

DAFTAR ISI

| | |
|--|-------------|
| HALAMAN PENGESAHAN PEMBIMBING | ii |
| HALAMAN PENGESAHAN PENGUJI..... | iii |
| SURAT PERNYATAAN KARYA ASLI TUGAS AKHIR | iv |
| PERNYATAAN BEBAS PLAGIASI..... | v |
| ABSTRAK..... | vi |
| ABSTRACT..... | vii |
| PRAKATA | viii |
| DAFTAR ISI | ix |
| DAFTAR GAMBAR | xii |
| DAFTAR TABEL | xiv |
| DAFTAR PERSAMAAN..... | xv |
| DAFTAR PSEUDOCODE..... | xvi |
| BAB I PENDAHULUAN | 1 |
| 1.1 Latar Belakang Masalah | 1 |
| 1.2 Rumusan Masalah..... | 2 |
| 1.3 Batasan Masalah | 2 |
| 1.4 Tujuan Penelitian..... | 3 |
| 1.5 Manfaat Penelitian..... | 3 |
| 1.6 Tahapan penelitian..... | 3 |
| 1.7 Sistematika penulisan | 4 |
| BAB II TINJAUAN LITERATUR | 5 |
| 2.1 Tunarungu..... | 5 |
| 2.2 Bahasa Isyarat..... | 5 |
| 2.3 <i>Hand Gesture Recognition</i> | 5 |
| 2.4 <i>MediaPipe Hands</i> | 5 |
| 2.5 <i>Multi-layer Perceptron</i> | 7 |
| 2.5.1 <i>Neuron</i> | 9 |
| 2.5.2 <i>Perceptron</i> | 10 |
| 2.5.3 <i>Dropout</i> | 10 |
| 2.5.4 <i>Dense Layer</i> | 11 |
| 2.5.5 <i>ReLU Activation</i> | 11 |
| 2.5.6 <i>Softmax Activation</i> | 12 |
| 2.5.7 <i>Adam Optimizer</i> | 12 |

| | |
|--|-----------|
| 2.6 Confusion Matrix | 12 |
| 2.7 Black box testing..... | 14 |
| 2.8 Literature Review | 14 |
| BAB III METODOLOGI PENELITIAN | 17 |
| 3.1 Metodologi Penelitian..... | 17 |
| 3.2 Analisis Permasalahan | 18 |
| 3.3 Pengumpulan Data..... | 18 |
| 3.4 Data Pre-Processing | 20 |
| 3.4.1 Convert To Relative Coordinates | 21 |
| 3.4.2 Convert To One-Dimensional List..... | 22 |
| 3.4.3 Normalize Value | 23 |
| 3.4.4 Data Splitting..... | 24 |
| 3.5 Modeling | 25 |
| 3.5.1 Input Layer | 27 |
| 3.5.2 Dropout Layer 1 | 27 |
| 3.5.3 Dense Layer 1 | 29 |
| 3.5.4 Dropout Layer 2 | 29 |
| 3.5.5 Dense Layer 2 | 30 |
| 3.5.6 Dense Layer 3 | 31 |
| 3.6 Evaluation..... | 33 |
| 3.6.1 Pengujian Model..... | 33 |
| 3.6.2 Pengujian Klasifikasi <i>Real-time</i> | 35 |
| 3.7 Pengembangan Sistem..... | 35 |
| 3.7.1 Planning..... | 36 |
| 3.7.2 Design | 37 |
| 3.7.3 Coding | 39 |
| 3.7.4 Testing | 39 |
| BAB IV HASIL DAN PEMBAHASAN | 41 |
| 4.1 Hasil..... | 41 |
| 4.2 Implementasi Pengumpulan Data | 41 |
| 4.3 Implementasi Data Pre-processing | 42 |
| 4.4 Implementasi <i>Modeling</i> | 44 |
| 4.5 Evaluation..... | 45 |

| | |
|--|-----------|
| 4.5.1 Pengujian Model..... | 45 |
| 4.5.2 Pengujian Klasifikasi <i>Real-time</i> | 55 |
| 4.6 Implementasi Pengembangan Sistem | 57 |
| 4.6.1 Testing | 58 |
| 4.7 Pembahasan | 60 |
| BAB V KESIMPULAN DAN SARAN | 62 |
| 5.1 Kesimpulan..... | 62 |
| 5.2 Saran | 63 |