

## DAFTAR GAMBAR

|                                                                                        |    |
|----------------------------------------------------------------------------------------|----|
| Gambar 2.1 Arduino IDE .....                                                           | 13 |
| Gambar 2.2 ESP32 .....                                                                 | 14 |
| Gambar 2.3 Nodemcu ESP8266 .....                                                       | 15 |
| Gambar 2.4 Sensor DHT11 .....                                                          | 16 |
| Gambar 2.5 Sensor gas MQ-2 .....                                                       | 17 |
| Gambar 2.6 Flame api sensor .....                                                      | 18 |
| Gambar 2.7 Sensor Arus ACS712 .....                                                    | 18 |
| Gambar 2.8 Aplikasi <i>Wireshark</i> .....                                             | 22 |
| Gambar 3.1 <i>Flowchart</i> Alur Penelitian .....                                      | 29 |
| Gambar 3.2 Alur metode <i>rapid prototype</i> .....                                    | 30 |
| Gambar 3.3 Use Case Aplikasi .....                                                     | 32 |
| Gambar 3.4 Diagram <i>Activity</i> .....                                               | 33 |
| Gambar 3.5 <i>Wireframe</i> aplikasi .....                                             | 34 |
| Gambar 3.6 Sequence Diagram .....                                                      | 35 |
| Gambar 3.7 <i>Flowchart</i> sistem .....                                               | 36 |
| Gambar 3.8 Diagram Blok .....                                                          | 37 |
| Gambar 3.9 Perancangan sistem .....                                                    | 38 |
| Gambar 3.10 Denah Ruang <i>Server</i> .....                                            | 39 |
| Gambar 4.1 Tampilan awal applikasi sistem sonitoring <i>Esp32</i> dan <i>Esp8266</i> . | 43 |
| Gambar 4.2 Tampilan awal firebase real-time database .....                             | 44 |
| Gambar 4.3 Tampilan monitoring flame <i>ON</i> .....                                   | 44 |
| Gambar 4.4 Tampilan monitoring mq2 <i>ON</i> .....                                     | 45 |
| Gambar 4.5 alat sistem monitoring <i>esp32</i> .....                                   | 46 |
| Gambar 4.6 alat sistem monitoring <i>esp8266</i> .....                                 | 47 |
| Gambar 4.7 Grafik Troughput <i>Esp32</i> .....                                         | 56 |
| Gambar 4.8 Grafik Delay <i>Esp32</i> .....                                             | 56 |
| Gambar 4.9 Grafik Troughput <i>Esp8266</i> .....                                       | 57 |
| Gambar 4.10 Grafik Delay <i>Esp8266</i> .....                                          | 57 |

|                                             |    |
|---------------------------------------------|----|
| Gambar 4.11 Nilai rata-rata troughput ..... | 58 |
| Gambar 4.12 Nilai rata-rata troughput ..... | 59 |