THE ELECOMM

A Half Yearly Newsletter

Department of Electronics & Communication Engg, Echelon Institute of Technology, Faridabad

This is the second issue of "THE ELECOMM" of the academic year 2021-2022. I would like to take this opportunity to motivate all the students to enroll in the internship programs and SWAYAM MOOCs to enhance their skills and earn the required credits.

Nitu Chauhan
Editor

Highlights

- ❖ **Article on E-waste**

- ❖ **Article on Arduino**

- ❖ **Yoga Day Celebration in the institute**

- ❖ **Activities in the department**

- ❖ **Faculty achievements**

E-Waste

Electronic waste also called e-waste constitutes of various forms of electric and electronic equipment that have ceased to be of value to their users or no longer satisfy their original purpose.

Technology has been making our lives easier, simpler and faster in so many ways with the progressive inventions of electrical and electronic equipment such as personal computers, scanners and televisions. The volume of generated e-waste has been increasing in line with economic development all over the world.

Fridges, freezers and cooling equipment, computers, telecommunications, equipment solar panels, monitors, LED Bulbs are types of e-waste. E-waste poses a huge risk to human beings animals and the environment. The presence of heavy metals and highly toxic

substances such as Mercury, Lead, and Cadmium pose a significant threat to the environment even in minute quantities. Consumers are the key to better management of e-waste pollutants.

The e-waste can accumulate in our bodies and can lead to DNA damage and cancer. Children are particularly vulnerable because they are still growing and pregnant women exposed to e-waste can pass on increased health hazards to their children in the womb.

When e-waste is exposed to the heat toxics chemicals are released into the air damaging the atmosphere. Those toxics materials can then seep into the ground water, affecting both land and sea animals. E-waste can also contribute to air pollution.

How can we manage e-waste?

1. Learn about local recycling options

2. Buy less electronic items

3. Organize electronic gadgets what we have

4. Chemical recycling methods

5. Buy energy star rated electronics

6. Teach kids about e-waste

Just as nations had bounded together to fight climate change, water pollution and save endangered species. It is critical that they stand together to make difference in the management of e-waste.

By Anish Ranjan
ECE 6th Sem

What is Arduino?
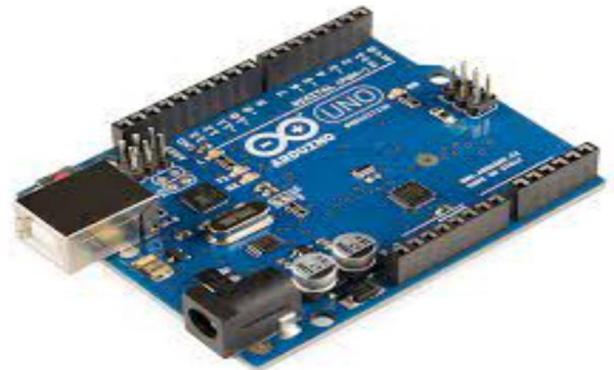
Arduino is an open-source electronics platform based on easy-to-use hardware and software. Arduino boards are able to read inputs - light on a sensor, a finger on a button, or a Twitter message - and turn it into an output - activating a motor, turning on an LED, publishing something online. You can tell your board what to do by sending a set of instructions to the microcontroller on the board. To do so you use the Arduino programming language (based on Wiring), and the Arduino Software (IDE), based on Processing.

Over the years Arduino has been the brain of thousands of projects, from everyday objects to complex scientific instruments. A worldwide community of makers - students, hobbyists, artists, programmers, and professionals - has gathered around this open-source platform,

their contributions have added up to an incredible amount of accessible knowledge that can be of great help to novices and experts alike.

Arduino was born at the Ivrea Interaction Design Institute as an easy tool for fast prototyping, aimed at students without a background in electronics and programming. As soon as it reached a wider community, the Arduino board started changing to adapt to new needs and challenges, differentiating its offer from simple 8-bit boards to products for IoT applications, wearable, 3D printing, and embedded environments.

Why Arduino?

Thanks to its simple and accessible user experience, Arduino has been used in thousands of different projects and applications. The Arduino software is easy-to-use for beginners, yet flexible enough for advanced users. It runs on Mac, Windows, and Linux. Teachers and students use it to build low cost scientific instruments, to prove chemistry and physics principles, or to get started with programming and robotics. Designers and architects build interactive prototypes, musicians and artists use it for installations and to experiment with new musical instruments. Makers, of course, use it to build many of the projects exhibited at the Maker Faire, for example. Arduino is a key tool

to learn new things. Anyone - children, hobbyists, artists, programmers - can start tinkering just following the step by step instructions of a kit, or sharing ideas online with other members of the Arduino community.

There are many other microcontrollers and microcontroller platforms available for physical computing. Parallax Basic Stamp, Netmedia's BX-24, Phidgets, MIT's Handyboard, and many others offer similar functionality. All of these tools take the messy details of microcontroller programming and wrap it up in an easy-to-use package. Arduino also simplifies the process of working with microcontrollers, but it offers some advantage for teachers, students, and interested amateurs over other systems:

Inexpensive - Arduino boards are relatively inexpensive compared to other microcontroller platforms. The least expensive version of the Arduino module can be assembled by hand, and even the pre-assembled Arduino modules cost less than $50.

Cross-platform - The Arduino Software (IDE) runs on Windows, Macintosh OSX, and Linux operating systems. Most microcontroller systems are limited to Windows.

Simple, clear programming environment - The Arduino Software (IDE) is easy-to-use for beginners, yet flexible enough for advanced users to take advantage of as well. For teachers,

it's conveniently based on the Processing programming environment, so students learning to program in that environment will be familiar with how the Arduino IDE works.

Open source and extensible software - The Arduino software is published as open source tools, available for extension by experienced programmers. The language can be expanded through C++ libraries, and people wanting to understand the technical details can make the leap from Arduino to the AVR C programming language on which it's based. Similarly, you can add AVR-C code directly into your Arduino programs if you want to.

Open source and extensible hardware - The plans of the Arduino boards are published under a Creative Commons license, so experienced circuit designers can make their own version of the module, extending it and improving it. Even relatively inexperienced users can build the breadboard version of the module in order to understand how it works and save money.

- By Rahul Gaur
ECE 6th Sem

Yoga Day celebration

Since 2015, the International Day of Yoga is celebrated worldwide on 21st June every year. The theme for this year's Yoga Day was 'Yoga for Humanity'. There was a yoga session for all the faculty and staff members on this occasion in the institute.

Glimpses of 8th International Yoga Day Celebrations at Echelon

Activities in the department

The Robotics and Electronika Club managed by ECE department organized hands on experience on Tinkercad and Scratch for students on 20th May, 2022 in the Analog Electronics lab at 2 pm. Ms. Mrinal Manjari and Mr. Himanshu Kumar coordinated the event. Students participated with great enthusiasm.
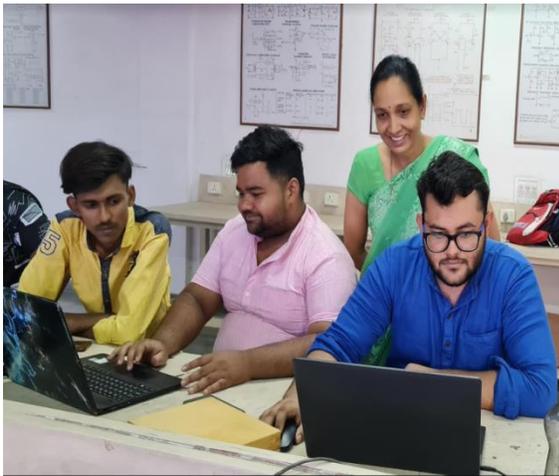
Faculty Achievements:

Following faculty members of the department participated in several faculty development programs and workshops:

Ms. Mrinal Manjari

- Participated and successfully completed the 6-day online UHV-II FDP organized by All India Council for Technical Education (AICTE) from 20th June to 25th June, 2022.

- Participated in the NPTEL E-Awareness Workshop on June 15, 2022.

Ms. Nitu Chauhan

- Participated and successfully completed the 6-day online UHV-II FDP organized by All India Council for Technical Education (AICTE) from 20th June to 25th June, 2022.

- Participated in the NPTEL E-Awareness Workshop on June 15, 2022.

- Participated in 3 days International Conference organized by Oxfaa University, Tamil Nadu, on Notion of Women Empowerment in Digital Native held between 12th June, 2022 to 14th June, 2022 .

Acknowledgment

For the publication of "THE ELECOMM" I would like to thank the members of faculty of the ECE department for their valuable contribution.

Nitu Chauhan

(Editor -The Elecomm)

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