

## DAFTAR ISI

|  |           |
|--|-----------|
| HALAMAN PERNYATAAN KEASLIAN .....  | ii        |
| HALAMAN PENGESAHAN TUGAS AKHIR .....   | iii       |
| HALAMAN PERSETUJUAN PUBLIKASI KARYA ILMIAH UNTUK KEPENTINGAN<br>AKADEMIS ..... | iv        |
| KATA PENGANTAR .....   | v         |
| ABSTRAK.....   | vii       |
| ABSTRACT.....  | viii      |
| DAFTAR ISI.....  | ix        |
| DAFTAR TABEL.....  | xi        |
| DAFTAR GAMBAR.....   | xii       |
| <b>BAB I PENDAHULUAN.....</b>  | <b>13</b> |
| 1.1 Latar Belakang.....  | 13        |
| 1.2 Rumusan Masalah .....  | 14        |
| 1.3 Tujuan Tugas Akhir.....  | 14        |
| 1.4 Manfaat Tugas Akhir.....   | 15        |
| 1.5 Lingkup Tugas Akhir .....  | 15        |
| 1.6 Metodologi Penelitian .....  | 16        |
| 1.7 Sistematika Penulisan Tugas Akhir.....                                     | 17        |
| <b>BAB II TINJAUAN PUSTAKA .....</b>   | <b>18</b> |
| 2.1 Arduino.....   | 18        |
| 2.2 Motor Stepper.....   | 19        |
| 2.3 Android.....   | 21        |
| 2.4 Bluetooth .....  | 21        |
| 2.5 Modul Bluetooth HC-05.....   | 21        |
| 2.6 App Inventor.....  | 23        |
| 2.7 Voice Recognition .....  | 23        |
| 2.7.1 Speech Recognition .....   | 24        |
| 2.7.2. Fungsi Speech Recognition.....  | 25        |
| 2.7.3 Perkembangan alat pengenalan ucapan .....                                | 26        |
| 2.7.4. Automatic Speech Recognition .....                                      | 27        |
| 2.7.5. String Matching .....   | 28        |
| 2.8 Penelitian Terdahulu.....  | 29        |
| <b>BAB III METODOLOGI PENELITIAN.....</b>                                      | <b>31</b> |
| 3.1 Diagram Alir Penelitian.....   | 31        |
| 3.2 Perancangan Alat.....  | 33        |
| 3.3 Perancangan Hardware.....  | 34        |
| 3.4 Perancangan Program dan Aplikasi.....                                      | 36        |

|  |           |
|--|-----------|
| 3.5 Prinsip Kerja Alat.....                                | 42        |
| 3.6 Alat dan Bahan .....                                   | 43        |
| <b>BAB IV PEBAHASAN .....</b>                              | <b>44</b> |
| 4.1 Pengertian Speech Recognition.....                     | 44        |
| 4.2 Sejarah Speech Recognition.....                        | 45        |
| 4.3 Skema Utama dan Algoritma Speech Recognition .....     | 46        |
| 4.4 Implementasi Speech Recognition .....                  | 49        |
| 4.5 Pengujian Alat .....                                   | 50        |
| 4.5.1 Pengujian Jarak Konektifitas Bluetooth .....         | 50        |
| 4.5.2 Pengujian Mikrokontroler Terhadap Motor Stepper..... | 51        |
| 4.5.3 Pengujian Penggerak Motor Stepper .....              | 54        |
| 4.5.4 Pengujian Speech Recognition .....                   | 54        |
| 4.6 Evaluasi .....   | 57        |
| 4.7 Penggunaan Sistem.....                                 | 59        |
| 4.8 Implementasi Perancangan Antarmuka.....                | 65        |
| 4.9 Kelebihan dan Kekurangan .....                         | 70        |
| <b>BAB V KESIMPULAN DAN SARAN.....</b>                     | <b>71</b> |
| 5.1 Kesimpulan.....  | 71        |
| 5.2 Saran .....  | 71        |
| <b>DAFTAR PUSTAKA.....</b>                                 | <b>72</b> |

## DAFTAR TABEL

|  |    |
|--|----|
| Tabel 2.1 Penelitian terdahulu .....                           | 30 |
| Tabel 3.1 Penggunaan Pin Arduino .....                         | 36 |
| Tabel 4.1 Pengukuran Jarak Konektifitas <i>Bluetooth</i> ..... | 51 |
| Tabel 4.2 Sudut Motor Stepper.....                             | 54 |
| Tabel 4.3 Tabel Akurasi.....                                   | 56 |
| Tabel 4.4 Pengujian Koneksi Bluetooth .....                    | 58 |
| Tabel 4.5 Pengukuran Spesifikasi Sistem.....                   | 59 |

## DAFTAR GAMBAR

|  |    |
|--|----|
| Gambar 2.1 Hardware Arduino.....                               | 18 |
| Gambar 2.2 Motor Stepper Nema17 .....                          | 20 |
| Gambar 2.3 Bluetooth HC-05 dan pinout.....                     | 22 |
| Gambar 2.4 App Inventor .....                                  | 23 |
| Gambar 3.1 Diagram Alir Penelitian .....                       | 31 |
| Gambar 3.2 Diagram Alir Perancangan Alat.....                  | 34 |
| Gambar 3.3 Skema Arduino Uno.....                              | 35 |
| Gambar 3.4 Program Arduino IDE.....                            | 37 |
| Gambar 3.5 <i>Flowchart</i> Program <i>Arduino</i> Uno .....   | 38 |
| Gambar 3.6 Program koneksi <i>Bluetooth</i> App Inventor ..... | 42 |
| Gambar 4.1 Skema Speech Recognition.....                       | 47 |
| Gambar 4.2 Spektrum Suara .....                                | 47 |
| Gambar 4.3 Contoh Hasil Konversi Sinyal Diskrit .....          | 48 |
| Gambar 4.4 Jarak Konektifitas Buletooth.....                   | 50 |
| Gambar 4.5 Car Lift Naik Lantai 2.....                         | 52 |
| Gambar 4.6 Car lift Naik Lantai 3 .....                        | 52 |
| Gambar 4.7 Car lift Naik Lantai 4 .....                        | 53 |
| Gambar 4.8 Car lift Naik Lantai 5 .....                        | 54 |
| Gambar 4.9 Grafik Akurasi.....                                 | 57 |
| Gambar 4.10 Proses Compile Program.....                        | 65 |
| Gambar 4.11 Tampilan Indikator Saat Lantai 1.....              | 66 |
| Gambar 4.12 Tampilan Indikator Saat Lantai 2.....              | 66 |
| Gambar 4.13 Tampilan Indikator Saat Lantai 3.....              | 67 |
| Gambar 4.14 Tampilan Indikator Saat Lantai 4.....              | 67 |
| Gambar 4.15 Tampilan Indikator Saat Lantai 5.....              | 68 |
| Gambar 4.16 Pemilihan Bluetooth.....                           | 69 |
| Gambar 4.17 Bluetooth status.....                              | 69 |
| Gambar 4.18 Menu Speech Recognition.....                       | 70 |