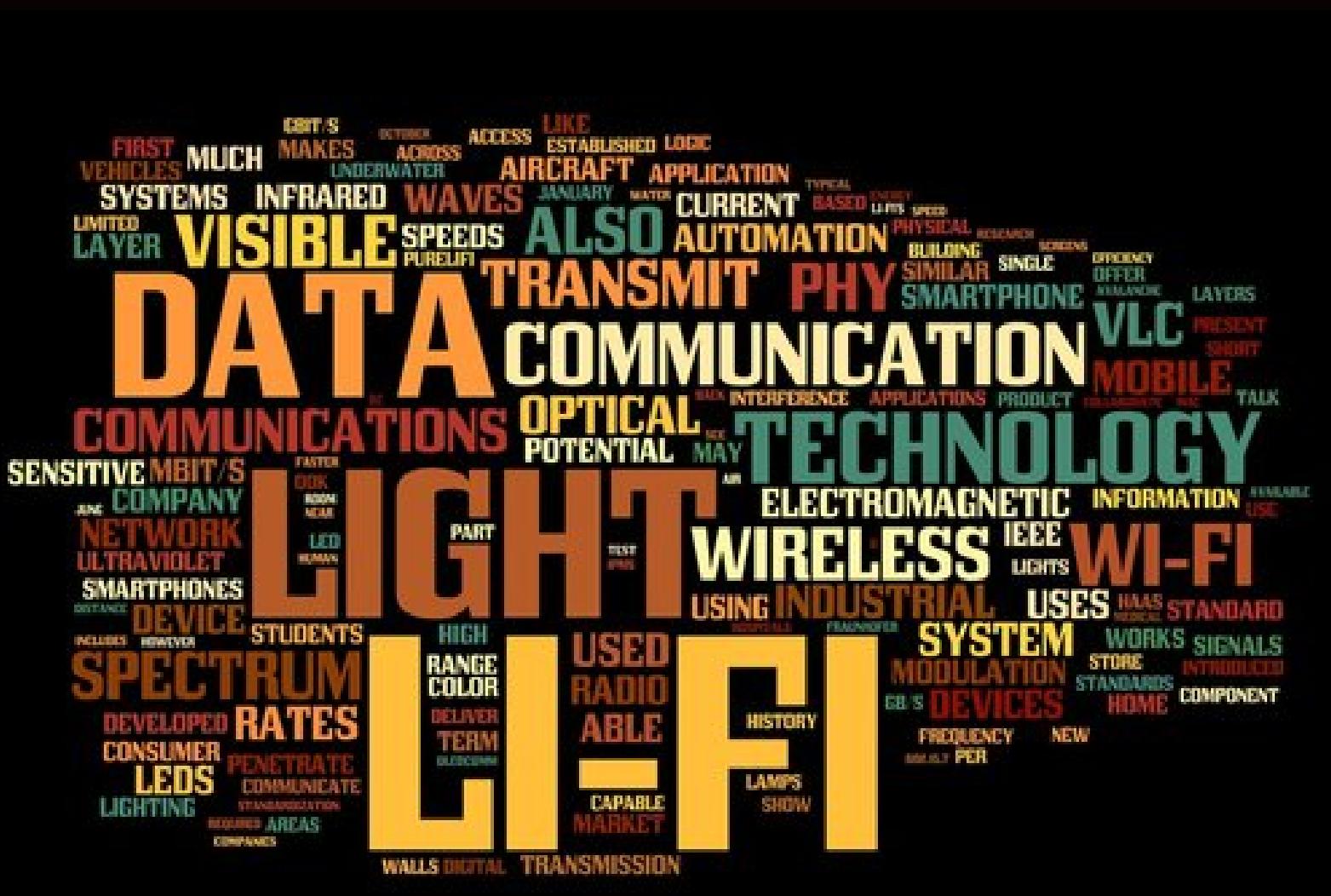


EE21B069

LiFi

Technology

Li-Fi Data Transmission using Phone Flash



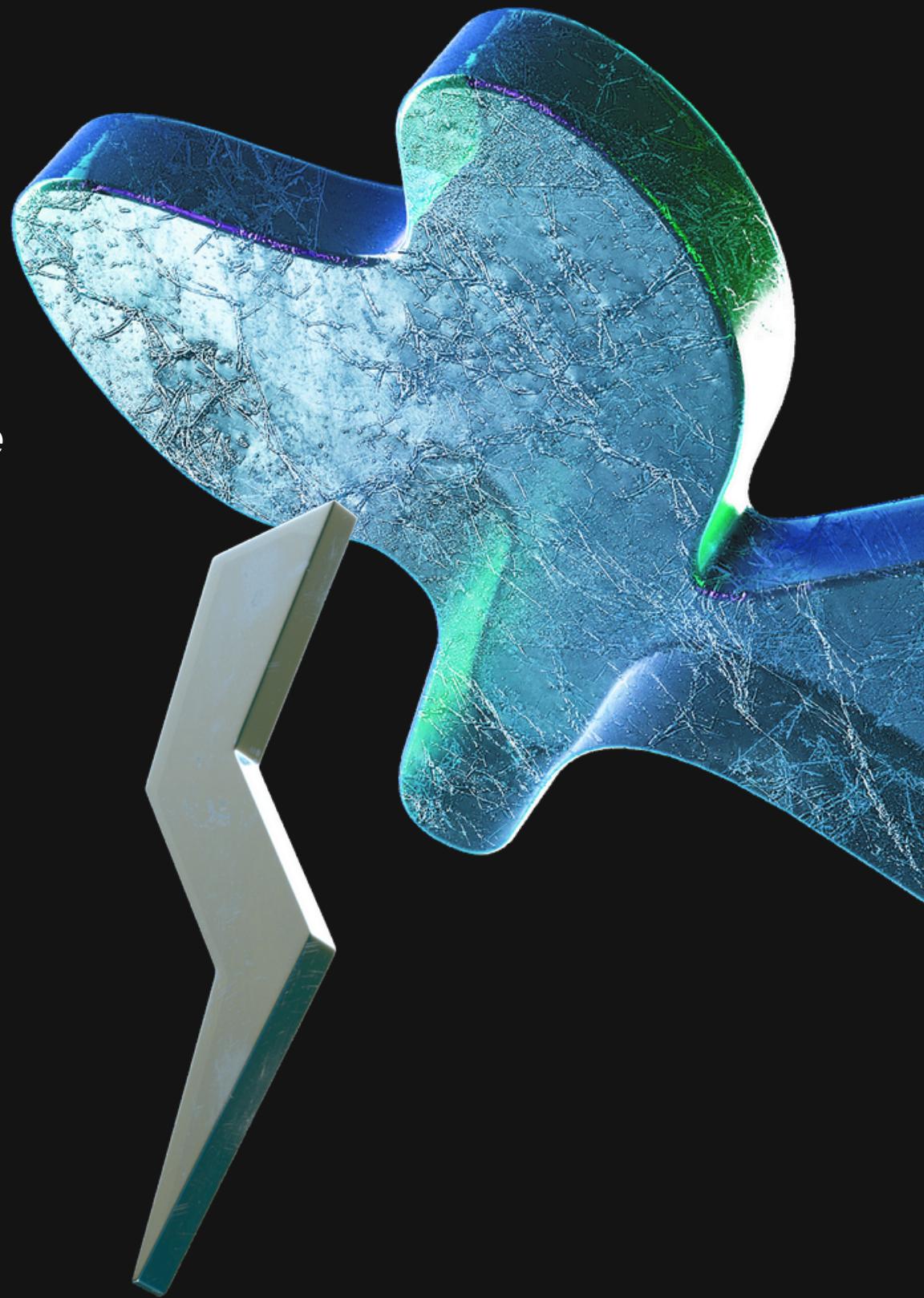
Motivation:

What is Li-Fi?

- LiFi—"LIGHT FIDEALITY" is transmission of data through Light, i.e. sending data through a light Source that varies in intensity faster than human eye can follow.
- Li-Fi is a light based Wi-Fi it uses light instead of radio waves to transmit information.

Why Li-Fi?

- High Speeds: Li-Fi technology can potentially offer much faster data transmission rates compared to conventional Wi-Fi.
- Increased Security: Light waves used in Li-Fi do not penetrate through walls. This limits the physical range of access, enhancing the security as only those within the visible area can access the network.
- No Electromagnetic Interference: Li-Fi uses light to transmit data, which does not interfere with radio frequency signals.



Objective:

Primary Goal:

- Establish a reliable communication channel between an Android phone and an Arduino using light signals.

Specific Aims:

- Develop an Android app to encode messages as light flash signals.
- Create an Arduino-based receiver to decode these signals into readable text.
- Show that it's possible to send specific messages using this technology.



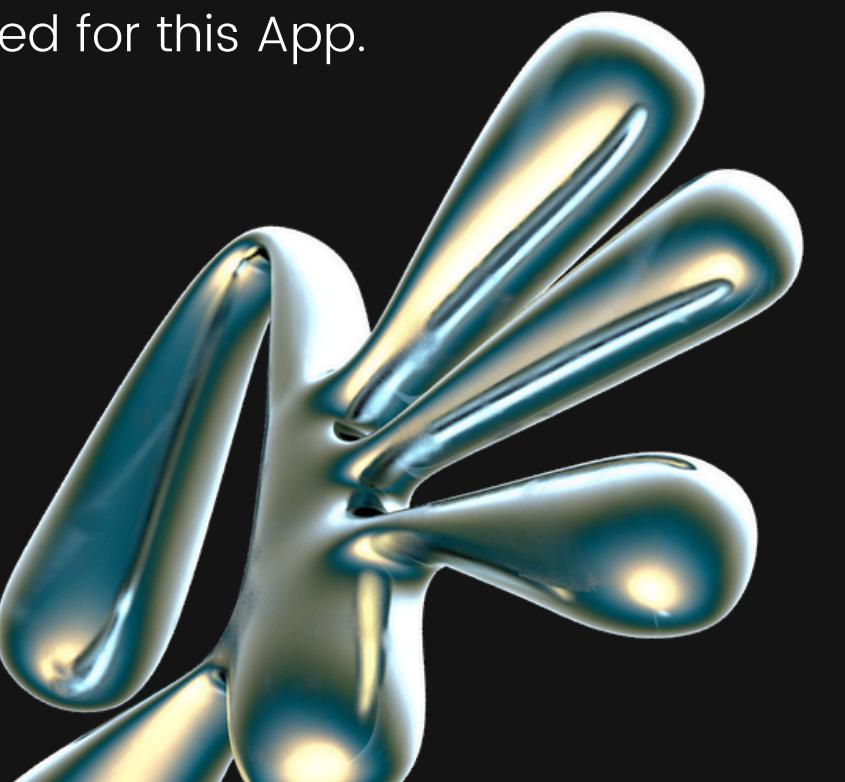
Methodology:

Component Assembly

- Arduino UNO Setup: The Arduino UNO board acts as the central unit, connected to a 16x2 LCD display for displaying messages in real time.
- LDR Sensor Integration: An LDR sensor is integrated to detect the intensity and duration of light pulses from the smartphone's flash, essential for decoding messages.
- Circuit Configuration: All components, including the Arduino, LDR sensor, and LCD display, are assembled on a breadboard for straightforward modifications and troubleshooting.

App Development

- Message Input Functionality: The Android app includes a simple user interface that allows users to type messages they wish to send.
- Flash Signal Control: Once a message is entered, the app encodes this message into specific durations of light pulses. The phone's flash acts as the transmitter, sending light signals corresponding to the encoded message.
- Source Code: Here is a source code ([link](#)) that I modified for this App.



Process

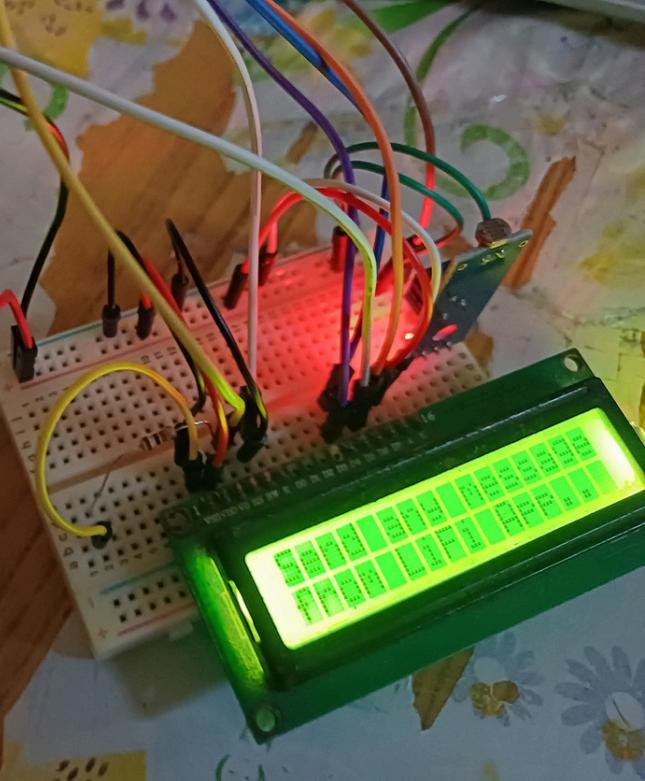
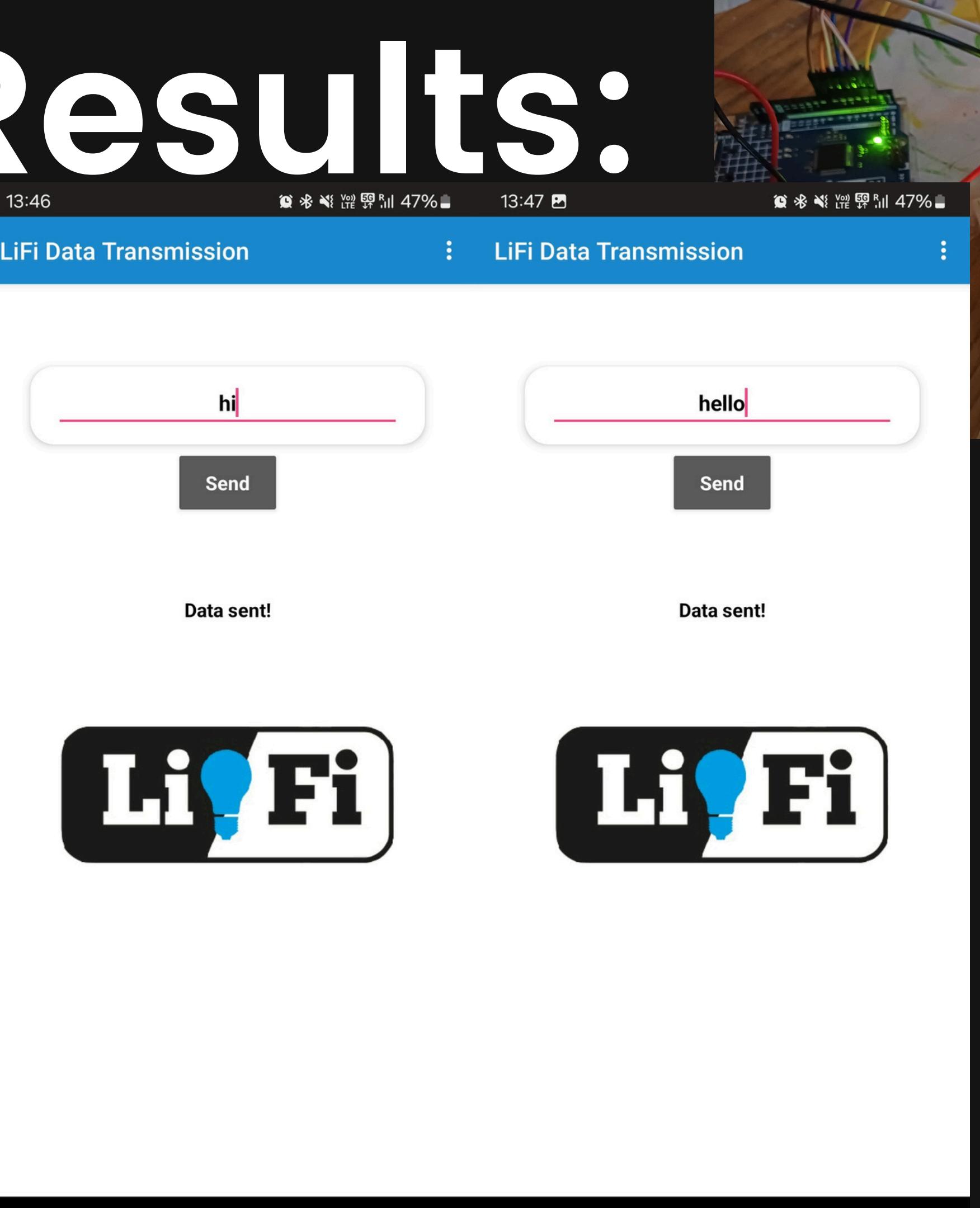
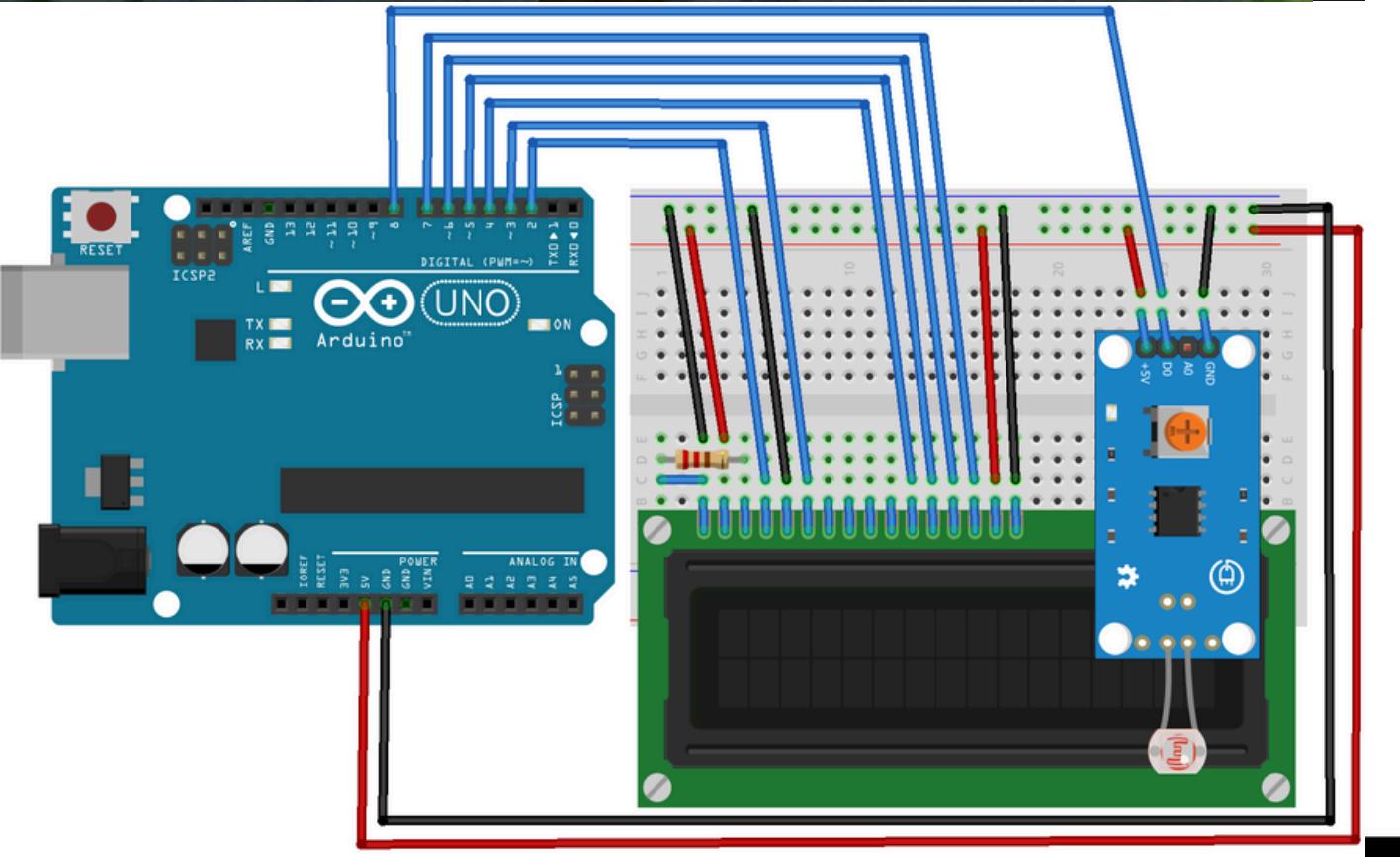
- Encoding Messages: Messages are encoded based on predefined durations where each duration represents a different message.
- Decoding Process: The Arduino's LDR sensor detects these light pulses. Based on the duration of each pulse, the Arduino decodes them back into the original messages, which are then displayed on the LCD.

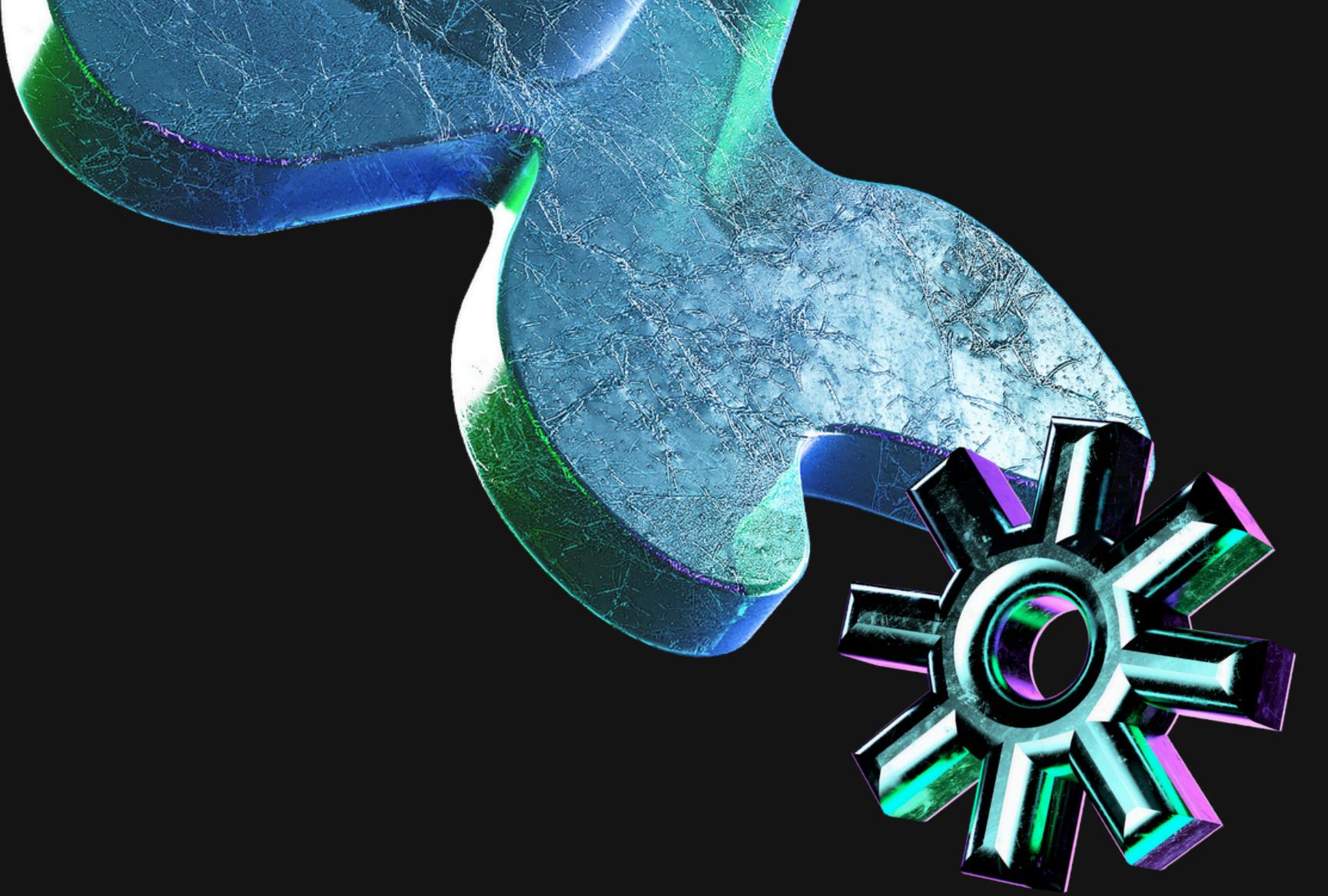
About this application

Data you can send:

1. hi
2. hello
3. how are you?
4. I am fine
5. ok
6. good morning
7. good afternoon
8. good evening
9. thank you
10. sorry

Results:





Thank YOU

Keshaw Choudhary! EE21B069