KARNATAK LAW SOCIETY'S

SHRI VASANTRAO POTDAR POLYTECHNIC

KLS CAMPUS, TILAKWADI, BELAGAVI – 590 006

(Recognized by Govt. of Karnataka & Approved by AICTE, New Delhi)

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGG.

NEWS LETTER -2023-24

Vision

The department of Electronics and Communication engineering shall stand as an excellent department, offering quality education in electronics and communication with a research focus, catering to the need of the public and being in tune with the advancing technological revolution.

Mission

M1: To train the students of Department of Electronics and Communication Engineering in technological areas.
M2: To establish centers of excellence pertaining to develop skills among the students.
M3: To facilitate the spirit of innovation & creativity in technological areas.

Message from Chairman

At VPP our quest for excellence continues through various initiatives that will help our students place themselves on a career path, that does justice to their capacities and motivation. I look forward for your suggestions and ideas for raising the bar.

-Shri. U.N.Kalkundrikar

Message from Principal

To impart quality education and bridge the industry-institution gap, VPP has established a Centre of Excellence which runs programmes to cater the needs of the students. Memorandum of understanding with the industries is established which helps the students in persuading internship programmes.To help students get admitted in reputed Engineering colleges, VPP conducts NATA and DCET classes for the students of final year. Your suggestions are most welcome.

-Ms. Shridevi S. Malaj

Editorial Board

Mrs. Priyanka Nishandar
Lecturer, Dept of EC
Mrs. Snehal Jadhav
Instructor, Dept. of EC

Abhay Nagure
VI SEM EC Student
Sakshi Tarale
VI SEM EC Student

EVENTS

- Two weeks Student Induction Programme (SIP) was organized for the newly admitted students from 3.7.2023 to 18.7.2023
- First Parent meet for the academic year 2023-24 was organized on 3rd July,2023.

- V sem students along with staff visited KMF on 16th Sep 2023.

- Placement talk by Shri. Vinayak Lokur on 11th Oct,2023 for al the final year students.

- A Talk on Business strategist and facilitator was arranged by KLS VPP for the boys students of first year on 30th Oct.2023. Resource person was Mr. Amit Soundalkar.

- CS & EC dept. organized an expert talk on "Development in the field of computer science" on 18th November 2023 for the 5th sem students, Resource person was Vidur Vatsalya, Microsoft, Seattle, USA.

- 24th and 25th of November 2023 project exhibition was organized for SSLC school students.

- **Technical Talk was organized on 10.02.2024 on Topic :**
  1. "Artificial intelligence in electronics & Comm. Engg."
     Resource Person:Prof. Santosh Kulkarni,Dept. of E&C,KLS GIT, Belagavi
  2. " **Sensors"**Resource person :Mr. Kishan Bhat, Manager,
     Servocontrols & Hydralics India Pvt. Ltd.Belagavi
  3. "**Sensors(CAN Technology)"**Resource person :Mr.Ragunath Shetty,
     Sr. Electronics Engineer. Servocontrols & Hydralics India Pvt. Ltd.Belagavi

- Document verification for NBA was done by Mrs. K.S.Bharati along with Mrs. T.Veena.
- KLS' s SHRI VASANTRAO POTDAR POLYTECHNIC BELAGAVIConducted a Road Safety Awareness Program on 12th Feb, 2024, for the final year students of diploma, on behalf of Maruti Suzuki and Shantesha Motors Mr. Nitish Hubli educated students about the importance of Road safety, rules and regulations and also created an awareness about the responsibility towards the same.

- Karnataka Fire and Safe Belgaum gave awareness about use of Fire Extinguishers for the 1st year students and staff of VPP.

- Staff Mrs. Pramod Terdalkar along with 10 students of E&C visited Maheshwari School for blind's, Nehru Nagar, Belagavi on 24th March 2024.

- Career Guidance Program on Air Force organized by KLS GIT for all the students of final year on 6th March, 2024. Mr. Sudindra Kulkarni accompanied the students.

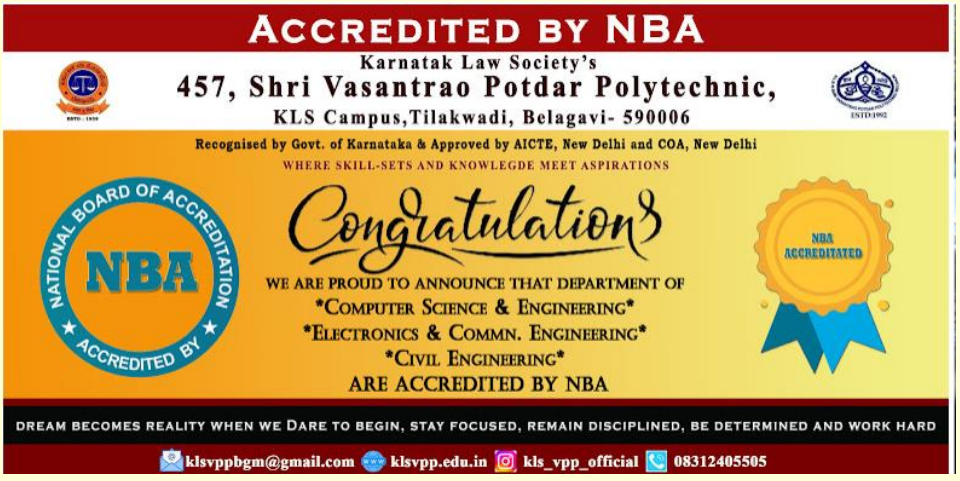
- Parents meet was organized for all semester students of E&C on 5th March 2024.

Enews Letter 2023-24

Department of ELECTRONICS &COMMUNICATION Engg.

- NBA expert team visited on 15th, 16th, and 17th March 2024.

- Dept. was NBA accredited on 26th March 2024



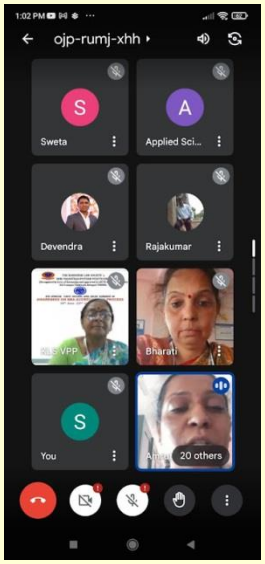
- Sanskriti 2k24 was organized on 17th and 18th April 2024. Students participated in Dance, Singing, Treasure Hunt, Face Painting and reel making. Annual day was celebrated on 19th April 2024. Academic and Sports prize distribution was done. Chief Guest was Neelesh Chougule, Founder of Creintors Group of Companies.

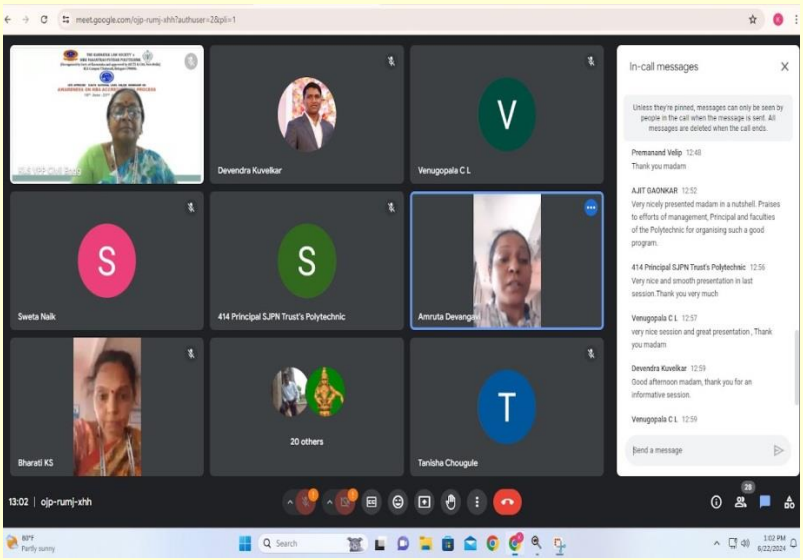
- Farewell was arranged for all the students of final year on 23rd April,2024.

Staff Achievements and Activities

- **Faculty Development program was organized on 24th 26th and 27th July,2023. Principal & staff members of KLS VPP attended the same**

- Staff Mrs. Pramod Terdalkar was resource person at Government polytechnic, in E&C Dept. on topic PCB design on 21th March 2024.
- THE KLS SHRI VASANTRAO POTDAR POLYTECHNIC , Belagavi organized a 5-day National level online workshop under ISTE on ” *Awareness on NBA accreditation Process* ” from 18th to 22nd June 2024 under guidance of K,S,Bharati, SGL / IQAC coordinator.Criteria incharges of the institution were the resource person for respective sessions.
  Sucheta Kulkarni (Lecturer) was Resource person for Criteria -2
  Amruta Devangavi (SSL,HOD) was Resource person for Criteria -7
  Abhiman Deshpande (Lecturer) was Resource person for Criteria -4





Students Achievements

- Student of 5th sem Shivganesh Bhalekar, E&C Participated in ANUTTARA 2023 held at Sant Gajanan Maharaj Polytechnic, Mahagaon in the ROBO Racing competition on 14th Oct 2023
- DCET Toppers 2022-23.

Ranks in **DCET-2023-24**

Register No.	Name of student	DCET Rank	Photograph
457EC21001	ABHAY NAGURE	152	
457EC21039	VINYAS KULKARNI	164	
457EC21010	ARCHANA BASUTKAR	200	
457EC21022	PRAJWAL SONDAKAR	283	
457EC21029	SAKSHI TARALE	532	
389EC21X01	SHIVAM PUNEKAR	880	

Final year toppers 2022-2023

Sl. No.	Name of the student	3rd Year		Photo	Rank
		Total	%age		
1	Mr. SUJAL RAHUL AMBEWADI	784/800	98.00%		1st Rank
2	Miss. SEJAL SANJAY KOKITKAR	783/800	97.87%		2nd Rank
3	Mr. RANJEET SINH PAWAR	775/800	96.87%		3rd Rank

Second year toppers 2022-2023

Sl.No.	Name of the student	2nd Year		Photo	Rank
		Total	Photo		
1	Mr. VINYAS VITHAL KULKARNI	807/850	94.94%		1st Rank
2	Mr.ABHAY SUNIL NAGURE	769/850	90.47%		2nd Rank
3	Miss.LAVANYA A GARAG	744/850	87.53%		3rd Rank

First year toppers 2022-2023

Sl.No.	Name of the student	1st Year		Photo	Rank
		Total	%age		
1	Miss.NIKITA CHANDRAKANT PARAVI	901/950	94.84%		1st Rank
2	Miss.SANIKA VINOD CHAVAN	837/950	88.11%		2nd Rank
3	Miss.RENUKA VINAYAK DOMBLE	837/950	88.11%		2nd Rank
4	Miss.SHRADHA KRISHNA SULGEKAR	832/950	87.58%		3rd Rank

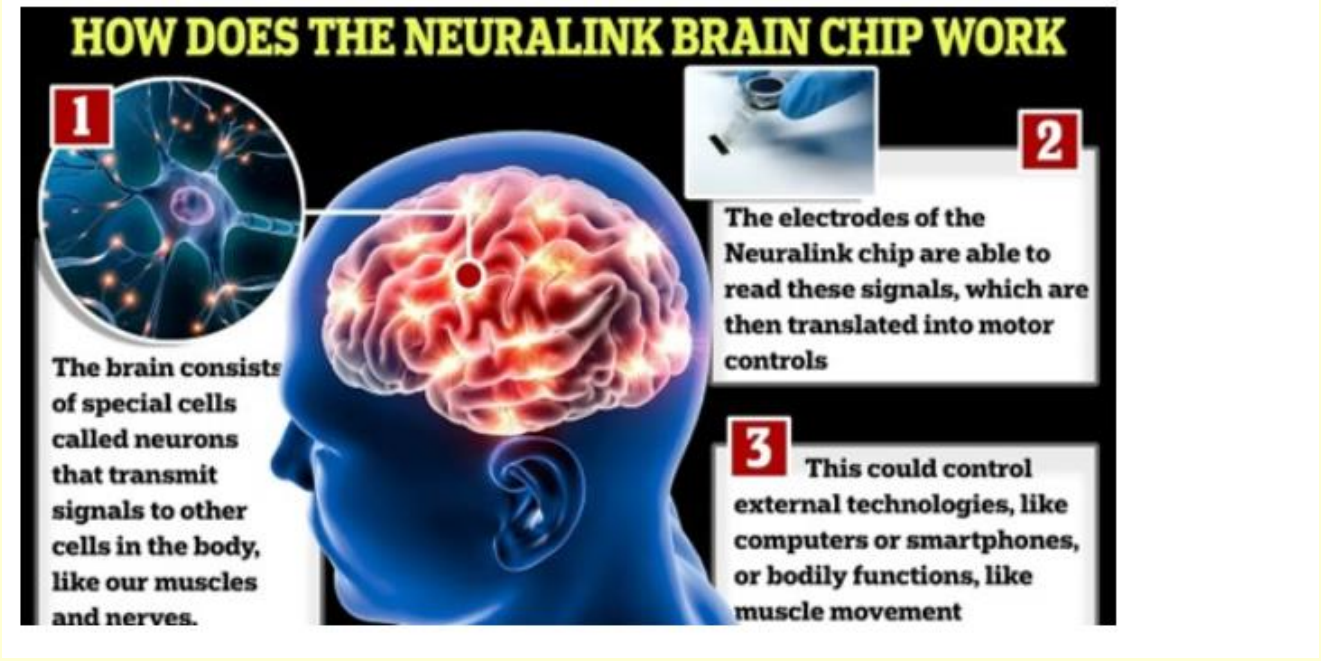
- Potdar scholarship is the scholarship awarded to the top scorer of the department of E&C. It is a scholarship of Rs. 2000/- by Shri. Ajit Potdar in the name of his father Late Shri. Anantrao Potdar and father in law Late Shri. Ganesh Rajadnya.
  The recipient for this scholarship is Mr. SUJAL RAHUL AMBEWADI (Top scorer).

ADVANCEMENTS IN ELECTRONICS AND COMMUNICATION

Article by Lecturer Sucheta Kulkarni (Pooja Rao)

As we navigate through the rapid advancements in electronics and communication, we witness groundbreaking innovations shaping our world. From the expansive rollout of 5G networks and the rise of artificial intelligence to the integration of the Internet of Things (IoT) and breakthroughs in quantum computing, technology is transforming every facet of our lives. Amidst these advancements, one of the most intriguing fields that stands out is brain implant technology—a domain where science fiction is fast becoming science fact.

BRAIN IMPLANT TECHNOLOGY



Brain implant technology involves placing devices or electrodes into or onto the brain to interact with neural tissue. These implants can be used for a variety of purposes, including:

1. **Medical Treatment**: For conditions like Parkinson's disease, epilepsy, and chronic pain. Deep brain stimulation (DBS) is a common example where electrodes are implanted in specific brain regions to modulate neural activity and alleviate symptoms.
2. **Neuroprosthetics**: These implants help restore lost sensory or motor functions. For instance, cochlear implants restore hearing, while brain-computer interfaces (BCIs) can help individuals with paralysis control prosthetic limbs or computer systems directly through brain activity.

3. **Research**: Scientists use brain implants to study brain functions, neural circuits, and the effects of various stimuli on brain activity.
4. **Cognitive Enhancement**: Although still largely experimental, some research explores using brain implants to enhance cognitive abilities or memory.

These devices can be either invasive, requiring surgery to implant, or non-invasive, such as those placed on the surface of the skull. Advances in materials, miniaturization, and wireless technology are rapidly evolving, making brain implants more effective and less intrusive over time. There is a need for robust regulatory oversight to ensure the responsible development, deployment, and use of brain implant technology.

THE INTERSECTION OF ELECTRONICS AND BRAIN IMPLANTS

Brain implant technology is emerging as a pivotal frontier where electronics and communication intersect with neuroscience. This field leverages sophisticated electronics to interface directly with the brain, offering both transformative medical solutions and pioneering research opportunities. Here's how recent trends in electronics and communication are driving innovation in brain implants:

1. ENHANCING MEDICAL TREATMENTS

Modern brain implants are revolutionizing the treatment of neurological and psychiatric disorders. **Deep Brain Stimulation (DBS)**, for example, uses advanced electronics to deliver targeted electrical impulses to specific brain regions, providing relief for patients suffering from Parkinson's disease, epilepsy, and chronic pain. With ongoing advancements, these devices are becoming increasingly precise and minimally invasive, enhancing their effectiveness and patient comfort.

2. INNOVATING NEUROPROSTHETICS

The rise of brain-computer interfaces (BCIs) is a direct result of progress in electronics and communication technology. BCIs enable direct communication between the brain and external devices, such as prosthetic limbs or computers. This technology is a game-changer for individuals with mobility impairments, allowing them to control devices with their thoughts. Recent developments are making these interfaces more intuitive and accessible, paving the way for broader applications and improved user experiences.

3. EXPLORING COGNITIVE ENHANCEMENT

While still in the experimental phase, brain implants for cognitive enhancement represent a fascinating application of advanced electronics. Researchers are investigating how these implants might improve memory, learning, and cognitive function. As electronics continue to evolve, the potential for creating devices that enhance brain function and cognitive capabilities becomes increasingly plausible, promising new ways to boost human performance.

4. ADVANCING BRAIN-MACHINE INTERFACES

The integration of brain-machine interfaces (BMIs) with cutting-edge electronics is opening new avenues for understanding and interacting with the brain. BMIs facilitate direct communication between the brain and machines, offering insights into brain function and enabling innovative applications. The latest advancements

in implant technology are making these interfaces more efficient and less invasive, pushing the boundaries of what is possible in brain-machine interaction.

5. ADDRESSING ETHICAL AND SAFETY CONCERNS

As brain implant technology advances, so too does the need to address ethical and safety concerns. Ensuring privacy, informed consent, and long-term safety are critical considerations as these technologies become more prevalent. Ongoing research and regulatory efforts are focused on balancing innovation with ethical responsibility, ensuring that these advancements benefit users while safeguarding their rights and well-being.

In Summary

The convergence of electronics, communication technologies, and brain science is leading to remarkable innovations in brain implant technology. From treating complex medical conditions to enhancing cognitive abilities, these advancements are shaping a future where the boundaries between mind and machine blur.

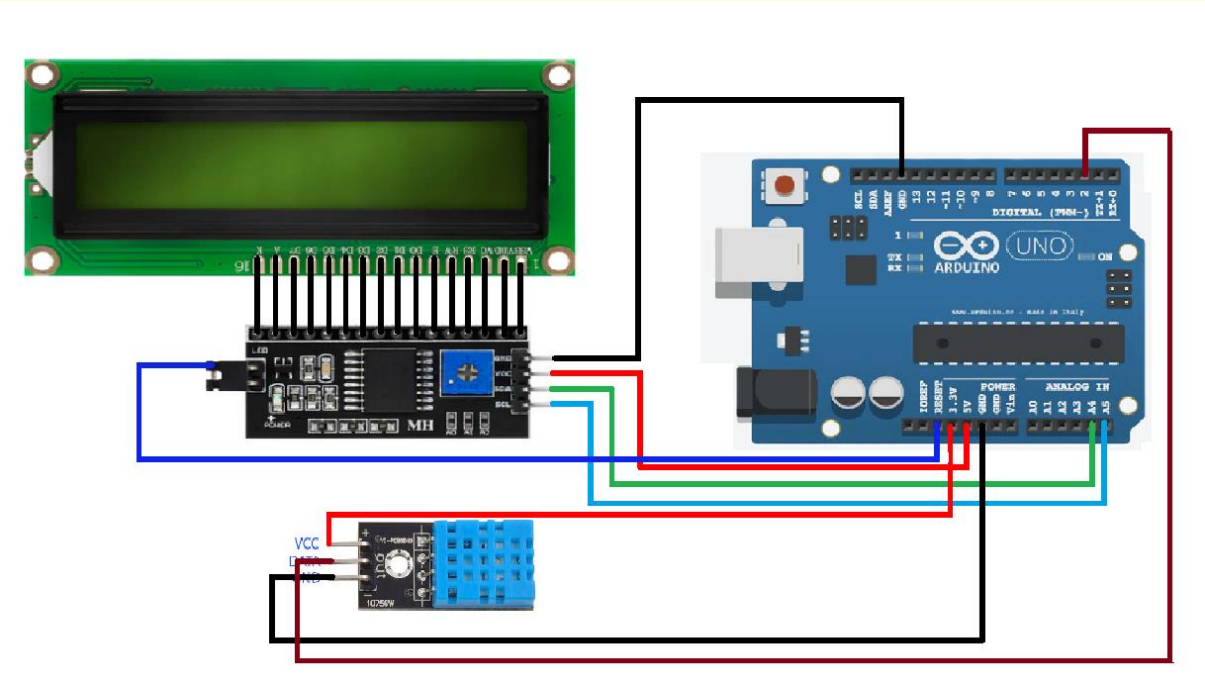
Temperature and Humidity monitoring over Liquid Crystal display using DHT11 Sensor & Arduino

Article by student **Yugandhar Desurkar**

Introduction

Monitoring temperature and humidity is essential in various applications, such as weather stations, home automation, greenhouses, and industrial environments. The DHT11 sensor is a popular, low-cost digital sensor used to measure temperature and humidity. When paired with an Arduino and a 16x2 Liquid Crystal Display (LCD), it allows real-time monitoring and display of environmental conditions. This project demonstrates how to build a simple temperature and humidity monitoring system using an Arduino Uno, a DHT11 sensor, and an I2C-enabled 16x2 LCD.

Circuit Diagram:



Components Required

1. **Arduino Uno**
   - A microcontroller board based on the ATmega328P. It has 14 digital input/output pins, 6 analog inputs, and operates at 5V.
2. **DHT11 Sensor**
   - A digital temperature and humidity sensor that provides calibrated digital output. It is relatively low-cost and provides reliable measurements of temperature (0-50°C) and humidity (20-80%).
3. **16x2 I2C LCD Display**
   - A 16x2 character LCD with an I2C interface, which reduces the number of pins required for connection. It displays the temperature and humidity readings.
4. **Jumper Wires**
   - Used to connect the components on a breadboard.
5. **Breadboard**
   - A platform used to connect components without soldering.

Connections:

- **DHT11 Sensor:**
  - VCC (Pin 1) → 5V on Arduino
  - GND (Pin 4) → GND on Arduino
  - DATA (Pin 2) → Digital Pin 2 on Arduino
- **16x2 I2C LCD Display:**
  - VCC → 5V on Arduino
  - GND → GND on Arduino
  - SDA → A4 on Arduino
  - SCL → A5 on Arduino

Software Requirements

- **Arduino IDE:**
  - The Arduino Integrated Development Environment (IDE) is used to write and upload code to the Arduino board.
- **Libraries:**
  - **DHT Library:** Provides functions to interface with the DHT11 sensor.
  - **LiquidCrystal_I2C Library:** Provides functions to interface with the I2C-enabled LCD.

Code Implementation

```
#include <SimpleDHT.h>

#include <Wire.h>

#include <LiquidCrystal_I2C.h>

// for DHT11,

//      VCC: 5V or 3V

//      GND: GND

//      DATA: 2

int pinDHT11 = 2;

SimpleDHT11 dht11(pinDHT11);

LiquidCrystal_I2C lcd(0x27, 16, 2);

void setup() {
```

```
  Serial.begin(115200);
}
void loop() {
  // start working...
  Serial.println("=================================");
  Serial.println("Sample DHT11...");
   // read without samples.
  byte temperature = 0;
  byte humidity = 0;
  int err = SimpleDHTErrSuccess;

if ((err = dht11.read(&temperature, &humidity, NULL)) != SimpleDHTErrSuccess) {

Serial.print(","); Serial.println(SimpleDHTErrDuration(err)); delay(1000);
 return;
  }
  lcd.begin( );
  lcd.backlight();
  lcd.print("tempature "); lcd.print((int)temperature);
  lcd.setCursor(0, 1);
  lcd.print("humidity ");
  lcd.print((int)humidity);
  delay(1000);
  Serial.print("Sample OK: ");
  Serial.print((int)temperature); Serial.print(" *C, ");
  Serial.print((int)humidity); Serial.println(" H");
   // DHT11 sampling rate is 1HZ.
  delay(1500);
}
```

Components and Their Roles

1. **DHT11 Sensor:**
    - **Function:** The DHT11 sensor is used to measure both temperature and humidity. It outputs calibrated digital signals, making it easy to interface with the Arduino.
    - **Working Principle:**
        - **Temperature Measurement:** The DHT11 sensor uses a thermistor to measure temperature. It converts the temperature to a digital signal using an analog-to-digital converter (ADC) embedded in the sensor.
        - **Humidity Measurement:** The sensor measures humidity using a capacitive humidity sensor. This component changes its capacitance based on the moisture level in the air. The sensor's internal circuitry converts this change in capacitance into a digital signal.
2. **Arduino Uno:**
    - **Function:** The Arduino Uno reads the digital signals from the DHT11 sensor, processes the data, and then sends the processed information to the 16x2 LCD for display.
    - **Working Principle:**
        - **Data Reading:** The Arduino receives temperature and humidity data from the DHT11 sensor via one of its digital pins.
        - **Data Processing:** The data received from the DHT11 sensor is in digital form. The Arduino processes this data to extract the temperature in degrees Celsius and the humidity in percentage.
        - **Display Control:** The Arduino sends the processed temperature and humidity values to the 16x2 LCD through the I2C interface.
3. **16x2 I2C LCD:**
    - **Function:** The LCD is used to display the temperature and humidity readings in real-time.
    - **Working Principle:**
        - **I2C Communication:** The LCD uses the I2C communication protocol, which allows it to be controlled with just two pins (SDA and SCL). This simplifies the wiring and allows other devices to share the same I2C bus.
        - **Displaying Data:** The LCD receives commands and data from the Arduino and displays the temperature and humidity on its screen.

Step-by-Step Working

1. **System Initialization:**
    - When the system is powered on, the Arduino initializes the DHT11 sensor and the 16x2 LCD. It sets the LCD's I2C address and the number of columns and rows.
    - A welcome message ("Temp & Humidity") is displayed on the LCD to indicate that the system is ready.
2. **Data Acquisition:**
    - Every two seconds, the Arduino reads the current temperature and humidity from the DHT11 sensor.
    - The DHT11 sensor sends digital signals representing the temperature (in Celsius) and humidity (in percentage) to the Arduino.
3. **Data Processing:**
    - The Arduino processes the received signals to extract the temperature and humidity values.
    - It checks the validity of the readings (e.g., ensuring they are not NaN or "Not a Number") to avoid displaying incorrect or failed readings.
4. **Data Display:**
    - The processed temperature and humidity values are sent to the 16x2 LCD.
    - The LCD displays the temperature on the first line (e.g., "T: 25.0C") and the humidity on the second line (e.g., "H: 60%").
    - If the readings fail (e.g., due to a sensor malfunction), the system displays a "Read failed" message on the LCD.
5. **Continuous Monitoring:**
    - The system continues to read and display the temperature and humidity every two seconds, providing real-time updates.

Key Points in the System's Operation

- **Real-time Monitoring:** The system continuously monitors and updates the temperature and humidity every two seconds, providing live data to the user.
- **Error Handling:** The system includes basic error handling by checking if the readings from the DHT11 sensor are valid before displaying them.
- **Ease of Use:** The use of I2C communication for the LCD reduces the number of pins required for connection, simplifying the wiring and leaving more pins available for other sensors or modules.

- **Versatility:** This system can be easily expanded by adding more sensors or connecting to other devices (e.g., an SD card module for data logging or a wireless module for remote monitoring).

How It Works

1. **Initialization:**
    - The Arduino Uno initializes communication with the DHT11 sensor and the 16x2 LCD. The LCD is set up with its I2C address and dimensions.
2. **Reading Data:**
    - Every two seconds, the Arduino reads the temperature and humidity data from the DHT11 sensor. These values are checked for validity (to ensure no reading errors occurred).
3. **Displaying Data:**
    - If the readings are valid, the temperature (in Celsius) and humidity (in percentage) are displayed on the 16x2 LCD.
4. **Debugging:**
    - The readings are also sent to the Serial Monitor for debugging purposes. If there is a failure in reading the sensor data, a "Read failed" message is displayed on the LCD.

KLS INSTITUTIONS

1. Raja Lakhamgouda Law College, Belgaum [1939]
2. Gogte College of Commerce (GCC), Belgaum [1954]
3. School of Business Management, Belgaum [1977]
4. Gogte Institute of Technology (GIT), Belgaum [1979]
5. Institute of Management Education and Research (IMER), Belgaum [1991]
6. Shri. Vasantrao Potdar Polytechnic, Belgaum [1992]
7. GCC Bachelor of Business Administration, Belgaum [1996]
8. GCC Bachelor Computer Applications, Belgaum [1999]
9. KLS Pre-Primary and Primary School, Belgaum [2002]
10. Vishwanathrao Deshpande Institute of Technology (VDIT), Haliyal [2004]
11. Pre-University College, Haliyal [2007]
12. KLS College of Computer Application & Business Administration, Haliyal [2009]
13. KLS Public School, Belgaum [2011]

VISION

To Make Vasantrao Potdar Polytechnic, Belagavi Stand Out as an Institution of Excellence in Building Technical Skills and to Create Individuals of Outstanding Character, Caliber and Entrepreneurial Skills.

MISSION

To Train Students of Vasantrao Potdar Polytechnic, Belagavi to Become Creative and Innovative Engineers while Imbibing in them Engineering Ethics and Professionalism, thus Empowering them to serve Human Kind.