

DAFTAR ISI

HALAMAN JUDUL	i
HALAMAN PENGESAHAN PEMBIMBING	ii
HALAMAN PENGESAHAN PENGUJI.....	iii
SURAT PERNYATAAN KARYA ASLI TUGAS AKHIR.....	iv
PERNYATAAN BEBAS PLAGIAT	v
ABSTRAK	vi
KATA PENGANTAR.....	vii
DAFTAR ISIS	viii
DAFTAR GAMBAR.....	X
DAFTAR TABEL	XII
DAFTAR MODUL	XIII
BAB I PENDAHULUAN	ERROR! BOOKMARK NOT DEFINED.
1.1 Latar Belakang	Error! Bookmark not defined.
1.2 Rumusan Masalah.....	Error! Bookmark not defined.
1.3 Batasan Masalah.....	Error! Bookmark not defined.
1.4 Tujuan Penelitian	Error! Bookmark not defined.
1.5 Manfaat Penelitian	Error! Bookmark not defined.
1.6 Metodologi Penelitian dan Pengembangan Sistem ...	Error! Bookmark not defined.
1.6.1 Metodologi Pengumpulan Data	Error! Bookmark not defined.
1.6.2 Metodologi Pengembangan Sistem	Error! Bookmark not defined.
1.7 Sistematika Penulisan	Error! Bookmark not defined.
BAB II TINJAUAN PUSTAKA	ERROR! BOOKMARK NOT DEFINED.
2.1 Pengertian Klasifikasi.....	Error! Bookmark not defined.
2.2 Jagung.....	Error! Bookmark not defined.
2.3 Citra Digital	Error! Bookmark not defined.
2.4 Citra Keabuan (Grayscale)	Error! Bookmark not defined.
2.5 Model Warna HSV	Error! Bookmark not defined.
2.6 Computer Vision	Error! Bookmark not defined.
2.7 Artificial Intelegence	Error! Bookmark not defined.
2.8 Machine Learning.....	Error! Bookmark not defined.
2.9 Pengolahan Citra Digital	Error! Bookmark not defined.
2.9.1 <i>Pre-processing</i>	Error! Bookmark not defined.
2.9.2 <i>Ekstraksi Fitur</i>	Error! Bookmark not defined.
2.10 Support Vector Machine.....	Error! Bookmark not defined.
2.11 Matlab.....	Error! Bookmark not defined.
2.12 Pengujian	Error! Bookmark not defined.
2.12.1 Confusion Matrix.....	Error! Bookmark not defined.
2.12.2 Akurasi	Error! Bookmark not defined.
2.13 Studi Pustaka	Error! Bookmark not defined.

**BAB III METODOLOGI PENELITIAN DAN PENGEMBANGAN SISTEM ERROR!
BOOKMARK NOT DEFINED.**

3.1	Metodologi Penelitian	Error! Bookmark not defined.
3.2	Pengumpulan Data.....	Error! Bookmark not defined.
3.3	Studi Pustaka	Error! Bookmark not defined.
3.4	Analisis Kebutuhan	Error! Bookmark not defined.
3.4.1	Kebutuhan Fungsional.....	Error! Bookmark not defined.
3.4.2	Kebutuhan Non Fungsional.....	Error! Bookmark not defined.
3.4.3	Analisis Model SVM.....	Error! Bookmark not defined.
3.5	Perancangan.....	Error! Bookmark not defined.
3.5.1	Perancangan Arsitektur Sistem.....	Error! Bookmark not defined.
3.5.2	Perancangan Proses	Error! Bookmark not defined.
3.5.3	Perancangan Tampilan Antarmuka	Error! Bookmark not defined.
3.6	Perancangan Pengujian.....	Error! Bookmark not defined.
3.6.1	Pengujian Model.....	Error! Bookmark not defined.
3.6.2	Pengujian Sistem	Error! Bookmark not defined.

**BAB IV HASIL, PENGUJIAN DAN PEMBAHASAN ERROR! BOOKMARK NOT
DEFINED.**

4.1	Hasil Penelitian.....	Error! Bookmark not defined.
4.1.1	Implementasi Pre-processing.....	Error! Bookmark not defined.
4.1.2	Implementasi Ekstraksi Ciri	Error! Bookmark not defined.
4.1.3	Implementasi Algoritma SVM	Error! Bookmark not defined.
4.1.4	Implementasi Sistem	Error! Bookmark not defined.
4.2	Pengujian	Error! Bookmark not defined.
4.2.1	Pengujian Model SVM.....	Error! Bookmark not defined.
4.2.2	Pengujian Sistem	Error! Bookmark not defined.
4.3	Pembahasan	Error! Bookmark not defined.

BAB V PENUTUP ERROR! BOOKMARK NOT DEFINED.

5.1	Kesimpulan.....	Error! Bookmark not defined.
5.2	Saran	Error! Bookmark not defined.

DAFTAR PUSTAKA..... ERROR! BOOKMARK NOT DEFINED.

DAFTAR GAMBAR

Gambar 2.1 Bercak Abu Daun Jagung (<i>Cercospora</i>).....	5
Gambar 2.2 Karat Daun Jagung (<i>Common Rust</i>)	6
Gambar 2.3 Hawar Daun (<i>Leaf Blight</i>)	6
Gambar 2.4 Representasi Citra Digital Daun Jagung.....	7
Gambar 2.5 Citra RGB dan <i>Grayscale</i>	8
Gambar 2.6 Spektrum Warna.....	8
Gambar 2.7 Ilustrasi Proses <i>Machine Learning</i>	10
Gambar 2.8 Perbaikan Citra Daun Jagung	11
Gambar 2.9 <i>Grayscale</i> Dataset Citra Daun Jagung	12
Gambar 2.10 <i>Hyperplane</i> Pemisah	13
Gambar 2.11 <i>Soft Margin</i>	14
Gambar 2.12 <i>Kernel Function Mapping</i>	15
Gambar 2.13 Pengaruh Penggunaan <i>Kernel Polynomial</i>	15
Gambar 2.14 Pengaruh penggunaan <i>Kernel Polynomial</i>	15
Gambar 3.1 Metode Penelitian	20
Gambar 3.2 Kerangka Kerja Penelitian	21
Gambar 3.3 <i>Folder Dataset</i> Pelatihan dan Pengujian SVM.....	22
Gambar 3.4 <i>Dataset</i> Pelatihan SVM	22
Gambar 3.5 Contoh <i>Dataset</i> Pada <i>Folder Train</i>	23
Gambar 3.6 <i>Flowchart</i> Model SVM	26
Gambar 3.7 <i>Flowchart Subroutine</i> Proses <i>Preprocessing</i>	27
Gambar 3.8 Ilustrasi <i>Resize</i>	28
Gambar 3.9 Ilustrasi Hasil <i>Resize</i>	28
Gambar 3.10 <i>Flowchart Subroutine</i> <i>Image Resize</i>	29
Gambar 3.11 <i>Flowchart Subroutine</i> <i>Image Enhancement</i>	30
Gambar 3.12 Contoh Hasil <i>Image Enhancement</i>	31
Gambar 3.13 <i>Flowchart Subroutine</i> Konversi RGB ke HSV	32
Gambar 3.14 <i>Flowchart Subroutine</i> Konversi GLCM.....	33
Gambar 3.15 Contoh Konversi Citra (a) ke <i>Grayscale</i> (b) dan HSV (c)	34
Gambar 3.16 <i>Flowchart Subroutine</i> Ekstraksi Ciri	34
Gambar 3.17 <i>Flowchart Subroutine</i> Ekstraksi Ciri Orde Satu	35
Gambar 3.18 <i>Flowchart Subroutine</i> Ekstraksi Ciri <i>Hue Saturation Value</i>	36
Gambar 3.19 Contoh Perhitungan Nilai HSV MATLAB	37
Gambar 3.20 <i>Flowchart</i> <i>Subroutine</i> Ekstraksi Ciri GLCM 4 Sudut	37
Gambar 3.21 Contoh Perhitungan Nilai GLCM.....	38
Gambar 3.22 <i>Flowchart</i> Pembelajaran (<i>Learning</i>).....	42

Gambar 3.23 <i>Flowchart</i> Pengujian.....	44
Gambar 3.24 Perancangan Arsitektur Sistem.....	45
Gambar 3.25 Use Case Diagram Klasifikasi Penyakit Tanaman Jagung.....	46
Gambar 3.26 Diagram Aktifitas Klasifikasi.....	47
Gambar 3.27 <i>Sequence Diagram</i> Klasifikasi.....	49
Gambar 3.28 <i>Class Diagram</i> Klasifikasi.....	49
Gambar 3.29 Perancangan Halaman Awal.....	50
Gambar 3.30 Perancangan Halaman Klasifikasi.....	50
Gambar 3.31 Perancangan Pelatihan dan Pengujian.....	51
Gambar 4.1 Halaman Awal.....	61
Gambar 4.2 Halaman Pelatihan.....	62
Gambar 4.3 Halaman Klasifikasi.....	63
Gambar 4.4 Halaman Pelatihan dan Pengujian.....	63

DAFTAR TABEL

Tabel 2.1 Perbedaan <i>Human Vision</i> dengan <i>Computer Vision</i>	9
Tabel 2.2 <i>Confusion Matrix</i>	16
Tabel 2.3 <i>State of the Art</i>	18
Tabel 3.1 Rincian Pembagian Jumlah Data	23
Tabel 3.2 Sampel Data Penyakit Tanaman Jagung	23
Tabel 3.3 Contoh Citra Penyakit Tanaman Jagung Lanjutan	24
Tabel 3.4 Kebutuhan Perangkat Keras	25
Tabel 3.5 Kebutuhan Perangkat Lunak	25
Tabel 3.6 Nilai Hue Pada Setiap Warna	36
Tabel 3.7 Contoh Nilai Matriks	38
Tabel 3.8 Nilai Matriks Setelah ditambah 1	38
Tabel 3.9 Nilai Hasil Matriks Bantu	38
Tabel 3.10 Nilai Matriks Transpose	39
Tabel 3.11 Hasil Penjumlahan Kedua Matriks	39
Tabel 3.12 Nilai Matriks Dibagi Total Isi Matriks	39
Tabel 3.13 Matriks Probabilitas	39
Tabel 3.14 Nilai Homogenitas	40
Tabel 3.15 Nilai Homogenitas Lanjutan	41
Tabel 3.16 Sampel Data Klasifikasi SVM	43
Tabel 4.1 Pengujian Model <i>SVM-Polynomial</i>	64
Tabel 4.2 Pengujian Model <i>SVM-RBF</i>	65
Tabel 4.3 Pengujian <i>Confusion Matrix SVM-Polynomial</i>	66
Tabel 4.4 Pengujian <i>Confusion Matrix SVM-RBF</i>	66
Tabel 4.5 Hasil Pengujian Sistem <i>SVM-Polynomial</i>	67
Tabel 4.6 Hasil Pengujian Sistem <i>SVM-Polynomial</i> Lanjutan	68
Tabel 4.7 Hasil Pengujian Sistem <i>SVM-Polynomial</i> Lanjutan	69
Tabel 4.8 Hasil Pengujian Sistem <i>SVM-Polynomial</i> Lanjutan	70
Tabel 4.9 Hasil Pengujian Sistem <i>SVM-RBF</i>	71
Tabel 4.10 Hasil Pengujian Sistem <i>SVM-RBF</i> Lanjutan	72
Tabel 4.11 Hasil Pengujian Sistem <i>SVM-RBF</i> Lanjutan	73
Tabel 4.12 Hasil Pengujian Sistem <i>SVM-RBF</i> Lanjutan	74

DAFTAR MODUL

Modul 4.1 Inisiasi Alamat Dataset	53
Modul 4.2 Read Training Data	53
Modul 4.3 Image Resize	54
Modul 4.4 Image Histogram Equalization	54
Modul 4.4 Konversi Citra	54
Modul 4.5 Ambil Nilai Hue Saturation Value	54
Modul 4.6 Normalisasi Nilai Ekstraksi HSV	54
Modul 4.7 Ekstraksi Ciri Orde Satu	55
Modul 4.8 Ekstraksi GLCM	55
Modul 4.9 Ekstraksi Ciri GLCM $0^0, 45^0, 90^0, 135^0$	55
Modul 4.10 Simpan Data Latih Hasil Ekstraksi	59
Modul 4.11 Inisiasi Target Latih	60
Modul 4.12 Pelatihan Support Vector Machine Kernel <i>Polynomial</i>	60
Modul 4.13 Pelatihan Support Vector Machine Kernel Raidal Basis Function	60
Modul 4.14 Akurasi Pelatihan Support Vector Machine	60