

DAFTAR ISI

LEMBAR PERSETUJUAN.....	Error! Bookmark not defined.
LEMBAR PENGESAHAN	Error! Bookmark not defined.
LEMBAR PERNYATAAN	Error! Bookmark not defined.
KATA PENGANTAR	Error! Bookmark not defined.
ABSTRAK	Error! Bookmark not defined.
ABSTRACT.....	Error! Bookmark not defined.
DAFTAR ISI.....	viii
DAFTAR TABEL.....	x
DAFTAR GAMBAR	xi
DAFTAR LAMPIRAN.....	xii
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. Tujuan Penelitian.....	Error! Bookmark not defined.
1.4. Manfaat Penelitian.....	Error! Bookmark not defined.
1.5. Batasan Masalah dan Asumsi.....	Error! Bookmark not defined.
1.5.1. Batasan Masalah	Error! Bookmark not defined.
1.5.2. Asumsi Masalah.....	Error! Bookmark not defined.
BAB II TINJAUAN PUSTAKA.....	Error! Bookmark not defined.
2.1. Kualitas.....	Error! Bookmark not defined.
2.2.1. Definisi Kualitas.....	Error! Bookmark not defined.
2.2.2. Definisi Rekayasa Kualitas	Error! Bookmark not defined.
2.2. Desain Eksperimen.....	Error! Bookmark not defined.
2.3. Metode Taguchi.....	Error! Bookmark not defined.

2.3.1.	Konsep <i>Loss Function</i>	Error! Bookmark not defined.
2.3.2.	Tahapan dalam Desain Eksperimen Taguchi	Error! Bookmark not defined.
2.3.3.	<i>Orthogonal Array</i>	Error! Bookmark not defined.
2.3.4.	<i>Signal to Noise Ratio</i>	Error! Bookmark not defined.
2.3.5.	<i>Analysis of Variance</i>	Error! Bookmark not defined.
2.4.	Deteksi Objek	Error! Bookmark not defined.
2.5.	<i>Deep Learning</i>	Error! Bookmark not defined.
2.6.	<i>You Only Look Once (YOLO)</i>	Error! Bookmark not defined.
2.7.	<i>Intersection over Union (IoU)</i>	Error! Bookmark not defined.
2.8.	<i>Mean Average Precision (mAP)</i>	Error! Bookmark not defined.
2.9.	<i>Precision & Recall</i>	Error! Bookmark not defined.
2.10.	<i>Confusion Matrix</i>	Error! Bookmark not defined.
2.11.	Penelitian Terkait	Error! Bookmark not defined.
2.12.	Kerangka Pemikiran	Error! Bookmark not defined.
BAB III METODOLOGI PEMBAHASAN		Error! Bookmark not defined.
3.1.	Objek Penelitian	Error! Bookmark not defined.
3.2.	Prosedur Penelitian	Error! Bookmark not defined.
3.2.1.	Penentuan Variabel Tak Bebas (Respon Kualitas)	Error! Bookmark not defined.
3.2.2.	Penentuan Variabel Bebas (Faktor Pengendali)	Error! Bookmark not defined.
3.2.3.	Penentuan Tingkat pada Masing-Masing Faktor	Error! Bookmark not defined.
3.2.4.	Pemilihan <i>Orthogonal Array</i>	Error! Bookmark not defined.
3.2.5.	Penggunaan <i>Hardware</i> dan Pemasangan <i>Library</i>	Error! Bookmark not defined.

3.2.6.	Pengumpulan Data Aktual	Error! Bookmark not defined.
3.2.7.	Proses Pelatihan dan Validasi Menggunakan Model YOLO...	Error! Bookmark not defined.
3.2.8.	<i>Main Effect Analysis</i> dan ANOVA ..	Error! Bookmark not defined.
3.2.9.	Uji Performansi YOLO Berdasarkan Faktor Level Optimum .	Error! Bookmark not defined.
BAB IV HASIL DAN PEMBAHASAN		Error! Bookmark not defined.
4.1.	Pengumpulan Data	Error! Bookmark not defined.
4.1.1.	Pengumpulan Gambar Sebagai Dataset Pelatihan	Error! Bookmark not defined.
4.1.2.	Pengumpulan Data mAP50 Sebagai Data Penelitian	Error! Bookmark not defined.
4.2.	Pengolahan Data	Error! Bookmark not defined.
4.2.1.	<i>Mean Standard Deviation</i> dan <i>Single to Noise Ratio</i>	Error! Bookmark not defined.
4.2.2.	Uji <i>Analysis of Variance</i> (ANOVA) pada <i>S/N Ratio</i> Faktor	Error! Bookmark not defined.
4.2.3.	Uji Performansi YOLO Berdasarkan Faktor Level Optimum.....	Error! Bookmark not defined.
BAB V KESIMPULAN DAN SARAN.....		Error! Bookmark not defined.
5.1.	Kesimpulan.....	Error! Bookmark not defined.
5.2.	Saran	Error! Bookmark not defined.
DAFTAR PUSTAKA		Error! Bookmark not defined.
LAMPIRAN		Error! Bookmark not defined.

DAFTAR TABEL

Tabel 2. 1 Tahapan dalam Melakukan Desain Eksperimen
Error! Bookmark not defined.

Tabel 2. 2 Tahapan dalam Melakukan Desain EksperimenError! Bookmark not defined.

Tabel 2. 3 Larik Ortogonal TaguchiError! Bookmark not defined.

Tabel 2. 4 Perhitungan rata-rata dari 2 hasil dataset berbedaError! Bookmark not defined.

Tabel 2. 5 Contoh tabel hasil percobaan L₄.....Error! Bookmark not defined.

Tabel 2. 6 Hasil perhitungan S/N Ratio pada masing-masing percobaan Error! Bookmark not defined.

Tabel 2. 7 Rumus pada Analysis of Variance (ANOVA)Error! Bookmark not defined.

Tabel 2. 8 Persamaan pada proses identifikasi objek YOLOError! Bookmark not defined.

Tabel 2. 9 Penelitian Terkait Metode Taguchi.....Error! Bookmark not defined.

Tabel 3. 1 Faktor Pengendali beserta LevelError! Bookmark not defined.

Tabel 3. 2 Orthogonal Array L₈(2⁷).....Error! Bookmark not defined.

Tabel 3. 3 Pengaturan Parameter pada Masing-Masing Eksperimen..... Error! Bookmark not defined.

Tabel 3. 4 Library yang Digunakan pada PenelitianError! Bookmark not defined.

Tabel 4. 1 Jumlah Gambar pada Himpunan Data..Error! Bookmark not defined.

Tabel 4. 2 Hasil Pelatihan pada Ekperimen 1Error! Bookmark not defined.

Tabel 4. 3 Hasil Pelatihan pada Eksperimen 2Error! Bookmark not defined.

Tabel 4. 4 Hasil Pelatihan pada Eksperimen 3Error! Bookmark not defined.

Tabel 4. 5 Hasil Pelatihan pada Eksperimen 4.....Error! Bookmark not defined.

Tabel 4. 6 Hasil Pelatihan pada Eksperimen 5.....Error! Bookmark not defined.

Tabel 4. 7 Hasil Pelatihan pada Eksperimen 6.....Error! Bookmark not defined.

Tabel 4. 8 Hasil Pelatihan pada Eksperimen 7Error! Bookmark not defined.

Tabel 4. 9 Hasil Pelatihan pada Eksperimen 8.....Error! Bookmark not defined.

Tabel 4. 10 Nilai MSD dan S/N Ratio.....Error! Bookmark not defined.

Tabel 4. 11 Main Effect Analysis dari S/N Ratio Faktor Pengendali Error! Bookmark not defined.

Tabel 4. 12 Faktor Level Optimal untuk Algoritma YOLO**Error! Bookmark not defined.**

Tabel 4. 13 Uji ANOVA dari rata-rata nilai mAP50**Error! Bookmark not defined.**

Tabel 4. 14 Hasil Performansi berdasarkan Parameter Maksimum **Error! Bookmark not defined.**

Tabel 5. 1 Parameter Maksimum Berdasarkan Analisis Taguchi **Error! Bookmark not defined.**

DAFTAR GAMBAR

Gambar 2. 1 Grafik Taguchi Loss Function.....**Error! Bookmark not defined.**

Gambar 2. 2 Diagram Fungsi Sistem Dinamis.....**Error! Bookmark not defined.**

Gambar 2. 3 Piramida Deep Learning.....**Error! Bookmark not defined.**

Gambar 2. 4 Prinsip Kerja Dasar Deep Learning.**Error! Bookmark not defined.**

Gambar 2. 5 Ilustrasi pemisahan gambar**Error! Bookmark not defined.**

Gambar 2. 6 Perbandingan identifikasi gambar pada Deep Learning..... **Error! Bookmark not defined.**

Gambar 2. 7 Pengaruh Non-Max Supression terhadap nilai IoU **Error! Bookmark not defined.**

Gambar 2. 8 Ilustrasi skema komputasi IoU**Error! Bookmark not defined.**

Gambar 2. 9 kurva precision-recall untuk satu kelas dan ambang batas IoU**Error! Bookmark not defined.**

Gambar 2. 10 Confusion Matrix.....**Error! Bookmark not defined.**

Gambar 2. 11 Kerangka Pemikiran pada Penelitian**Error! Bookmark not defined.**

Gambar 3. 1 Perintah Pembuatan Environment Baru**Error! Bookmark not defined.**

Gambar 3. 2 Perintah Aktivasi Environment**Error! Bookmark not defined.**

Gambar 3. 3 Sintaks Pemasangan Jupyter.....**Error! Bookmark not defined.**

Gambar 3. 4 Install YOLO pada Jupyter Notebook**Error! Bookmark not defined.**

Gambar 3. 5 Diagram Alir Penelitian.....**Error! Bookmark not defined.**

Gambar 4. 1 Respon Grafik Faktor Initial Learning Rate**Error! Bookmark not defined.**

Gambar 4. 2 Respon Grafik Faktor Final Learning Rate**Error! Bookmark not defined.**

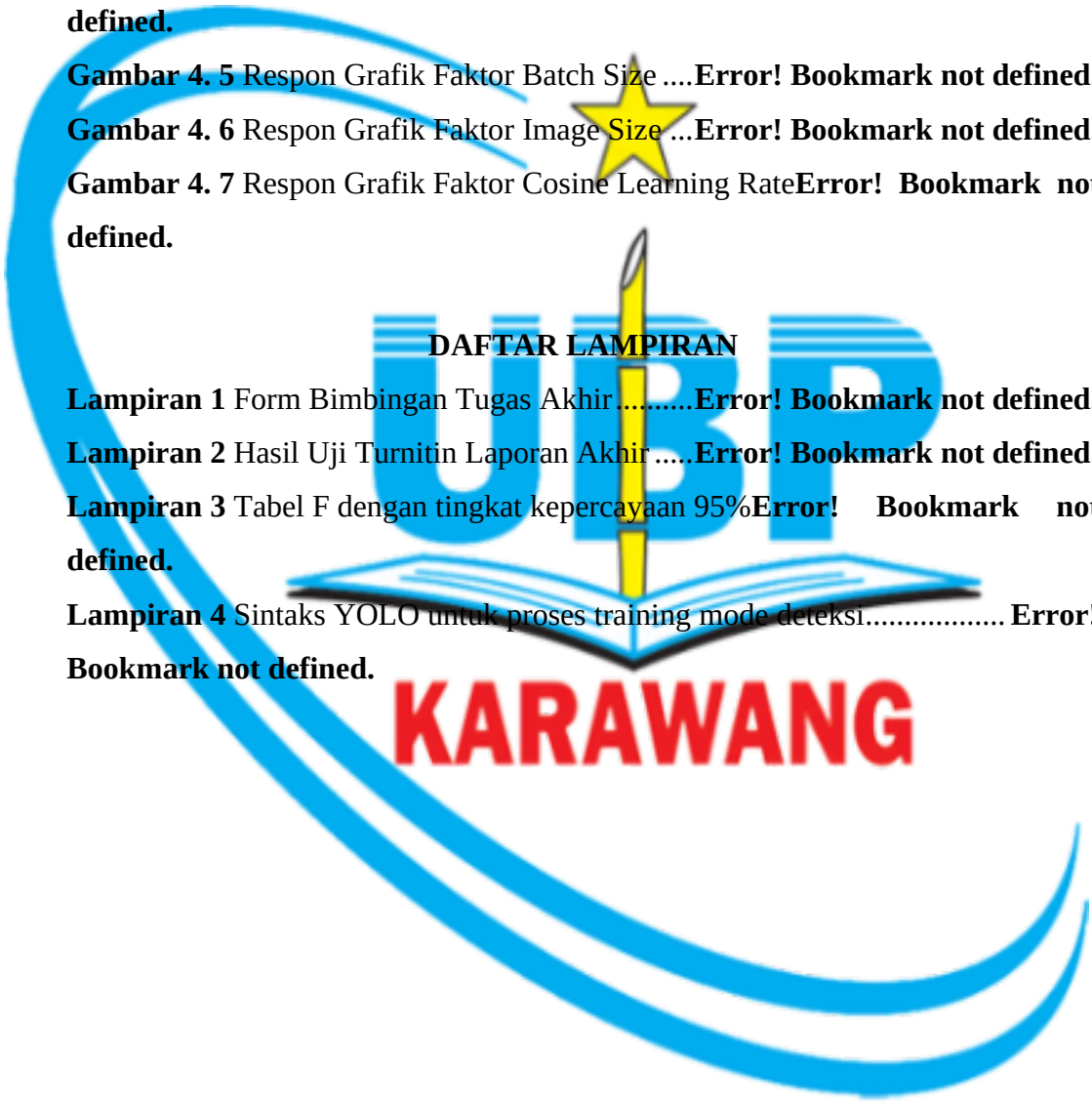
Gambar 4. 3 Respon Grafik Faktor Momentum...**Error! Bookmark not defined.**

Gambar 4. 4 Respon Grafik Faktor Weight Decay**Error! Bookmark not defined.**

Gambar 4. 5 Respon Grafik Faktor Batch Size**Error! Bookmark not defined.**

Gambar 4. 6 Respon Grafik Faktor Image Size ...**Error! Bookmark not defined.**

Gambar 4. 7 Respon Grafik Faktor Cosine Learning Rate**Error! Bookmark not defined.**



DAFTAR LAMPIRAN

Lampiran 1 Form Bimbingan Tugas Akhir.....**Error! Bookmark not defined.**

Lampiran 2 Hasil Uji Turnitin Laporan Akhir**Error! Bookmark not defined.**

Lampiran 3 Tabel F dengan tingkat kepercayaan 95%**Error! Bookmark not defined.**

Lampiran 4 Sintaks YOLO untuk proses training mode deteksi..... **Error! Bookmark not defined.**