

IoT Based Food Monitoring System

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Abstract: Nitrogen, Oxygen, Trace gases and other various mixtures of gases comprises the Earth's atmosphere. Trace gas is usually in small portion and is a mixture of gases include carbon monoxide, methane, carbon dioxide, hydrogen, argon, neon etc. The concentration of these trace has have increased in recent past and have a adverse effect on human health. So, it is very important to determine these gases. Over the last few decades, sensors have developed its applications in several fields of technology. In this paper, IoT framework is provided for food monitoring system for protection of food due to surrounding conditions with array of low cost sensors. The proposed work analyzes temperature, humidity and gas emitted by food as these parameters affect nutritional value of the food items and analyzed results will be displayed on LCD and message will be sent to android phone (or any device which access internet) by using application.

Keywords: IoT, Sensors, Food Monitoring System, Android Phone, LCD

REFERENCES

- [1]. <http://ieeexplore.ieee.org/xpl/articleDetails.jsp?arnumber=7454565&newsearch=true&queryText=iot%20health>
- [2]. <http://ieeexplore.ieee.org/xpl/articleDetails.jsp?arnumber=7454565&newsearch=true&queryText=iot%20health>
- [3]. S. J. Brown, "Remote health monitoring and maintenance system," ed: Google Patents, 2001.
- [4]. N. Zarka, I. Al-Houshi, and M. Akhkobek, "Temperature control via sms," in Information and Communication Technologies, 2006. ICTTA'06. 2nd, 2006, pp. 2678-2683.
- [5]. Zhu F, Bosch M, Khanna N, Boushey CJ, Delp EJ (2015) Multiple hypotheses image segmentation and classification with application to dietary assessment. IEEE J Biomed Health Inform 19: 377–388. [PMC free article] [PubMed] [Google Scholar]
- [6]. Boushey CJ, Harray AJ, Kerr DA, Schap TE, Paterson S, et al. (2015) How willing are adolescents to record their dietary intake? The mobile food record. JMIR MHealth UHealth 3: 47. [PMC free article] [PubMed] [Google Scholar]
- [7]. Farooq M, Sazonov E (2016) A novel wearable device for food intake and physical activity recognition. Sensors 16: 7. [PMC free article] [PubMed] [Google Scholar]
- [8]. Schmalz M.S., Helal A., Mendez-Vasquez A. Algorithms for the detection of chewing behavior in dietary monitoring applications; Proceedings of the SPIE Mathematics for Signal and Information Processing; San Diego, CA, USA. 2–5 August 2009. [Google Scholar]
- [9]. Olubanjo T., Ghovanloo M. Tracheal activity recognition based on acoustic signals; Proceedings of the 2014 36th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC); Chicago, IL, USA. 26–30 August 2014; pp. 1436– 1439. [PMC free article] [PubMed] [Google Scholar]
- [10]. Fulk G.D., Sazonov E. Using Sensors to Measure Activity in People with Stroke. Top. Stroke Rehabil. 2011;18:746–757. doi: 10.1310/tsr1806-746. [PMC free article] [PubMed] [CrossRef] [Google Scholar]
- [11]. Kong F. Ph.D. Thesis. Michigan Technological University; Houghton, MI, USA: 2012. Automatic food intake assessment using camera phones. [Google Scholar]
- [12]. Kumar A, Tanwar P, Nigam S (2016) Survey and evaluation of food recommendation systems and techniques. IEEE 2016: 3592–3596. [Google Scholar]
- [13]. Yanai K, Kawano Y (2015) Food image recognition using deep convolutional network with pre-training and fine-tuning. IEEE 1: 1–6. [Google Scholar]

- [14]. Shimoda W, Yanai K (2015) CNN-Based food image segmentation without pixel-wise annotation. ICIAP 2015: 449–457. [Google Scholar]
- [15]. Bossard L, Guillaumin M, Gool LV (2014) Food-101-Mining discriminative components with random forests in computer vision. ECCV 2014: 446–461. [Google Scholar]

Annexure: Coding

```
#define BLYNK_TEMPLATE_ID "TMPL3AwQMykZu"
#define BLYNK_TEMPLATE_NAME "IOTFoodMonotringSystem"
#define BLYNK_AUTH_TOKEN "NtwQ4oQtPiG1NO9JAwCfBVCay9SUKJT"

#include <WiFi.h> #include <WiFiClient.h>
#include <BlynkSimpleEsp32.h>

#include <LiquidCrystal.h> LiquidCrystal lcd(2,4,5,18,19,21);
#include "DHT.h"
#define DHTPIN 22 // Digital pin connected to the DHT sensor #define DHTTYPE DHT11 // DHT 11
DHT dht(DHTPIN, DHTTYPE);
char auth[] = BLYNK_AUTH_TOKEN;
char ssid[] = "Rounak"; // type your wifi name
char pass[] = "12345678"; // type your wifi password
void setup()
{
  lcd.begin(16, 2);
  dht.begin(); Blynk.begin(auth, ssid, pass);
}
void loop()
{
  float h = dht.readHumidity();
  // Read temperature as Celsius (the default) float t = dht.readTemperature(); lcd.setCursor(0,0);
  lcd.print("temp:"); lcd.setCursor(6,0); lcd.print(t); lcd.setCursor(0,1); lcd.print("Humidity:"); lcd.setCursor(9,1);
  lcd.print(h); delay(500);
  Blynk.virtualWrite(V0, t); Blynk.virtualWrite(V1, h); delay(1000);
  Blynk.run();
}
```