

DAFTAR ISI

HALAMAN JUDUL.....	i
PERNYATAAN BEBAS PLAGIARISME.....	ii
KATA PENGANTAR	vi
DAFTAR TABEL.....	xi
DAFTAR GAMBAR	xii
DAFTAR LAMBANG DAN SINGKATAN	xiii
INTISARI.....	xvi
ABSTRACT.....	xvii
BAB I PENDAHULUAN.....	1
I.1. Latar Belakang.....	1
I.2. Perumusan Masalah	6
I.3. Batasan Masalah	7
I.4. Tujuan Penelitian	7
I.5. Manfaat Penelitian	7
BAB II TINJAUAN PUSTAKA.....	9
II.1. <i>Chatbot Berbasis Natural Language Processing</i>	9
BAB III DASAR TEORI	20
III.1. <i>Chatbot</i>	20
III.2. <i>Natural Language Processing</i>	22
III.2.1. <i>Case Folding</i>	22
III.2.2. <i>Tokenization</i>	23
III.2.3. <i>Stopwords removal</i>	23
III.2.4. <i>Lemmatization</i>	23
III.2.5. <i>Feature Extraction</i>	24
III.2.6. <i>Padding</i>	28
III.3. <i>Machine Learning</i>	29
III.3.1. Identifikasi Masalah.....	31
III.3.2. <i>Preprocessing Data</i>	31
III.3.3. <i>Data Labelling</i>	31



III.3.4. Membuat Model Machine Learning.....	31
III.3.5. Evaluasi Model.....	32
III.4. <i>Deep Learning</i>	35
III.5. <i>Artificial Neural Network</i>	35
III.5.1. Adam (<i>Adaptive Moment Estimation</i>).....	38
III.6. <i>Recurrent Neural Network</i>	39
III.7. <i>Long-Short Term Memory</i>	41
III.8. <i>Speech Recognition</i>	44
III.8.1. <i>Noise</i>	45
III.8.2. <i>Short-Time Fourier Transform</i>	46
BAB IV PELAKSANAAN PENELITIAN	49
IV.1. Alat dan Bahan Penelitian.....	49
IV.2. Tata Laksana Penelitian	50
IV.2.1. Identifikasi Masalah.....	51
IV.2.2. Studi Literatur	51
IV.2.3. Pengumpulan Dataset.....	51
IV.2.4. Perancangan Sistem	52
IV.2.5. Perancangan Model <i>LSTM</i>	58
IV.2.6. Pengujian Model <i>LSTM</i>	71
IV.2.7. Analisis Hasil Pengujian <i>LSTM</i>	72
IV.2.8. Penulisan Laporan.....	72
BAB V HASIL DAN PEMBAHASAN.....	73
V.1. Akuisisi Data Audio	73
V.2. Hasil <i>Speech Recognition</i>	74
V.3. Hasil Eksperimen Arsitektur <i>LSTM</i>	75
V.3.1. Hasil Eksperimen Performa Pelatihan Model <i>LSTM</i>	76
V.4. Pengujian Evaluasi Model <i>LSTM</i>	79
V.5. Hasil Respon <i>Chatbot</i> Pada Model <i>LSTM</i>	82
BAB VI KESIMPULAN DAN SARAN	84
VI.1. Kesimpulan	84
VI.2. Saran	84
LAMPIRAN.....	89



LAMPIRAN A <i>SOURCE CODE</i>	90
LAMPIRAN B DOKUMENTASI MODEL.....	99
LAMPIRAN C HASIL PENGUJIAN	100

