KINGS
COLLEGE OF ENGINEERING
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Affiliated to Anna University, Chennai.

B++ NAAC

INSTITUTION'S
INNOVATION
COUNCIL
(Ministry of Education Initiative)

Session Details:

Title of the Session : Workshop on **"Prototype/Process Design and Development-Prototyping "**

Date : 11.4.2023	Duration : 7 Hour (9.15 A.M TO 4.15 P.M)
Activity Category :External and Internal	Nature of the Session : Physical Mode
Facebook link for the event organized	Facebook/Kings College of Engineering
Instagram link for the event organized	Kings_iic 4.0

Speaker Details:

Name:Dr.M.Vijayakumar	Designation:Founder&CEO

Organization:IndiGuard Systems Private Limited,Thanjavur

Programme Report:

Objective:

- To provide a brief idea of prototype design and about it's important in the manufacturing Industry and other sectors.
- To give Innovative ideas to the students to upgrade and know about the development and Technology.
- To provide a platform for the Teaching faculties and students to upgrade and know about the Innovation and product development.
- In addition, this programme will help to improve the student's ability in carrying out simple innovation and to bring to product through professional discussions.

Institution's Innovation Council (IIC) of Kings College of Engineering organized workshop on **"Prototype/Process Design and Development" on 11.4.2023.**The session was started by 10.00 A.M. Dr.J.ArputhaVijayaSelvi,Principal&IIC President delivered presidential address.The event had a whooping number of 72 participants of whom 65 were students and 07 were Faculty. Introduction about the resource person was delivered by M.Mukesh, UG Student IIC Member.

The following points were discussed during session-I:

Prototype Design:

- Prototyping is the process of designing and building an early model of a product to test it. Any system or device that will be sold to consumers, government agencies, or businesses will begin as a prototype that typically does not have all of the components or functions that will be used in the final product that is brought to market.

- A prototype can serve as a proof of concept showing that the system or device can be built and will perform correctly.

Breadboards:

- Breadboards are small boards that are commonly used for circuit prototyping. They allow the circuit's components to be connected without making permanent connections.
- The red and blue strips on the sides of the board (sections A and D) are called power rails and are connected down the board, usually used for powering and grounding.
- The non-colored rows between the power and ground strips (sections B and C) are connected across and are usually used for making the connections between components. Sections B and C are not connected to each other across the bridge in the middle of the board

Microcontrollers:

- A microcontroller is an inexpensive, programmable computer without any peripherals, such as a mouse, keyboard, or screen.
- Microcontroller boards have direct access to the input and output pins of their processing chips so that the user can directly read from sensors and perform actions.
- Microcontrollers perform specific functions in household appliances, medical devices, cars, and other systems and devices.
- Arduino boards which use a microcontroller were designed to be easily programmed and assembled into larger projects. These boards come in many shapes and sizes, and some contain additional features, such as WiFi or Bluetooth connectivity. Different boards can also have different features, such as a higher processing speed and more memory.

The Arduino IDE (Integrated Development Environment):

- Arduino IDE is a program that can be used to edit, compile, and upload code to a supported microcontroller.
- Verify: Checks code for errors and points those errors
- Upload: Verifies code and uploads it to the Arduino board
- Console: Shows errors found in the hardware
- Serial Monitor: Sends and receives messages to and from the board

Arduino Programming:

- The Arduino programming language is based on C/C++, but it is designed to be simpler and easier to learn. The intuitive way to think about programming is like building with LEGO blocks: certain rules must be followed and different building blocks can be used to build bigger parts.
- Every line must end with a semicolon (;) unless it is a conditional, loop, or function. Comments start with two backslashes (//). Comments are text that the program ignores and are used to label and explain code.

Arduino Programs:

- Programs written in Arduino are called sketches. A basic sketch can be broken up into three different areas: global, setup, and loop. These areas are pictured in Figure 14.
- Global: Contains constants and imported libraries
- Setup: Functions that run once at the start of the program. Setup function often used to activate pins and sensors in the program
- Loop: Function runs continuously after Setup function. Code in a loop function will continue to run until Arduino loses power. Function often in most of the program to read sensors and switch pins HIGH or LOW

Schematic Circuit Design:

- There are dozens of PCB tools available. The first step in designing a schematic is to place all of the key components. For this initial design this includes the microcontroller chip, a voltage regulator, a microUSB connector, and a programming connector.
- For more complex designs it usually makes more sense to completely design each sub-circuit first, and then merge them all together. Rechargeable batteries that hold electrical charge and help to stabilize the voltage on a supply line.By placing a 4.7uF capacitor on the input pin of the linear regulator. This is the 5VDC input voltage supplied by an external USB charger.
- This voltage is fed into a TLV70233 linear regulator which steps the voltage down to 3.3V since the microcontroller can only be supplied by a maximum of 3.6V.Another 4.7uF capacitor is placed on the output of the regulator as close to the pin as possible.

SessionII:

- During the session-II resource person has started from his research experience and different mechanisms are used in Prototype design and process designing order to develop the prototype. He has broadly given the agenda such as Introduction about prototype, basic circuit designing, latest software and applications etc. He clearly explained from basics of prototype through some practical examples such as LED TV and Refrigerator.
- In addition with, other practical examples were also given such as agriculture field and real world problem COVID-19 .He has given plenty of problems and solutions in order to get product through flowchart.
- Finally he has mentioned that general Instructions and guidelines to solve real world problems to convert prototype to product. The session was very informative and the participants have interacted with the resource person.

Valedictory Function:

This session proposed a chance to the Undergraduate and Faculty members to spread their skill in the various steps involved in prototype and various processes involved in design & development. The feedbacks from the participants were collected. Mr.G.Bharath, IIC Member delivered the vote of thanks.
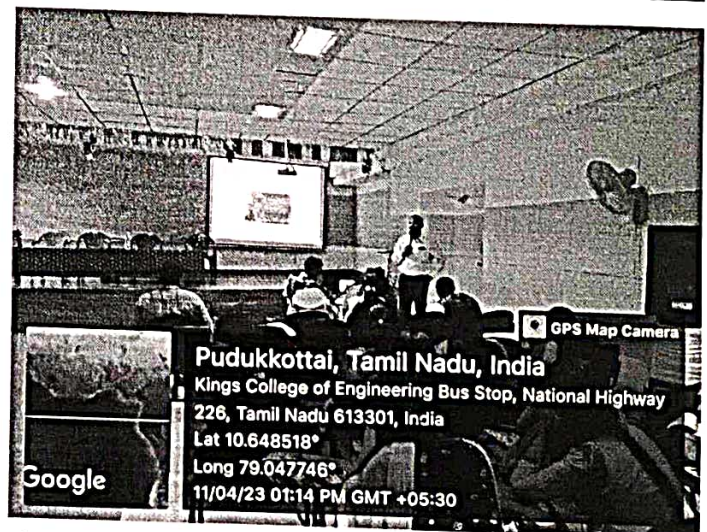
Outcome of the activity:

- All the participants have benefitted and gained knowledge about Prototype/Process Design and Development.
- Programme helped to adapt new technologies in all the sectors.
- Portrays the accelerated learning curve for students in involving different technologies associated with different Industries and funding Agencies.
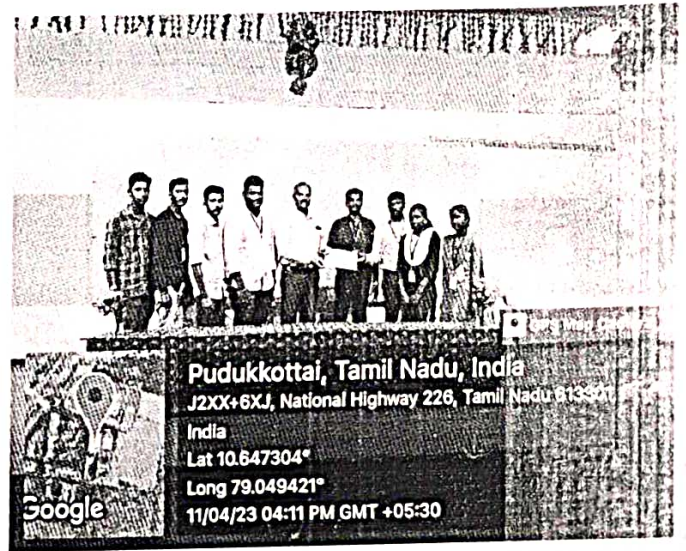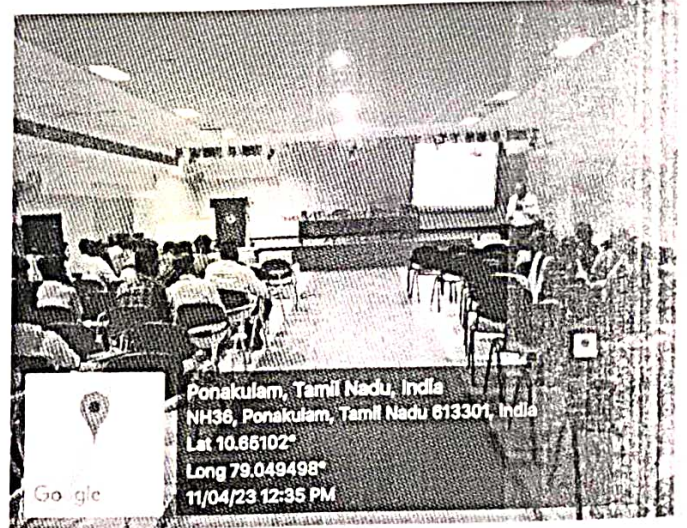
Participants Details:

Total No. of Student Participation: 65 Members

Total No. of Staff (Teaching / Non-Teaching) Participation: 07 Members

SNAPSHOTS:

Pudukkottai, Tamil Nadu, India
Kings College of Engineering Bus Stop, National Highway 226, Tamil Nadu 613301, India
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Ponakulam, Tamil Nadu, India
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FEEDBACK:

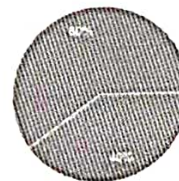**Year**
25 responses

Level of Knowledge at the end of the course
25 responses

- Excellent
- Good
- Average

Objective of the Workshop Were Clearly Defined
25 responses

- Strongly Agree
- Agree
- Neutral
- Disagree

Was this workshop useful
25 responses

- Yes
- No

Was the workshop upto your expectations ?
25 responses

- Yes
- No

Coordinators   20/04/23

Vice President , IIC   20/04/23

Principal/President, IIC   20/4/2023

20/04/2023