Dr. Kannan Lakshminarayan, Professor of Practice, Department of Engineering Design, IIT Madras; Karthick Athmanathan, Senior Vice President, Ashok Leyland Limited; Mohan GR, Secretary, Society for Smart E Mobility and Subhabrata Sengupta, Vice President, Avalon Consulting as Moderator.

PG Diploma Courses at Chennai Centre

NIELIT Chennai centre conducts regular Post Graduate Diploma courses on advanced areas of Electronics & Information Technology such as Data Science, Information Security, Cloud Computing, Embedded systems and IoT. These courses are offered in full time mode for 6 months duration twice a year starting in February and August month.

Fifth batch of PG Diploma in Data Science and Analytics [DS 500] has started in Online/Blended mode on 11thFebruary 2021. 70 students have joined the program. Dr. Pratap Kumar S, Director, NIELIT Chennai, Dr. Sanjeev Kumar Jha, Scientist D & Course

Coordinator along with candidates took part in the inauguration ceremony. During the ceremony Dr. Pratap has highlighted the manpower deficit in the industry in the domain of data science and the skill sets to be acquired to become a good data scientist.

Group Photo of DS-500 students along with NIELIT Chennai Staff
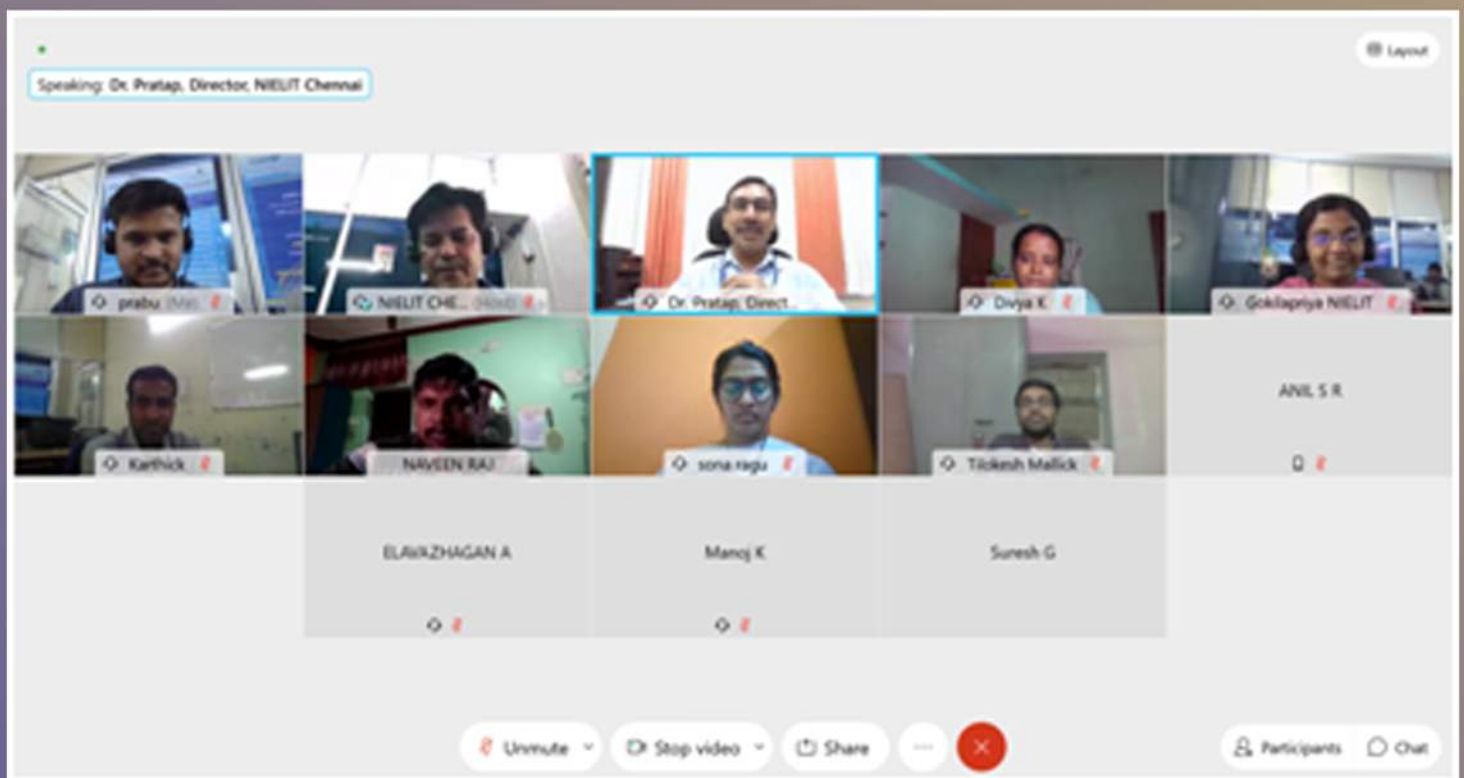
Group Photo of ED 600 students along with NIELIT Chennai Staff

NIELIT Chennai has started PG Diploma in Embedded Real Time System [ED 600] in Online/Blended mode on 3rd March 2021. Dr. Pratap Kumar S, Director, NIELIT Chennai, Shri Ripunjay Singh, Scientist D & Course Coordinator along with candidates and other training staff took part in the inauguration ceremony. Dr. Pratap has highlighted the applications of IoT in Smart Village, Agriculture, Transportation and many more. He has stressed the need of HRD in the Embedded/IoT in support of the Make in India campaign.

Kohima Centre

MOU signed with State Government for Setting up of Incubation Centre

NIELIT Kohima has been selected to setup incubation centre in IT sector by Govt. of Nagaland as per Nagaland Start-up policy 2019. NIELIT Kohima will provide start-ups the co-working space, access to lab facilities, helps to develop their business especially in the initial stage, mentoring support, tie-up with business partners, aAcademics, connect with financial organizations and prospective investors. Through this initiative it is envisage to encourage young entrepreneurs in Nagaland to come forward and setup start-ups to develop innovative IT products and services.

Industrial Training on Python

Training on Python was imparted to the students of Diploma in Computer Science & Engineering of Government Polytechnic Kohima from 15th to 26th March 2021 at NIELIT Kohima as a part of their Industrial training.

2nd PRSG Cyber Forensic "Development of Cyber Forensic Training cum Investigation Labs in North Eastern States"

The 2nd PRSG for cyber forensic "Development of cyber forensic training cum investigation labs in North Eastern States and cloud based centralised cyber forensic lab infrastructures being implemented jointly by NIELIT Kohima and C-DAC Kolkata" was held on 2nd March 2021. The meeting was chaired by Dr. Gulshan Rai, Ex-National Cyber Security Coordinator. The meeting was attended by PRSG members, Dr. Arvind kumar, GC, R&D Cyber Security MeitY and senior officials of MeitY, CDAC Kolkata and NIELIT centres.

Haridwar Centre

Ujwal Uttarakhnad

NIELIT Haridwar participated in "Ujwal Uttarakhand Mega Event" organised at Rudrapur in Udham Singh Nagar district from 19th March' 2021 to 21st March' 2021 along with various other departments like DRDO, NHPC, NDDB, BARC, CSIR, ICMR, etc; and spread awareness about various schemes of Ministry of Electronics and Information and Technology, Government of India. The main attraction of the event was the IoT based model of "Smart Parking System" developed by the students of NIELIT Haridwar.

Calicut Centre

Installation of '40 KW' ' ON-Grid Solar Power Plant at NIELIT Main Campus

Completed the installation of 40kW /3 Phase ON-Grid Solar Power plant in NIELIT Main Campus with surplus fund. This is a good investment from Return on investment (ROI)point of view and also from carbon emission point of view. Centre has already installed similar systems in both campus. With this, the total installed capacity is 90 kW. It will lead to significant savings in revenue expenditure. With net metering facility, the excess energy produced by the solar plant during holidays will be exported to Kerala State Electricity Board.

Online Internship on Hardware for Computational Neuroscience

"Online Internship on Hardware for Computational Neuroscience" was organized jointly **by NIELIT Calicut & VIT Vellore**, during 21st January to 4th February 2021. It also included a Two Weeks Program with Remote FPGA Lab. 20 participants who were Students, Faculty members and Corporate Customers benefitted from the Program.The Program was successfully completed and certificates are distributed to all candidates.

PG Diploma in Industrial Automation System Design (Blended mode)

Stiff competition, higher quality standards and growing concerns of safety & environmental damage have pushed the Industrial sector to adapt state-of-the-art Automation Techniques for effective utilization of resources and optimized performance of the process plants. Recent trend of merging control systems associated with both factory and process automation demands knowledge from diverse fields. The 24week blended course "PG Diploma in Industrial Automation System Design" is aimed at making an Engineer with appropriate experience; a qualified designer of Industrial automation systems with the use of PLCs, PACs, Industrial Field Instruments, Industrial PCs, SCADA/HMI, Data-acquisition boards,

Machine vision, Robots, Microprocessor based instruments, and related Software. The course also includes an industrial oriented project work during which the student will be working on specific assignments of his/her choice.

Patna Centre

NIELIT Patna started Computer Training of 105 Police Constables (Literate) from Bihar Military Police, Bodh Gaya at its Infrastructure Partner (Ikon Gaya). This training is conducted as a part of promotional activities.

NIELIT Patna started 15 days training of 25 DSP (Deputy Superintendent of Police) probationers of Bihar Police on Computer hardware, Networking and Forensics at Bihar Police Academy, Rajgir.

New NIELIT Centre to be opened at Buxar and Mujaffarpur

Buxar

Mujaffarpur

NIELIT Patna will soon have two new Extension Centres at Buxar and Mujaffarpur. Construction work is going on with full swing and has reached up to slab casting level.

Placement Drive

04 students (women) from "Cyber Shikshaa" organized by NIELIT Patna course got placed in Standard Chartered Bank.

Delhi Centre

Signing of MoU between NIELIT and BSF

NIELIT signed a Memorandum of Understanding with Border Security Force to conduct various capacity building and skill development training programs on various NIELIT's courses or specially designed for BSF personnel in the field of ICT. The MoU was signed by Dr. Jaideep Kumar Mishra, JS (MeitY) & also DG, NIELIT and Shri Mahender Singh, IG (ICT), BSF. The most important aspect of this MoU is that it will help BSF to utilise NIELIT's expertise in imparting quality skill development training programs in various legacy and disruptive technologies all over the country at various NIELIT Centres.

Capacity Building Programme for BSF Personnel in SQL Server and ASP.net

NIELIT Delhi Centre successfully conducted training programme on SQL Server and ASP.net at Signal Training School, BSF, Tigri, New Delhi from 15th February 2021 to 3rd March 2021 for 28 officers/officials of BSF. The training delivery by the NIELIT faculty was highly appreciated.

Tailor made Course on Advance IT, Networking, Cyber Security and Cyber/Digital Forensic

NIELIT Delhi in collaboration with NIELIT Chandigarh, Chennai and Kohima organised a 260 Hours intensive training program on a specific tailormade course for Army Educational Corps personnel at AEC Training College and Centre, Panchmarhi. The training program was inaugurated by Brig. Harish Garg, Commdt. AEC, Brig. R. Puterjanam and Director In-charge, NIELIT Delhi. The training program was highly appreciated. During the valedictory function Brig. Harish Garg, Commandant, AEC Training College and Centre appreciated the efforts put in by NIELIT officials/officers and expressed his desire in organising such courses in future.

Imphal Centre

One Day Workshop on Intellectual Property Right (IPR) at NIELIT Imphal

One Day Workshop on Intellectual Property Right (IPR) was held at NIELIT Imphal on 23rd March 2021 organized by IPR Cell NIELIT Imphal in association Patent Information Centre, Manipur Science & Technical Council (MASTEC), Govt. of Manipur. The function was graced by Shri Th. Prameshwor Singh, Executive Director, NIELIT Imphal, Dr. L. Dinachandra Singh,Director, MASTEC and Dr. R.K. Pritamjit Singh, Scientific Officer and In-charge Patent Information Centre, MASTEC. A total of 130 nos. of students and staff were present in the event.

Certificate Distribution function of "Skill Development Courses" under Pradhan Mantri Kaushal Vikas Yojana (PMKVY)

Hon'ble Minister Shri Th. Satyabrata Singh distributing the certificates   *Traineesparticipated in the certificate distribution programme.*

A certificate distribution programme for trainees who have completed Skill Development Courses under Pradhan Mantri Kaushal Vikas Yojana (PMKVY), in the Job Roles (i) Field Technician Computing and Peripherals (ii) Field Technician Networking and Storage, sponsored by Ministry of Skill Development & Entrepreneurship, Govt. of India was held on 13th March 2021 (Saturday) at NIELIT Imphal. The programme was graced by Hon'ble Minister Shri Th. Satyabrata Singh, Minister of Labour and Employment, CAF & PD, Law & Legislative Affairs, Govt. of Manipur, Shri M. Harekrishna (IAS), Commissioner of Higher & Technical Education and Vice Chancellor of Manipur Technical University, Govt. of Manipur and Shri Th. Prameshwor Singh, Executive Director, NIELIT Imphal respectively. Altogether, 61 trainees were given certificates for different job roles.

Aurangabad Centre

Sensitization Programme on Skill Development of Senior Citizen

Dr. Sanjeev Kumar Gupta, Executive Director, NIELIT Aurangabad was the chief speaker for an Online awareness/sensitization program on Skill development through self-help groups organized on 26th March 2021. The Programme was conducted under the State Action Plan for Senior Citizens & Empowerment of Senior Citizens through the usage of Technology and was organized by Regional Resource & Training Centre(RRTC), Centre for the Study of Social Change.

Radio Talk on 5G

A radio talk on CyberSecurity and other challenges in implementation of 5G was delivered by Dr. Sanjeev Gupta, Executive Director, NIELIT Aurangabad and broadcasted by Akashwani Aurangabad

Meeting with Chamber of Marathwada Industries & Agriculture

A meeting of CMIA Office (Chamber of Marathwada Industries & Agriculture) with Dr. Sanjeev Kumar Gupta, Executive Director, NIELIT Aurangabad for joint collaboration with Industries for Internship of students was held on 14th January 2021. Shri Kamleish Dhoot, President CMIA, Shri Satish Lonikar, Secretary CMIA and other Office bearers of CMIA participated in the meeting.

NIELIT Guwahati in Association with Assam Election Commission Designed & Developed the Training & Assessment Portal
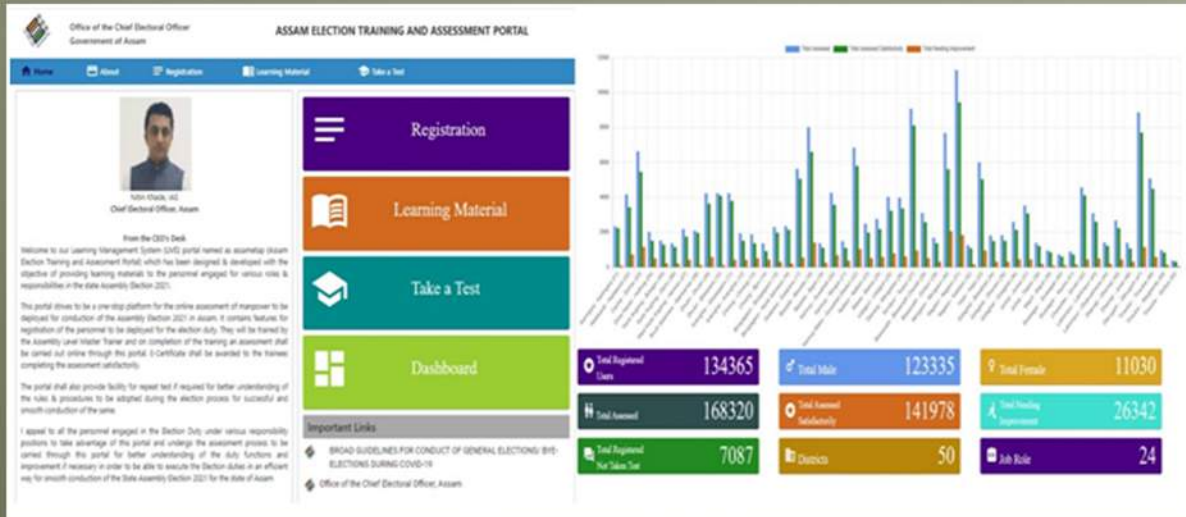

For smooth conduct of the assembly election 2021 for the state of Assam, Learning Management System (LMS) portal was launched by the office of the Chief Electoral Officer, Assam which has been designed & developed by NIELIT, Guwahati with the objective of providing online learning materials to the personnel engaged for various roles & responsibilities in the state Assembly Election 2021.

The LMS portal has been designed and developed by the office of the CEO, Assam, in partnership with the National Institute of Electronics and Information Technology (NIELIT) Guwahati for providing online learning materials to the polling personnel as ready reference. Trained personnel can assess their capacities and understanding. e-Certificates can be downloaded by the personnel completing the assessment satisfactorily. So far, a total of 1,63,109 nos of online assessment have been done on LMS in connection with the Assam Assembly elections 2021.

Skill based job oriented courses for youths

During March 2021, NIELIT Guwahati and its extension centres conducted the following 06 skill based job oriented courses for the youths of Assam in collaboration with Multi Skilling and Sustainability Centre of Assam Engineering College

- Cyber / Info. Security
- 3D Printing/Additive Manufacturing
- IoT using Arduino
- Applied Bioinformatics
- Cloud Computing
- Advanced Diploma in Computer Application, Accounting and Publishing
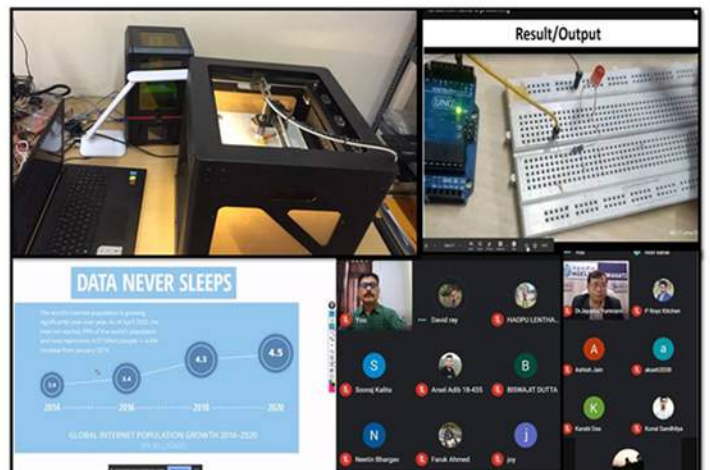
The courses were of 10 days to 30 days duration. The entire programme was fully sponsored by Directorate of Technical Education, Assam.

Upcoming courses on Drones in association with Indian Institute of Drones, Guwahati Unit.

*Inauguration of Indian Institute of Drones (IID) Noida, Guwahati unit*

On 17th February, 2021, Indian Institute of Drones (IID) Noida, Guwahati unit was formally inaugurated. The event was graced by the presence of Dr. Y. Jayanta Singh, Director, NIELIT Guwahati & Shillong and Shri, Hanif Noorani, ACS, Assam Skill Development Mission (ASDM). Members from NSDC & other State Government officers of Assam. NIELIT Guwahati is planning to start courses jointly with IID in the area of Drone.

NIELIT Jorhat (EC of NIELIT Guwahati)

Training on Statistical Data Analysis using R

A national level seven days blended online training was conducted by NIELIT Jorhat in collaboration with Department of Agricultural Statistics, Sarat Chandra Sinha College of Agriculture (SCSCA) Dhubri under Assam Agricultural University(AAU) from 4th Jan'2021 to 11th Jan'2021. A total of 548 participants from all over India participated in the training. The program was sponsored by National Agricultural Higher Education Project (NAHEP), Assam Agricultural University, Jorhat.

The program was inaugurated by Dr. Jayanta Deka, Dean Faculty of Agriculture, AAU in presence of Dr. Ranjit Sharma, Associate Dean, SCSCA and Dr. Y. Jayanta Singh, Director, NIELIT Guwahati &Shillong.
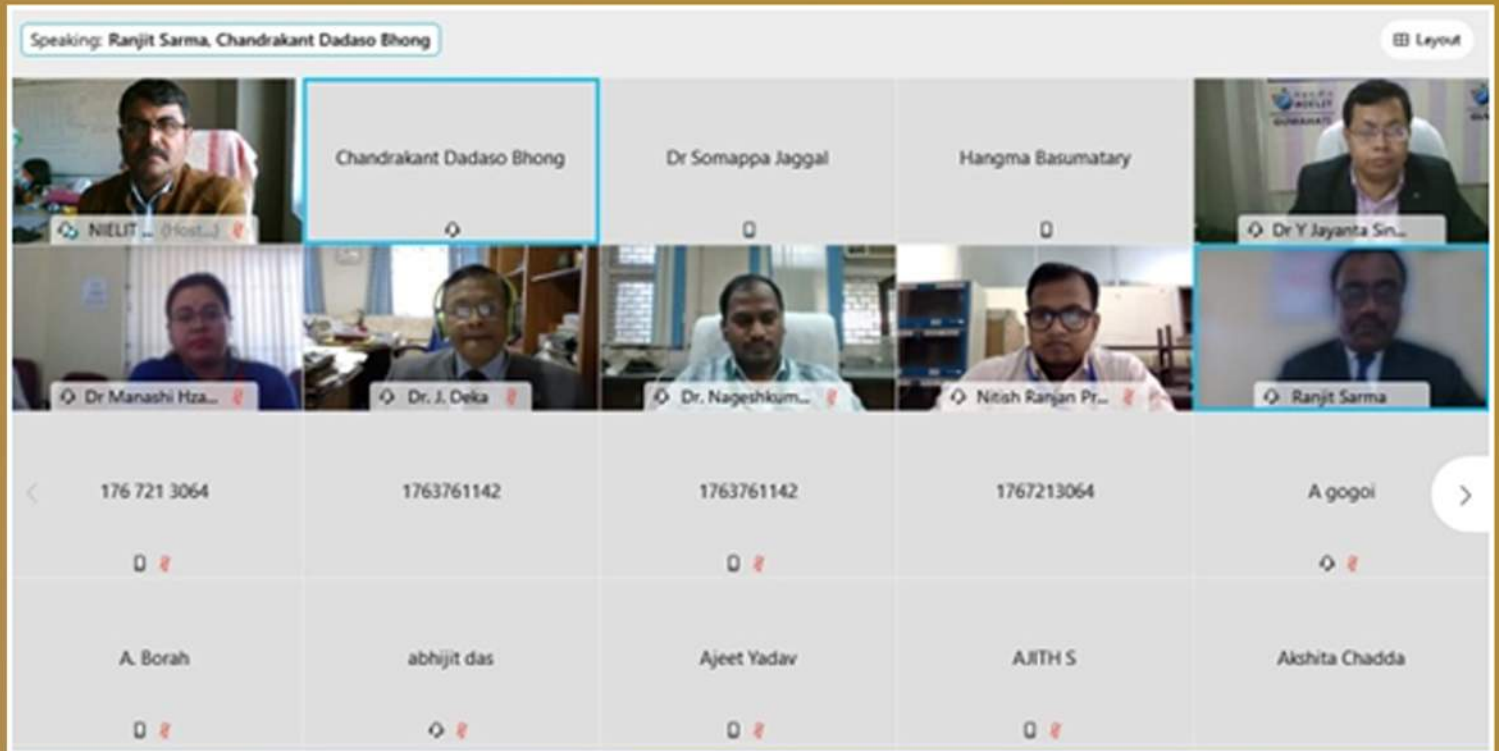
NIELIT Kokrajhar (EC of NIELIT Guwahati)

Programme on Digital Payment & Cyber Security

Kokrajhar EC.

In an attempt to create awareness among the students and rural villagers, one-day training program on 'Digital Payment & Cyber Security' was organized by NIELIT Kokrajhar on 31st March, 2021 in its new permanent campus at Titaguri.In the day long program, domain like Digital Payment and its Security, Cyber Security, E-Governance in Cyber Security etc. were covered. The programme was attended by 65 students from Bodoland University, CIT, KKHSOU, AIMT, DIET Kokrajhar apart from and local villagers of Kokrajhar district. Resource person for the program was Dr. Bipul Roy, Scientist 'C'& ECIC, Dr. Rana Sharma, Administrative Officer, Ms. Banti Das, Sc-C/ Deputy Director and Ms. UdiptaKalita, IT Faculty, from NIELIT

J&K Centre

NIELIT Srinagar/Jammu undertook the Industrial Skill Training program for 5724 students belonging to 80 Govt. Degree Colleges across the UT of J&K. The program was sponsored by the Department of Higher Education, UT of J&K.The training was being coordinated/imparted by NIELIT Srinagar as well as Jammu campus of the centre. The emphasis of the program was to impart training in various fields of Information Technology like Python, Machine Learning, Android Programming, Internet of Things, Web Designing, Tally, Networking and Repair & Maintenance of Hospital Equipments, CCC, CCA, Certificate in Data Entry and Office Automation etcto enhance the employability of the students.

The valedictory ceremony was conducted at NIELIT Srinagar on 20th March 2021. The function was graced by Prof. Peerzada Mohammad Yousuf, Director Colleges, Higher Education Department, UT of J&K, Prof. Yasmeen Ashai, Nodal Principal Kashmir Division Colleges and Principals of various Govt. Degree Colleges. A project expo was held to showcase the projects developed by the students and a plantation drive was also held at the NIELIT Srinagar campus.

Computer based Typing Speed Testfor SKIMS- Sher I-Kashmir Institute of Medical Sciences

NIELIT Srinagar successfully conducted computer based type speed test for the post of Junior Assistant of 6000 candidates at NIELIT Srinagar for SKIMS- Sher-I-Kashmir Institute of Medical Sciences.

Inauguration of Training program for Artisans for the Handloom and Handicraft artisans of Ladakh

Shri Umang Narula, CS/Advisor Ladakh inaugurated a 6 days training program for artisans under IT-enabled incubation centre project for the Handloom and Handicraft artisans of Ladakh. Shri Saugat Biswas, Secretary, Industries and Commerce, Shri Moses Kunzang, Director, Industries & Commerce, Shri Phuntsog Tolden, Deputy Director NIELIT, Leh and other officials were present during the function.

The project of IT-enabled incubation centre project for the Handloom and Handicraft is sponsored by the Ministry of Electronics & Information Technology, Govt of India and is executed by NIELIT, Leh under the mentorship of IT Department Ladakh.

This is the first step in the series of trainings, targeting coverage of all artisans & craftsman of Ladakh over a period of three years.

Techवार्ता

Artificial Intelligence Chatbot

A bot is software program which performs automatic tasks and chatbot comes under the category of bots which is present in various chat platforms. A chatbot has capability to converse with humans so the primary duty of a chatbot is conversation. Chatbots are conversational agents that use machine learning technique so as to reply with appropriate answers, and it has advantages relevant to the present crisis. First, they're accessible any time, allowing customers to get answers 24/7 and to avoid wait times on hold before reaching a person. Second, chatbots have a better handling capacity than any human. A single chatbot can simultaneously have conversations with thousands of people no matter what time of day. Regardless of the quantity of calls, every question could also be answered immediately. It stores the chating history.

Generally chatbots are two types:-

Command based:-

Chatbots that function on set of predefined rules and can answer to only limited number of queries or questions. Users need to select a particular option to determine their next steps.

Intelligent/AI Chatbots:-

Chatbots that use machine learning, deep learning and natural language understanding to understand the user's language and are intelligent enough to learn from conversations with their users so that users can converse via text, speech or even interacts with using any graphical user interface such as by image, video, audio etc. Chatbots runs on various platforms such as Facebook messenger, Slack, Telegram, Skype, SMS and even websites. Each platform has its own features which are capable of determining their possible ways in which chatbot can interact with the user's, however the actual behaviors of the chatbot is determine by bots itself. Today AI has revolutionizing the business and chatbots made with AI's components are becoming feasible customer service. Interacting with brands or business, any product has become so easy for the customers. The purpose of chatbots is to reduce the human efforts for unnecessary Q&A for enquiry also scale business teams and helps them in maintaining cordinals relationship with the customers. It helps business to reduce the operational costs, save time and increase the level of productivity as all the basic and monotones requests can handled by chatbot while complex queries are taken care of by the experts team.
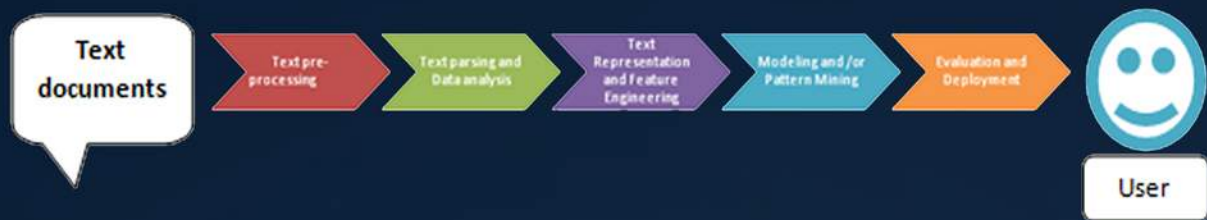
Uses of chatbot:-

It helps customers to purchase e-commerce product, answer customer service queries, monitors employee's or customer's satisfaction, Helps to improve customer's response rate, deliver a personalized experience, business intelligence, automate repetitive tasks and we can actually come up with a chatbot use case for every single business or industry solution.
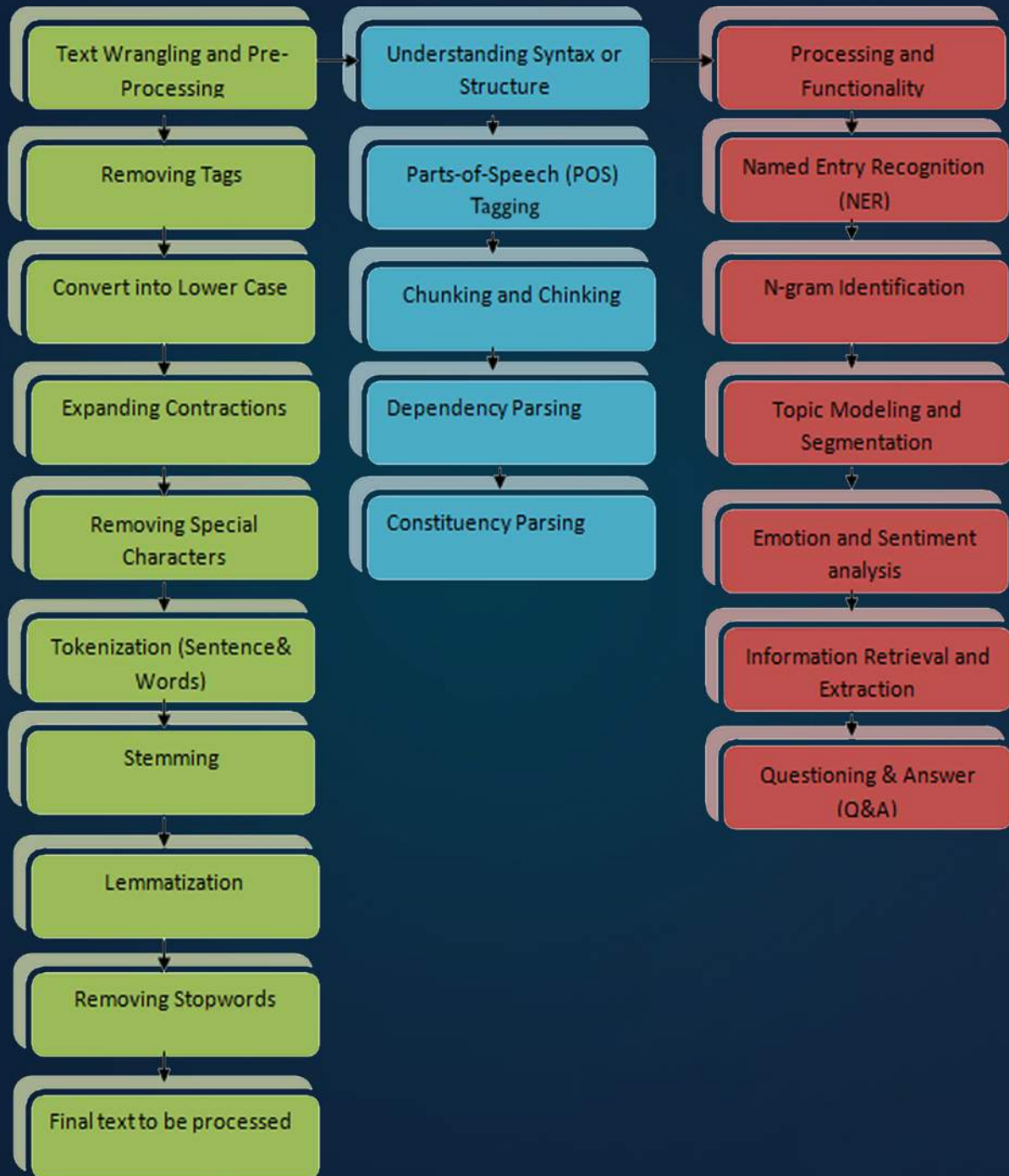
Working Methods:-

Collecting data as a source of information:- AI chatbots are of under the category of supervise learning. In real world we mostly deals with unstructured data collecting from various sources such as Literature source, Surveys, Interview, Observations, Documents and records, Experiments & also data generated from the file extension such as XML, HTML, JSON, XLSX, CSV, DOC, TXT, etc.

NLP(Natural Language Processing):- Natural Language Processing usually we termed as NLP it is a branch of artificial intelligence is a technology that used to help computer to understand the human natural language. The ultimate objective of NLP is to read, decipher, understand and make sense of humane language in a manner that is valuable.
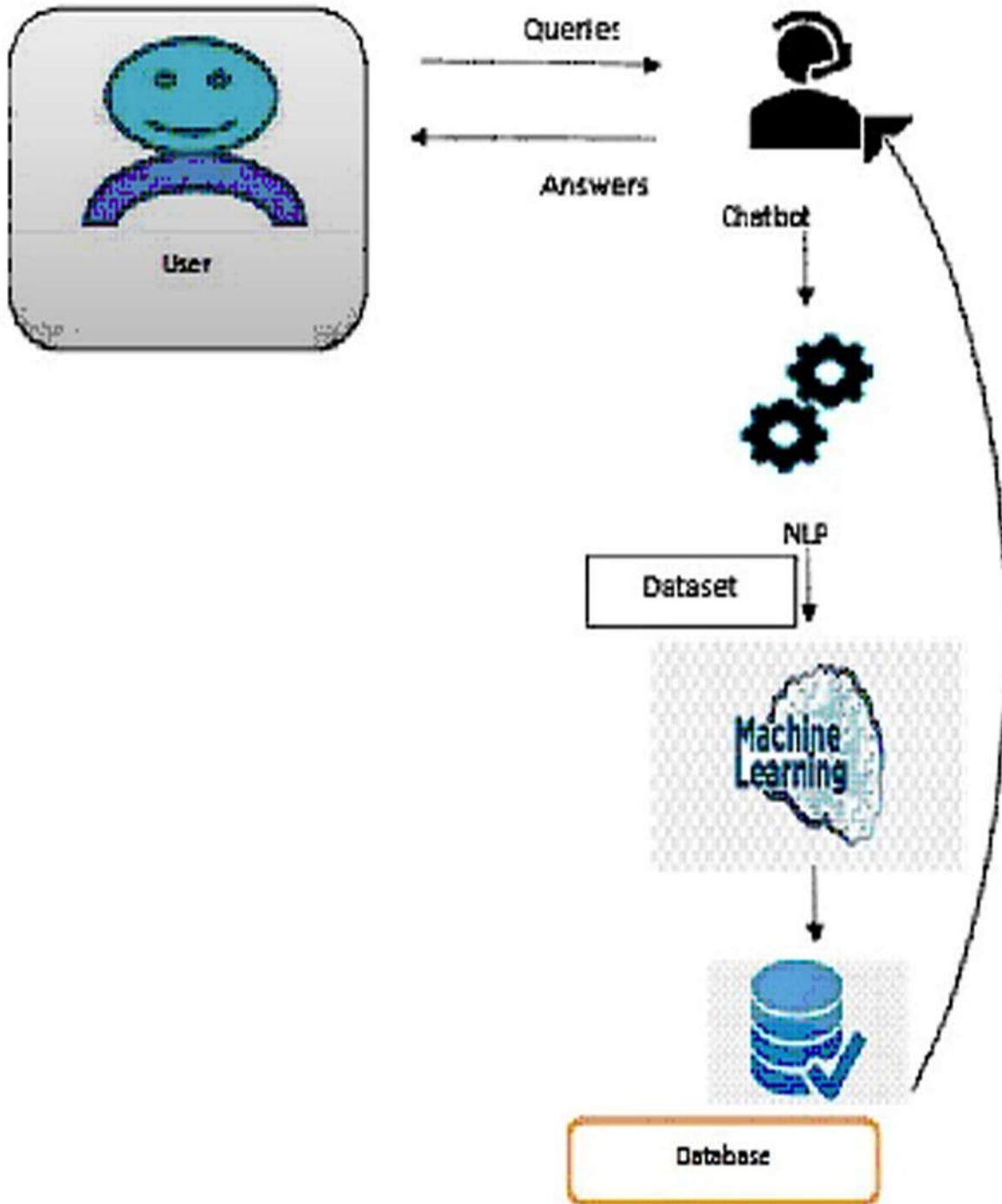
NLP Workflow:-

Text documents → Text pre-processing → Text parsing and Data analysis → Text Representation and Feature Engineering → Modeling and/or Pattern Mining → Evaluation and Deployment → User

NLP Pipeline Step-by-Step Guide:-

Column 1 (green):
- Text Wrangling and Pre-Processing
- Removing Tags
- Convert into Lower Case
- Expanding Contractions
- Removing Special Characters
- Tokenization (Sentence & Words)
- Stemming
- Lemmatization
- Removing Stopwords
- Final text to be processed

Column 2 (blue):
- Understanding Syntax or Structure
- Parts-of-Speech (POS) Tagging
- Chunking and Chinking
- Dependency Parsing
- Constituency Parsing

Column 3 (red):
- Processing and Functionality
- Named Entry Recognition (NER)
- N-gram Identification
- Topic Modeling and Segmentation
- Emotion and Sentiment analysis
- Information Retrieval and Extraction
- Questioning & Answer (Q&A)

Database and Dashboard:-

Different databases like MongoDB, MySQL, PostgreSQL, Excel or any other database can be used to store and retrieve data and also to make your bot learn from the existing data. A Dashboard is required to measure the performance and health of the bot and also to provide insights and analytics about the chatbot.

Reference:-

1. https://chatbotslife.com/an-introduction-to-chatbots

2. https://blog.ubisend.com/discover-chatbots/what-is-a-chatbot-introduction

3. https://suneelpatel-in.medium.com/nlp-pipeline-building-an-nlp-pipeline

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Cryptokitties

We all know Blockchain is the most disrupting technology today. Whenever we come across the term blockchain the only first thing that flashes is Bitcoin. Many think that Bitcoin and blockchain are same. But blockchain has far more applications than only cryptocurrency. Blockchain concept is also being used to develop token based games .Blockchain is also being used to develop and sell collectibles which have a great financial value in the digital world. One such example is Cryptokitty.

We can say CryptoKitties represent a blockchain game on Ethereum which was developed by Canadian studio Dapper Labs that enables players to purchase, collect, breed and sell virtual cats. Cryptokitties were launched as a fun game with an attempt to deploy blockchain technology for recreation and leisure. This game congested Ethereum network with its popularity in December 2017 and also slowed down it significantly.

Technology behind Cryptokitties:

One of the powerful feature of Ethereum is its Smart contract. Smart contracts have powered developers to develop decentralized applications. Same concept is applicable to Cryptokitties. There is a Smart contract behind the ownership of a cryptokitty.A cryptokitty is actually a non-fungible token that uses the ERC-721 Token.The zero generation cryptokitties were initially sold as an auction to players. Existing cryptokitties are bred to create New CryptoKitties.The total no of cats that can be bred are limited to 4 billion.The concept behind these cryptokitties is of token exchange on Ethereum. The crypto kitty genotype is stored on a smart contract. These cats can be bought at a price and can then be traded to make profit.

As per info. from Wikipedia, Axiom Zen developed the game. Until November 2018, Axiom Zen intended to continually release a new CryptoKitty every 15 minutes. There is info.. on breeding of CryptoKitties and its business purposes [1]. The value of the cryptokitty rises and falls on the Blockchain Network. Its really a great fun to generate new kitties on the go which has some specific features as selected by one at the time of purchase. Cryptokitties can be said as ETHEREUM based assets. They have three features- Collectable, breadable and Adorable. They are also a way of creating a crypto asset. The main interesting feature over here is how you select a cryptokitty which can be bred with other cryptokitty to enable you to make profit.

But also it is risky to invest in this game as it involves cryptocurrency. One should be cautious before investing in this game. We can conclude that CryptoKitties is not a cryptocurrency itself, but it can be used to demonstrate the use of the alternative currencies such as Ethereum as well as blockchain, the decentralized and transparent ledger system. Crypto- Kitties are useful for raising the public's awareness of blockchain and cryptocurrency. A museum in Germany is creating an exhibit that will use the game to explain the technologies [2,3]. More info. on topic is available at www.cryptokitties.co.

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Application of High Performance Computing in Drug Discovery

To be generalized, high performance computing (HPC)can be considered as the "use of sophisticated computer systems to model or simulate the real-world processes, which are too big, too small, too fast, too slow, or too expensive to easily observe empirically" [1]. In general, HPC engages in describing such processes mathematically and then developing algorithms to solve the problem on computer systems. In current trends in Computer Science, HPC technologies and supercomputers have significantly advanced resulting in remarkable achievements. In current drug research and development, computational drug design based on HPC is becoming a critical approach. This approach combines pharmaceutical chemistry and computational biology as well as produces a series of new algorithms, Software and Databases which are being extensively used in computational drug designing. Concurrently in the recent covid-19 pandemic, several studies revealed HPC to be the prerequisite for re-purposing of approved drugs. Here, a compressed note on recent status and application of HPC to computational drug discovery approaches including high-throughput virtual screening (HTVS) and molecular dynamics (MD) simulation is reported.

Current Global Status:-

Most HPC problems, including those in computational drug designing, have a common concern that the better answer is to be achieved with more computational resources. More precisely, it is to be understood that the larger the system that can be studied, more simulations that can be run, the longer the time scale that can be modeled, the larger the space that can be searched, etc. Consequently, computational resources are limited to a typical researcher. In industries where HPC is employed, model sizes are growing and model complexity is increasing in order to address challenges such as:

• The need to meet more demanding government regulations,
• The need to meet increased product quality,
• The need to meet lower production costs.

Computational drug design is no exception, perhapshighlights computer architectures across a broader range of problems than all but any other HPC discipline [2]. From protein–protein or protein–ligand docking or sequence analysis (which require minimal computational resources) to physicochemical property or MD simulations (which require speedy interconnect or shared-memory architectures), additional computing resources are always utilized by computational biologist, as shown in the figure. The figure depicts the X-Axis ranges from high throughput demands to large simulation demands, while Y-Axis ranges from I/O and memory intensive to compute intensive. This self-descriptive diagram directs understanding of the type of multiprocessor system best suitable for application scalability from distributed-memory clusters to shared memory symmetric multiprocessors (SMP), as well as the indispensable qualities for each node (not only processor type, but alsolocal and shared memory and disk, I/O and interconnect requirements, etc.). Memory intensive large simulations, as illustrated by some quantum chemistry tasks, have best performance on large SMP systems; applications in other quadrants are better served by clusters [3]. The jobs that are not computationally too intensive, such as, BLAST, a simple cluster of 32-bit x86 processors provides exceptional price performance. Similarly for the other quadrants, similar recommendations of the configurations can be inferred.
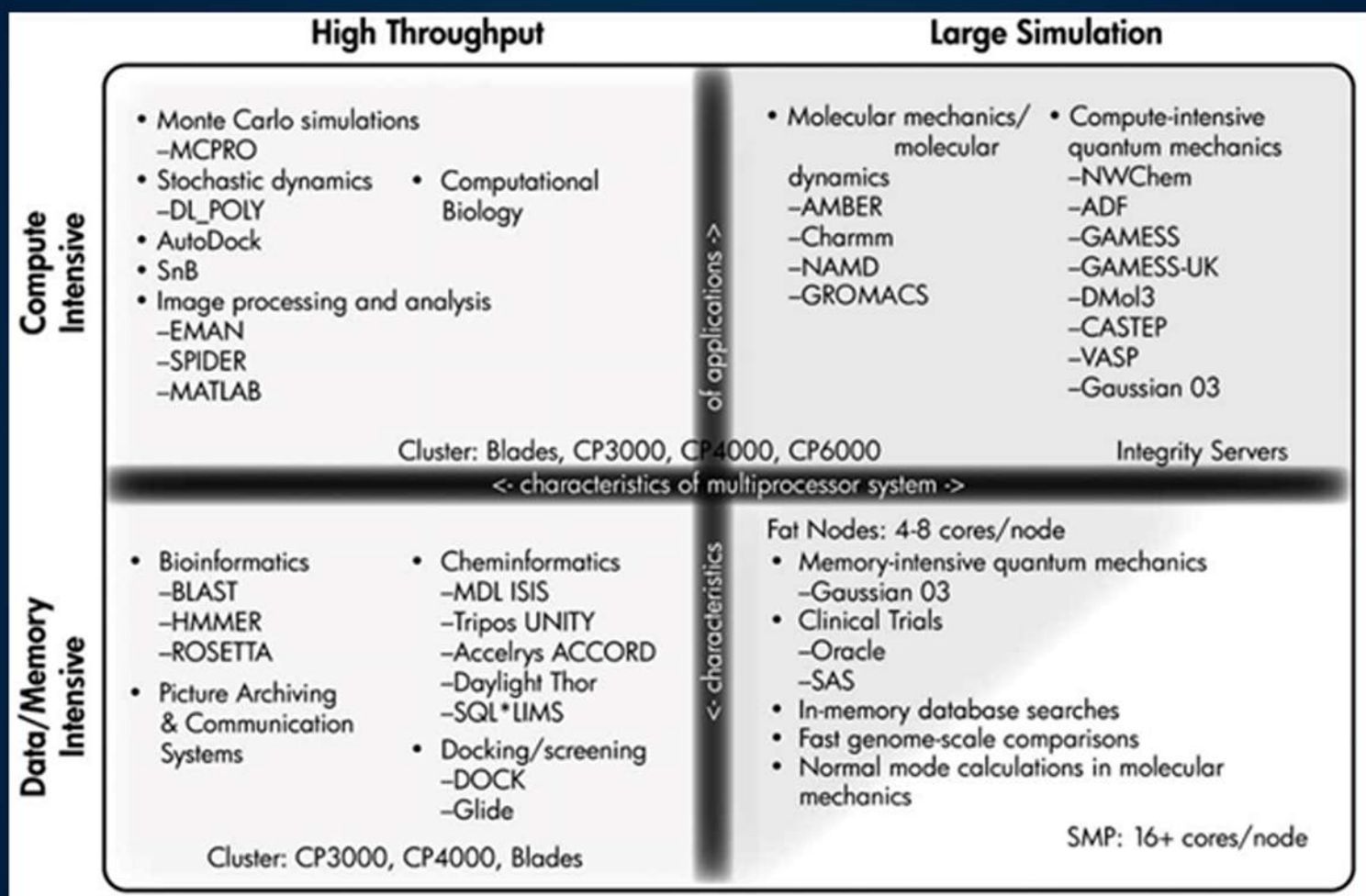

Figure: Computational need of various Life and Materials Sciences applications. High throughput jobs are typified by many small tasks that need to be completed as quickly as possible. Large simulation jobs emphasize the completion of a single large, complex job as quickly as possible.

Conclusion:-

Today graphics processing units (GPUs) are flourishingly used in computational drug design,especially to conduct MD simulations.GPUs are capable of extremely high floating-point calculation rates and are also being examined for offloading CPUs to increase specific algorithms' performance. Stanford University united to create a GPU-based client for Vijay Pande's folding@Home distributed computing project that demands in certain incidents to produces results significantly faster than the conventional CPUs [4]. Nevertheless, GPUs are designed precisely for graphics and thus are very restrictive in terms of operations and programming [5]. For price performance, GPUs acquire the economies of scale similar to other commercial off-theshelf (COTS) CPUs. For instance, the implementation of floating point on GPUs is generally not IEEE flexible with only

most marketable applications from being ported anytime soon. Some attempt is being conducted to rectify the problems of GPUs by adding more control and precision, forging them more generally programmable (GPGPUs). That will require a delicate balancing act.

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