Adi Shankara
INSTITUTE OF ENGINEERING AND TECHNOLOGY
Ph: 0484-2463825
Email: info@adishankara.ac.in
Website: www.adishankara.ac.in

DEPARTMENT OF ELECTRONICS AND COMMUNICATION

EXPLORE, DREAM, DISCOVER

ISSUE 52 MONTHLY NEWSLETTER MAY 2022

GENESIS

IGNITING THOUGHTS

CONTENTS

Vision

- To be recognized at the national and international level for excellence in education and research in Electronics and Communication Engineering.

Mission

- Inculcating leadership qualities, adaptability, and ethical values
- Imparting quality education in the field of electronics, communication, and related areas to meet the challenges in the industry, academia, and research
- Nurture the growth of each individual by providing a dynamic and conducive learning environment.

DEPARTMENT ACTIVITIES & ACHIEVEMENTS

ACES DAY - ENCORE '22

Encore '22 - The annual techno-cultural fest organized by the Association of Electronics and Communication Engineering was staged at 8 venues on 18th May 2022. The entire one-day program had an overwhelming participation of students across all the departments of ASIET. The fest was organized with the objective to provide a platform for students to showcase their talent with a competitive spirit, and to learn and experience the field of electronics. Cultural events were also included.

Encore was inaugurated at the hands of Mr. Rahul Eapen George, Project manager at Wipro cum Creative engineering lead at Industries tech. The presidential address was delivered by principal Dr. Suresh Kumar in the presence of the Head of Department, Dr. Bobby Mathews C, Staff Coordinators Ms.Savitha Raghavan and Ms. Remya Ramesh, and the student office bearers. The inauguration was followed by a tech talk by Mr. Rahul Eapen George.

IEI TALK-INTRODUCTION TO VIRTUAL REALITY/AUGMENTED REALITY

"INTRODUCTION TO VIRTUAL REALITY/AUGMENTED REALITY" was organized by IEI within our esteemed institution ASIET through Google meet on 18 May 2022.
The Talk started at 10.30 AM with the welcome address by the IEI Students Branch chairman (ASIET). Our resource person; Mr. Shyam Pradeep Alil, Co-founder and Chief Operations Officer at Infusory Future Tech Labs Pvt Ltd; began the session with a small introduction on the topic.Followed by the session was a wonderful interactive session where the audience interacted with the speaker clarifying their doubts and queries. It brought an interesting opportunity to get enlightened and explore the futuristic realm of Augmented and Virtual Reality. Around 90 participants, including the HOD of EC Dept. Dr. Bobby Mathews, IEI Faculty Advisors Dr. Ajay Kumar, Ms. Arya Paul, and students attended the session. The session ended at around 12 PM with a vote of thanks by the IEI SB Secretary (ASIET).

INDUSTRY TIE-UP PROJECT : SUYATI SECOND PHASE INTERNSHIP MEETING

Second phase of the industry tie up project with Suyati Technologies kick started on 9th May 2022. The second phase project teams and their ASIET mentors had a meeting with officials of Suyati Technologies at Infopark Campus. Students were grouped into 4 teams working on separate projects. In the first phase, 2 students from ECE, Manikandan A R and Libin Luvis of S6 ECE, got eligible for stipend for their excellent performance during the project phase.

TALK ON "CYBER SECURITY AND ETHICAL HACKING".

"CYBER SECURITY AND ETHICAL HACKING" was organized by IEI on 18th May 2022 as a part of Brahma '22. It was a live session presented by Techbyheart. Techbyheart is a leading Cybersecurity training company endeavoring to produce proficient security professionals with 360 degrees understanding of security architecture, ethical hacking, and security governance. The talk started at 10.30 AM. The IEI Students Branch chairman (ASIET) gave the welcome address and invited the Resource person. The session was handled by Mr.Dhanoop R, Associate Member at National Cyber Safety Security Standards, Volunteer at National Cyber Defence Research Centre, Cyber Security Analyst at Techbyheart India Pvt Ltd, and Cyber Security Expert at Appin Technology Lab, Kochi. He is also the co-founder and chief operations officer at Infusory Future Tech Labs Pvt Ltd. The Session provided an accurate and deep understanding of Ethical Hacking and further, it created awareness about Cybersecurity. The audience interacted with the speakers clarifying their doubts and asking interesting questions and providing their feedback. Around 55 members including IIC President Dr. Ajay Kumar, IEI Staff Advisor Ms. Arya Paul, and students attended the talk. The session ended at around 1 PM followed by the vote of thanks by the IEI SB Secretary (ASIET).

PCB DESIGN WORKSHOP

IEEE Signal Processing Society Chapter in collaboration with Communications Society Chapter of IEEE SB ASIET, conducted an exuberant technical event, which was a hands-on training program on the topic PCB Designing. It was organized on 18th May 2022 in the Simulation Lab , Department of ECE. Speakers for the event were Mr. Athul A Kumar and Mr. Binil Jacob, currently working at LiDelta Innovation Pvt Ltd. 51 students from various departments attended the training program. The students were guided on how to design a PCB using a software called PROTEUS. The event started off with an introduction to the Basics of PCB Design, in which topics such as Data Sheets of PCB Components and its working were covered. Also, a clear idea about uses of diodes, resistors, LEDs etc in the circuit. In Proteu,s we can design any circuit and simulate the circuit and make PCB layout for that circuit. They were taught to design some basic circuits such as LED Blinking, Rotation of Diodes etc.Learning how to design a PCB with this software will be effective for an individual for making electronics projects compact, efficient and will help in his future career as a professional. The workshop will be targeted towards students with little to no prior experience in PCB designing.

CONGRATULATIONS

DILNA DAVIS - KALATHILAKAM
(Advaiya Arts Fest 2022)


Adi Shankara
INSTITUTE OF ENGINEERING AND TECHNOLOGY
TOP
PERFORMERS
KTU S4 Examination July 2021
Hrithika S Pai
SGPA-9.68
Vyshnav C J
SGPA 9.73
Akshay Subramanian
SGPA-9.5
Abirami Muraleedharan
SGPA 9.36
Sona Paul
SGPA-9.27
Mehanas Latheef
SGPA-9.05
Katharin P Jose
SGPA- 8.95
Abirami K A
SGPA-8.91
Andria Raju
SGPA-8.86
Sidharth A J
SGPA-8.77
Manikandan. A. R
SGPA-8.55
Congratulations
Dept. of Electronics & Communication Engineering


Department of Electronics and Communication Engineering
KTU S2 EXAM JULY 2021 RESULT
Adi Shankara
INSTITUTE OF ENGINEERING AND TECHNOLOGY
Congratulations!
Aleena Antony
SGPA 10
Avin Sony
SGPA 10
Gaea Titus
SGPA 9.86
Arya Vinod
SGPA 9.71
Malavika S Menon
SGPA 9.71
Adhithya Krishna
SGPA 9.7
Sereen Sabu
SGPA 9.62
Liya Sam
SGPA 9.24
Noel Mathew Shillow
SGPA 9.14
Dilna Davis
SGPA 9.1
Sonu Rajesh
SGPA 9.05
Giftson Varghese
SGPA 9.02
Titya Ramchandran
SGPA 9
Athulkrishna
SGPA 8.9
Vysakh Pradeep
SGPA 8.67
Radhika Radhakrishnan
SGPA 8.62
Sreehari L Shenoy
SGPA 8.57
Sreelakshmi Sreekumar
Raveena A
Akshay Krishna
SGPA 8.43
Fathima Muhsina
SGPA 8.31
Sreekarun A

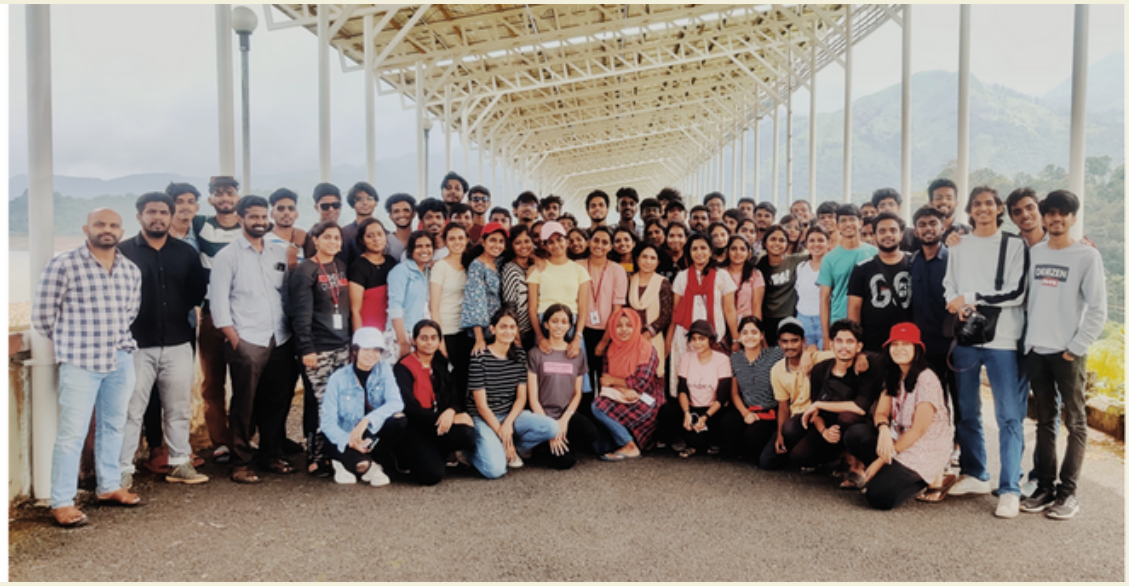
ARTS / BRAHMA / SPORTS WINNERS

NAME	CLASS	EVENT PARTICIPATED	EVENT	PRIZE DETAILS
ANAL C D	S2 ECA	SPORTS DAY	Relay (4×100) boys	FIRST PRIZE
Viswesh Parameswaran	S6 ECB	SPORTS DAY	Volleyball	FIRST PRIZE
Mehanas Latheef	S6 ECB	ARTS FESTIVAL	Face painting	SECOND PRIZE
Vyshnav CJ	S6 ECB	ARTS FESTIVAL	Essay Writing In Malayalam (Offstage Event)	SECOND PRIZE
Jagannath U	S8 ECB	SPORTS DAY	Tug of war , Cricket	FIRST PRIZE
RAJA M	S8 ECB	SPORTS DAY	Tug of war - 1st and Cricket - 1st	FIRST PRIZE
Titya Ramchandran	S4 ECB	ARTS FESTIVAL	Western English (solo)	FIRST PRIZE
Sangeetha Prasad	S6 ECB	ARTS FESTIVAL	Western song English	SECOND PRIZE
AISWARYA LAKSHMI BABU	S6 ECB	ARTS FESTIVAL	NADANAM	FIRST PRIZE
Pranith S Prabhu	S8 ECB	ARTS FESTIVAL	Wind Instrument-Eastern	FIRST PRIZE
Aslaha Farha	S2 ECA	ARTS FESTIVAL	Light music	FIRST PRIZE
M Mohit	S6 ECB	BRAHMA	Glow Ball	FIRST PRIZE
Avin Sony	S4 ECA	BRAHMA	Technophile	FIRST PRIZE

INDUSTRIAL VISITS

2018-22 BATCH PLACE : Machino Tech Engineering Works, Verna Goa

BATCH 2020-24 PLACE : BANASURA SAGAR DAM



BATCH 2022-26 PLACE : KANNAN DEVAN HILLS, MUNNAR

BATCH 2019-23 PLACE : VATSAA ENERGY pvt Ltd.

TECH TALKS

STAFF ZONE

SMART HEALTH MONITORING SYSTEM (SHMS): BENEFITS, ARCHITECTURE, APPLICATIONS, AND CHALLENGES

By Neethu Suman, Asst Professor, Department of ECE

Our world has evolved from the era when sensors were just used to measure specific essential physiological human body signals such as temperature and pressure during the late 1980s to the current age where we have wireless and miniaturized implanted sensors that can even monitor the operation of internal organs and transmit the critical health information to experts within seconds. The advancements in wireless technologies such as wireless body area network [WBAN] and the rising population, especially the aging population, are directed towards developing flexible and patient-friendly health monitoring systems.

Benefits of smart health monitoring systems

The SHMS makes healthcare available from anywhere. Apart from the availability, it also has the following benefits:

- Continuous monitoring of the patients, thereby ensuring constant and quality care in remote locations.
- The wireless and portable devices improve the mobility of the patients.
- Reduction in healthcare experience by reducing the hospitalization days and frequent hospital visits.
- The advanced monitoring data can be used for advanced or interdisciplinary consultation, increasing the patient's confidence level in the treatment.
- The computational analysis of continuously monitored health information is available to the doctor and patient. This helps in quick treatment initiation and timely modification in treatment and reduces the chance of erroneous diagnosis and incorrect treatment.
- The alert system for deviation in the physiological parameter helps in earlier disease detection and proactive management of its treatment. This decreases the mortality rate.
- The doctors and medical staff can attend to more patients.

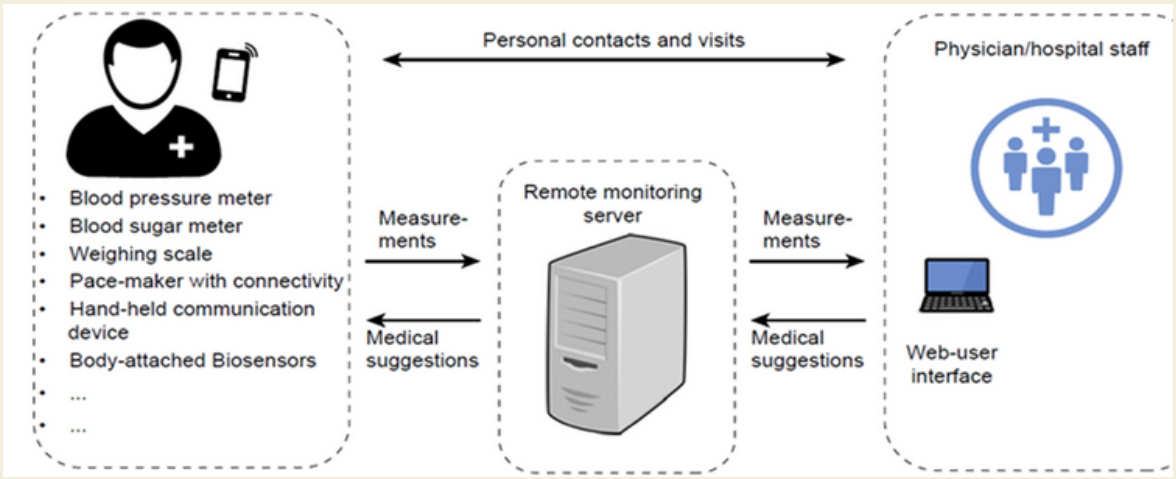


Figure 1: A general architecture of smart monitoring [1].

A general architecture for the smart health monitoring system is shown in figure 1. The smart health monitoring system has three essential parts. The first block is the data collection block. In this part, the patient's health information such as weight and height are entered. The vital parameters like heart rate, blood pressure, body temperature, and blood sugar level are measured using a sensing device. The sensing device can be wearable (Heart rate sensor, ECG, EMG) or non-wearable (environment temperature sensor) or implanted (pacemaker, cochlear implants) devices. The data collection block consists of sensors with connectors, an application interface for manual data entry, a pre-processor, and a communication manager.

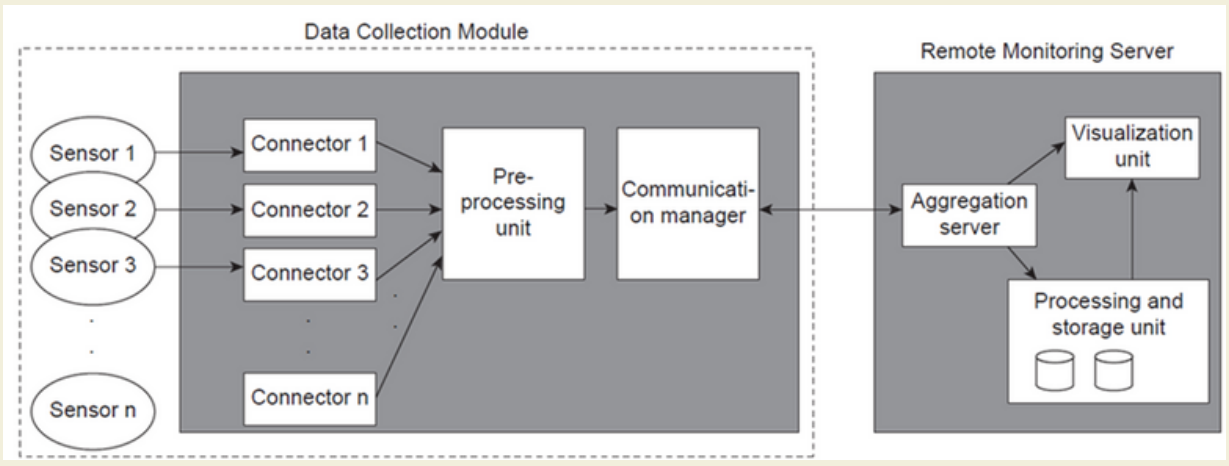


Figure 2: Components of the data collection module and smart monitoring server [1].

The coordinator node collects the data from all the sensors and sends it to the smart patient monitoring server (the system's second block). The server analyzes the measured data and alerts the doctor, patient, or caretaker about the abnormal condition. The data aggregation, visualization, and processing are the different units in the server. Collecting data from the coordinator node, checking the integrity and consistency, getting it ready for processing and visualization units, noise cancellation, and generating alerts are the functions of the aggregation unit.

Visualization is a basic web-based or mobile phone application that visualizes the result in a better understandable form and is accessible by authorized persons. The processing unit processes the data, recognizes the complex pattern in the patient's health parameters and stores the data. The smart patient monitoring server requires expensive software and hardware for real-time complex data computation and communication. For this, a dedicated third-party cloud processing server that provides data privacy and reliability can be utilized. The last block is a web/mobile-based user interface for the physician or authorized personnel to monitor the patient's data and interact with the patient.

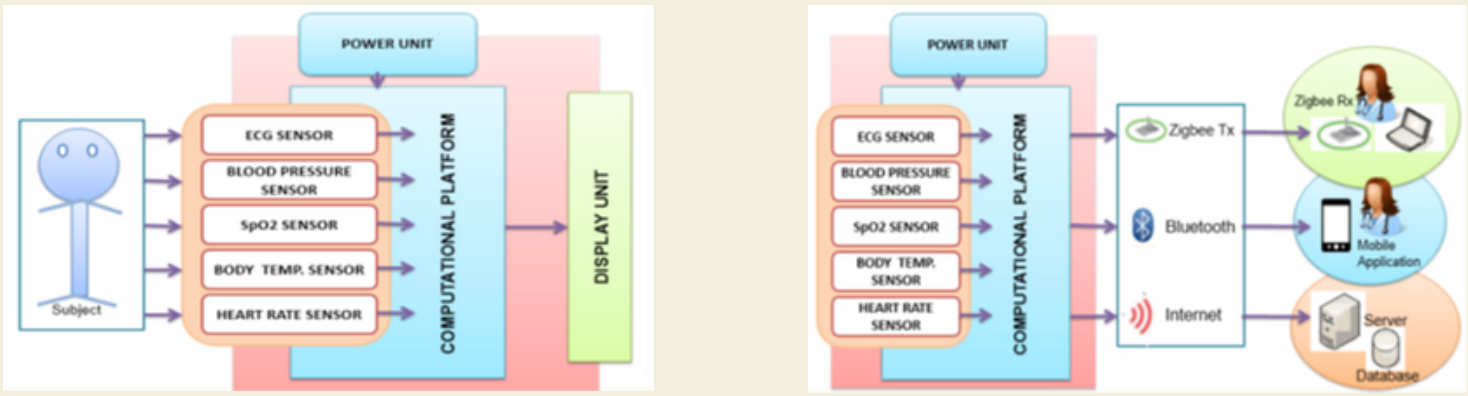
The basic design functionality of the system is broadly divided into different sections:

1. Real-Time Data Extraction and Monitoring station

The block schematic of the real-time data extraction and monitoring station is shown in figure 3(a). It incorporates a computational platform, to which various health sensors will be connected. The health sensors are the basic entities connected with the patient to extract the readings for the computational platform. The raw readings from the sensors will undergo processing as per the programming. Physiological parameters of the patient will be displayed on the display unit which is further connected to the computational platform.

2. Wireless communication controller

The block schematic of the wireless communication controller is shown in figure 3(b). The real-time data monitoring station imparts the extracted readings to the communication station. Using a developed mobile application or mobility care unit, the local supervisors can analyze the parameters within the Bluetooth and ZigBee range. The remote supervisors can analyze the parameters over an internet connection.

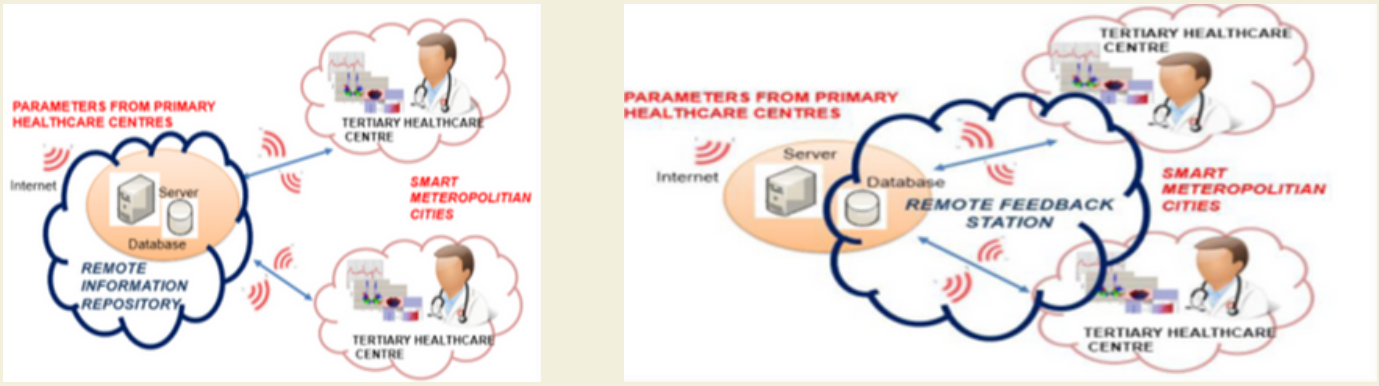


(a) (b)

Figure 3: (a) Real-Time Data Extraction and Monitoring Station and (b) Wireless communication controller

3. Remote Advisory and Decision Support station

The schematic diagram of the remote advisory and decision support station is shown in figure 4(a). Remote Advisory and Decision Support stations provide the remote monitoring of physiological parameters at tertiary health care centres. Physiological parameters extracted at primary health care centres in Remote Locations are sent to Tertiary Health Care Centres for analysis of the readings. The decision regarding abnormal readings will be based on the specific decision support system which will define the threshold values for each and every physiological parameter.



(a) (b)

Figure 4: (a) Remote information repository and (b) Remote feedback station

4. Remote Information Repository

The block schematic of the remote information repository is shown in figure 4(b). The remote information repository provides storage of physiological parameters at the server which can be further retrieved at different tertiary healthcare centers in the future. The data will have real-time tracking and thus help the remote supervisors in the deep analysis of readings.

5. Remote Feedback Module

The block schematic of the remote feedback module is shown in figure 5. The remote feedback module provides intercommunication between primary and tertiary health care centers which enables doctors at different ends to discuss the cases, settle queries, collaborate insights, and provide solutions in peculiar circumstances.

Applications of smart health monitoring systems

The smart health monitoring system has found widespread application in healthcare services such as chronic patient monitoring, rehabilitation after critical illness or surgery, and elderly people care.

· Chronic patients can be taken care of at home with reduced expense and improved mobility. Even when the patients are in their comfort zone, doctors and healthcare professionals can continuously monitor the vital parameters of the patients and guide them in chronic disease management.

· The success of rehabilitation lies in the patient's dedication and accuracy in following the rehabilitating programs. The real-time activity monitoring of patients boosts the efficiency of the rehabilitation sessions.

· Older people may have one or multiple diseases. Smart health monitoring systems substantially help them deal with these diseases by reducing the frequent hospital visit or hospitalization, early diagnosis of conditions and resulting in correct and timely treatment and better quality of life.

Challenges in smart health monitoring

To implement the smart health monitoring system, these are the main challenges that need to be addressed

- One of the advantages of SHMS is that it can provide healthcare services to smart locations without much healthcare infrastructure. But for deploying smart health monitoring systems, there is a minimum requirement for computation and communication facilities for sensing and transmitting data.
- People have not used wearable and self-monitoring devices. It may take time to adapt to sensing devices and even sometimes they have to be trained for it.
- The users including patients, doctors, and caretakers may be concerned about the privacy, security, confidentiality, and affordability of the health data information of the patient and the accuracy of the system.

Reference

1. Pramanik, Pijush Kanti Dutta, Anand Nayyar, and Gaurav Pareek. "WBAN: Driving e-healthcare beyond telemedicine to remote health monitoring: Architecture and protocols." Telemedicine technologies. Academic Press, 2019. 89-119.

2. Gahlot, Sonal, S. R. N. Reddy, and Dinesh Kumar. "Review of smart health monitoring approaches with survey analysis and proposed framework." IEEE Internet of Things Journal 6.2 (2018): 2116-2127.

3. Jones, Richard W., and Konstantinos Katzis. "5G and wireless body area networks." 2018 IEEE wireless communications and networking conference workshops (WCNCW). IEEE, 2018.

4. Wei, Kefeng, et al. "Health monitoring based on the internet of medical things: architecture, enabling technologies, and applications." IEEE Access 8 (2020): 27468-27478.

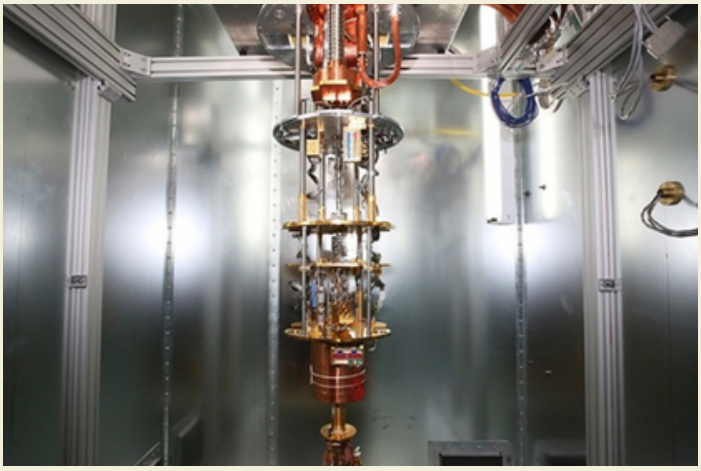
IS A QUANTUM COMPUTER FASTER THAN A REGULAR COMPUTER? HOW?

By Anit Sunil S2ECA

Scientists at the quantum computing company D-Wave have shown that by using a method called quantum annealing, they could simulate certain materials up to 3 million times faster than with the corresponding conventional methods

Working with google researchers, the scientists tried to measure the simulation speed in one of the D-Wave quantum annealing processors and found that performance has increased with both the size of the simulation and the difficulty of the problem, reaching a million acceleration over what might be achieved with a classical CPU.

The latest research from D-Wave shows that the company's quantum annealing processors can lead to computational performance benefits.



D-Wave processors are based on quantum annealing technology, which is a quantum computing technique used to solve optimization problems. While some argue that the scope of the problems that can be resolved by the technology is limited, quantum annealing processors are easier to control and operate than their gate-based equivalents, which is why D-Wave's technology has already reached much higher numbers of qubits than can be found in the devices built by big players like IBM or google.

To simulate exotic magnetism, Andrew King and his team used the D-Wave 2,000-qubit system, which was recently revised to reduce noise, to model a programmable quantum magnetic system, just like Berezinskii, Kosterlitz and Thouless did in the 1970s to observe the unusual states of matter. The researchers also programmed a standard classical algorithm for this kind of simulation, called a "path-integral Monte Carlo" (PIMC), to compare the quantum results with CPU-run calculations. As the numbers show, the quantum simulation outperformed classical methods by a margin.

Equally as significant as the performance milestone, said D-Wave's team, is the fact that the quantum annealing processors were used to run a practical application, instead of a proof-of-concept or an engineered, synthetic problem with little real-world relevance. Until now, quantum methods have mostly been leveraged to prove that the technology has the potential to solve practical problems, and is yet to make tangible marks in the real world

In contrast, D-Wave's latest experiment resolved a meaningful problem that scientists are interested in independent of quantum computing. The findings have already attracted the attention of scientists around the world.

STAFF PARTICIPATION

Dr. Bobby Mathews C HOD

- Completed a Short Term Training Program (STTP) on Training of Trainers on Ecosystem-based Disaster Risk Reduction and Climate Change Adaptation on 23.05.22 conducted by the United Nations.

Dr. V T Gopakumar

- Got an invitation from OPTICA (formerly OSA) to attend in-person (fully funded) "INNOVATION SCHOOL" from 12th June to 16th June 2022, in Washington DC, USA.

Divya V Chandran

- Published a paper "Change Detection & Flood Water Mapping from Remotely Sensed Images- A survey," International Conference on Sustainable Computing and Data Communication Systems (ICSCDS), 2022, pp. 1601-1606, DOI: 10.1109/ICSCDS53736.2022.9761015.

- Submitted Paper on 2022 IEEE World Conference on Applied Intelligence and Computing (AIC 2022)

Aswathy N

- Attended a Webinar on Understanding research metrics and Finding relevant journals to read and publish, on 5th May 2022 by Amrita Vishwa Vidyapeetham.

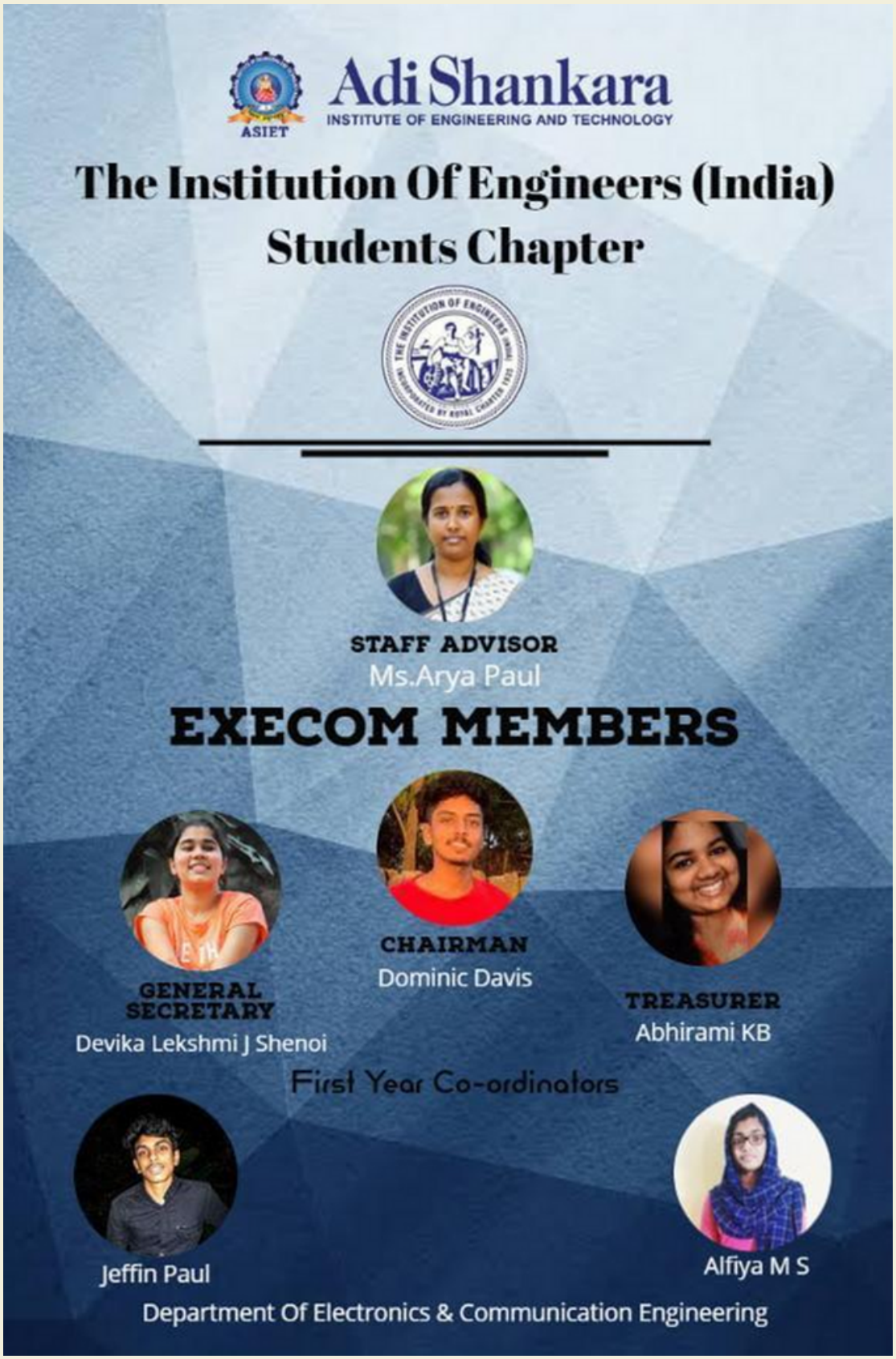
Prasanth P Menon

- Got NPTEL Elite Certification in Photonic Integrated circuits (equivalent to fdp) in May 2022 by IIT.

STUDENT ACHIEVEMENTS

Student Batch	Name	Title of Course attended	Conducted By	Date
2021-25	DHANUSH S S	BMW WORKSHOP	Mechanical department	5/10/2022
2018-22	ASWANI M RAVI	Introduction to industry 4.0 and industrial internet of things of	Nptel	4/24/2022
2020-24	N Sneha Das	BMW WORKSHOP	Octane	5/10/2002
2021-25	ANAL C D	Mechanical QA/QC &NDT	INSTITUTE OF INDUSTRIAL RESEARCH AND DEVELOPMENT CONFEDERATIONS	2/10/2022
2021-25	ANAL C D	Medical Device Design and Development	Institution of industrial research and development confederation	2/17/2022

2021-25	PARVATHY V	Data Science For Beginners	Future Skills Prime(NASSCOM)	12/19/2021
2018-22	AUSHIN JOSE MANJOORAN	1. Introduction to Industry 4.0 and Industrial Internet of Things 2. Product design and Manufacturing	NPTEL - IIT Kharagpur, IIT Kanpur	5/15/2022
2018-22	AISHA MEHRIN K I	Introduction to Industry 4.0 and Industrial Internet of Things	NPTEL	5/15/2022
2020-24	ANJANA RAVEENDRAN	BMW WORKSHOP	Department of Mechanical Engineering, ASIET	5/10/2022
2020-24	AVIN SONY	Technophile	Adi Shankara Institute of Engineering and Technology Kalady	5/20/2022
2020-24	S DEVIPRIYA	Advaiya Art Fest 2022	Adi Shankara Institute of Engineering and Technology Kalady	5/20/2022
2021-25	SREERAG	Electric and future mobility	Techmaghi	5/14/2022
2021-25	ALFIYA M S		Adi Shankara Institute of Engineering and Technology Kalady	5/13/2022


Adi Shankara
INSTITUTE OF ENGINEERING AND TECHNOLOGY
ASIET
The Institution Of Engineers (India)
Students Chapter
STAFF ADVISOR
Ms.Arya Paul
EXECOM MEMBERS
CHAIRMAN
Dominic Davis
GENERAL SECRETARY
Devika Lekshmi J Shenoi
TREASURER
Abhirami KB
First Year Co-ordinators
Jeffin Paul
Alfiya M S
Department Of Electronics & Communication Engineering


DEPARTMENT OF ELECTRONICS AND COMMUNICATION
STAFF ADVISORS
Ms. Remya Ramesh
Ms. Savitha Raghavan
CORE TEAM
Jagannath U
Chairman
Krishnapriya Boban
Vice-Chairman
Aswathy Babu
Secretary
Edwin Francis
Joint Secretary
Akhil Kumar
Treasurer
THIRD YEAR REPRESENTATIVES
Abhirami KB
Devadath PG
Sneha V
Sohith Krishna
SECOND YEAR REPRESENTATIVES
Annmaria Paulose
Jaison T Poulose
Noel
Mariya Sunny
FIRST YEAR REPRESENTATIVES
Bahanam Varghese
Anit Sunil
Muhammed Fahim
Swathy Krishna

EDITORIAL BOARD

Dr BOBBY MATHEWS C
HEAD OF DEPARTMENT(HOD).
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Ms ANJANA S
ASSISTANT PROFESSOR
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Ms NEETHA K
ASSISTANT PROFESSOR
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Ms Hridaya U Mallia
S8 ECA

Ms Kavya G Padiyar
S8 ECB

Mr Samuel Sabu Thomas
S6 ECB

Ms Reshmi R
S6 ECB

Ms Titya Ramchandran
S4 ECB

Ms Sereen Sabu
S4 ECB