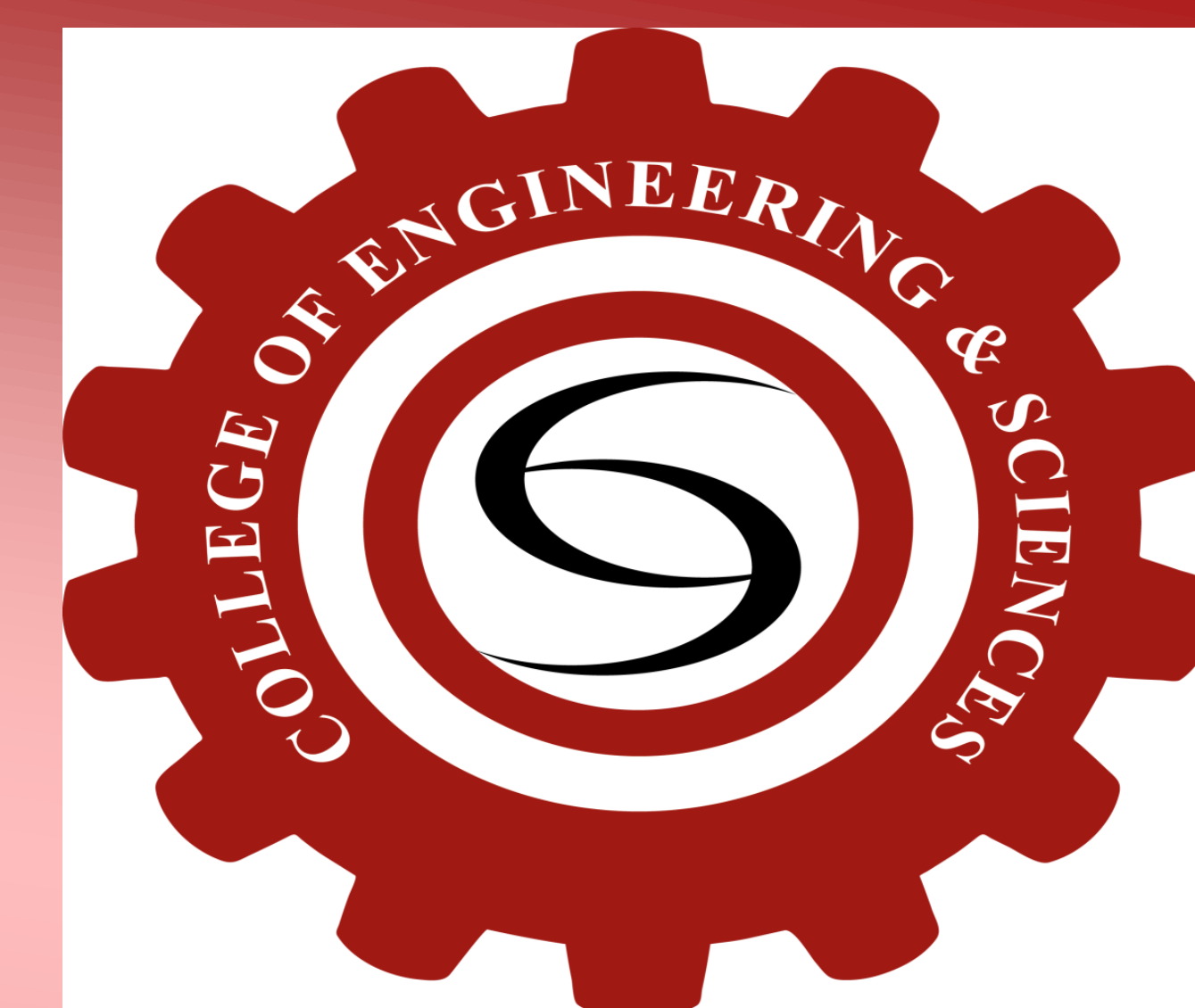




# ELECTRICAL ENGINEERING DEPARTMENT

## COLLEGE OF ENGINEERING AND SCIENCES

### FINAL YEAR PROJECT



**SUPERVISOR:**  
Engr. Tahniyat Aslam

**PROJECT:**  
IoT Based Smart Management of Poultry Farm

**GROUP MEMBERS:**  
Dhanesh Kumar  
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#### ABSTRACT

#### INTRODUCTION

#### PROBLEM STATEMENT

- ❖ Internet of Things (IoT) based poultry farming is beneficial in conditions wherein far-off monitoring and controlling system are needed and this, in turn, modifies the traditional farm into a modern farm with various automated functions.
- ❖ This project focuses on the automation of poultry farms by using wireless sensors and digital image processing techniques for checking the different environmental parameters and weight estimation inside a poultry farm in real-time.
- ❖ With the help of the IoT, we can easily monitor and control different parameters of the environment such as temperature, humidity, emission of unwanted gases, and water level.
- ❖ By using digital image processing techniques we can also measure the estimated weight of the broilers in the poultry farm.

- ❖ Modern technological advancements help the poultry industry in monitoring and tracking the health of poultry chickens. The use of modern advancements provides the possibility to monitor and predict a chicken's sickness and well-being early by observing and sensing behaviors in a poultry farm. One of the most important factors for the farmer is to maintain all environmental parameters such as temperature, humidity, CO<sub>2</sub>, and ammonia gases in the chicken coop. The poultry is sensitive to temperature, humidity, CO<sub>2</sub>, and NH<sub>3</sub> gases.
- ❖ Image processing is a method to perform some operations on an image, in order to get an enhanced image or to extract some useful information from it. Body weight is one of the most important parameters that provide valuable information about growth and occurrence of diseases in poultry chickens.

- ❖ The increase in the demand for chicken poultry has raised the health quality of the chicken as an important concern of the consumer market.
- ❖ The chickens tend to spread illness within their respective flocks and even to entire poultry farms, resulting in mass losses in the poultry industry.
- ❖ The farmer makes decisions based on accumulated experiences. This traditional method is ineffective, and requires a lot of time and energy. The significant change in temperature and humidity of chickens on poultry farm can increase the death rates and reduces chicken productivity.

#### PROJECT COMPONENTS

#### BLOCK DIAGRAM

#### IMPACT & RESULTS (SDGS, CEPS)

- ❖ **Hardware:**
  - **NodeMCU ESP32:** It is a Microcontroller. It is used to program the MPU-6050 sensor and also used to communicate with the computer.
  - **Gas Sensor:** We have used an MQ2 gas sensor. It is used to detect the leakage of any gas in the environment or the concentration of gases in the air.
  - **Temperature/Humidity Sensor:** We have used a DHT11 sensor for temperature and humidity. DHT11 stands for Digital Humidity and Temperature sensor.
  - **Water Level Sensor:** We have used a water level. It is a device that measures the liquid level in a fixed container or tank that is too high or too low.
- ❖ **Software:**
  - **Arduino IDE:** We have used Arduino IDE software to upload and run coding.
  - **PyCharm:** PyCharm is a dedicated Python Integrated Development Environment (IDE) providing a wide range of essential tools for Python developers, It is used to upload and run programming coding.
  - **Google Colab:** Colab allows anybody to write and execute arbitrary python code through the browser.

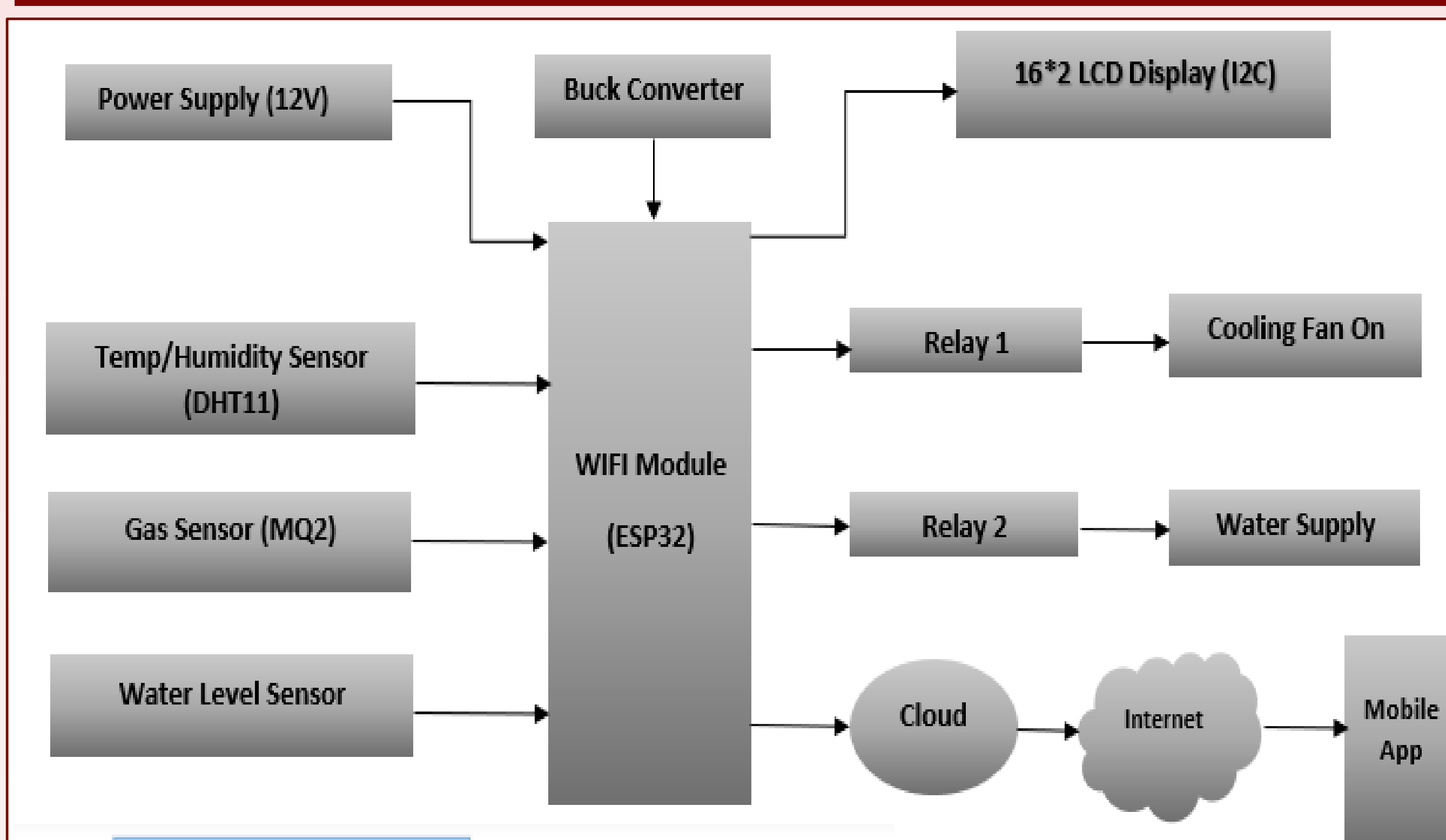


Fig No: 01: Block Diagram

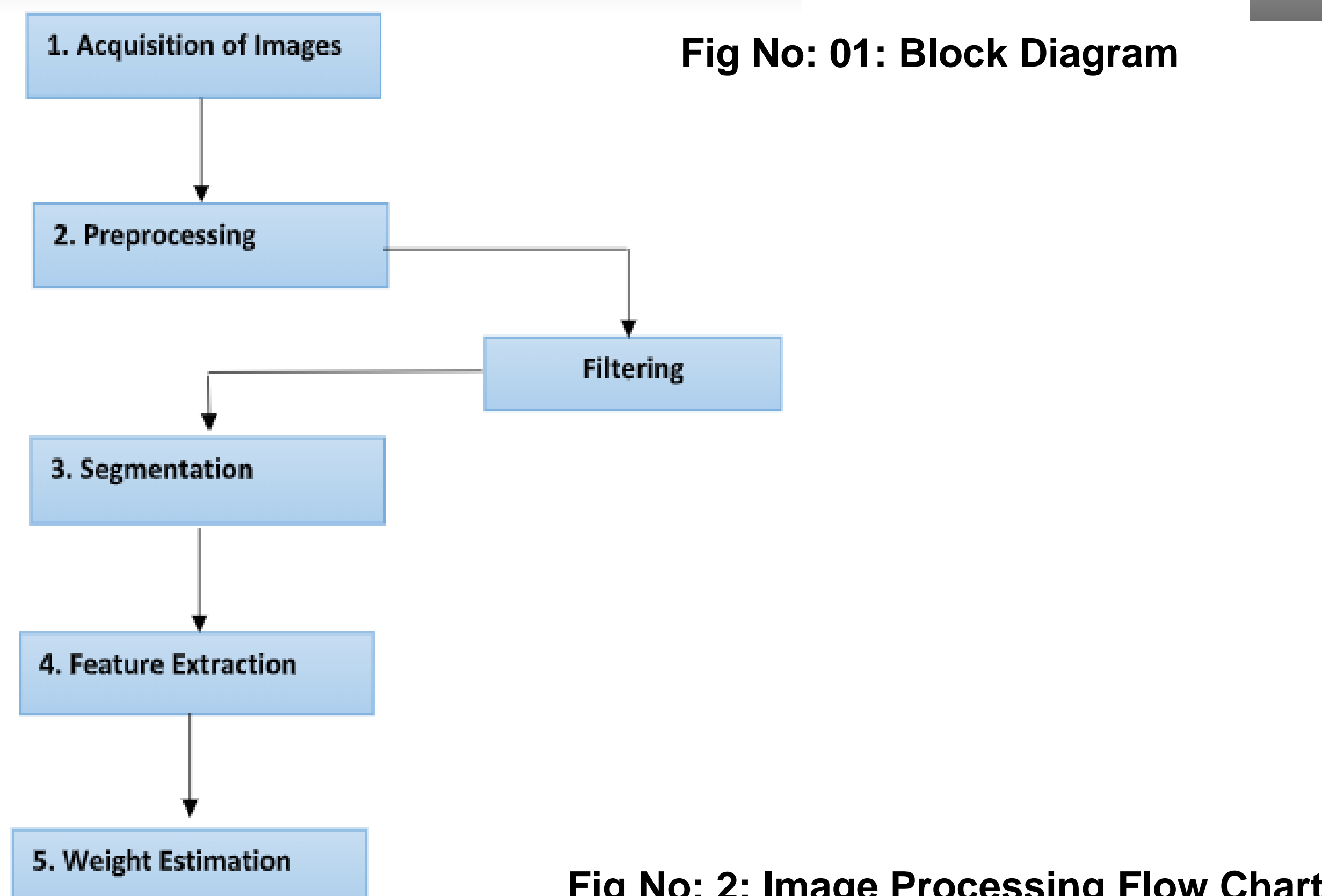


Fig No: 2: Image Processing Flow Chart

#### CEPs

- ❖ **Depth of Knowledge**  
The concept of IoT and image processing is applied to observe the real-time parameters of a poultry farm to check the health of the chickens.
- ❖ **Depth of analysis**  
Depth of analysis are required for monitoring and controlling different parameters and measuring the estimated weight of the chickens using image processing technique.
- ❖ **Familiarity of issues**  
Measuring of the weight of the broilers in poultry farm by using image processing technique is the difficult task.

#### RESULTS

The IoT-based smart management for poultry farms monitors various environmental parameters by using different sensors and also measure the estimated weight of the broilers. By monitoring these environmental parameters, we can easily reduce the mortality rate of chickens in poultry farms.

