

## DAFTAR ISI

LEMBAR PENGESAHAN .....	ii
LEMBAR PERNYATAAN ORISINALITAS .....	iii
ABSTRAK .....	iv
KATA PENGANTAR.....	vi
UCAPAN TERIMAKASIH.....	vii
DAFTAR ISI.....	ix
DAFTAR GAMBAR.....	xii
DAFTAR TABEL .....	xiii
DAFTAR SINGKATAN.....	xiv
<b>1. BAB I PENDAHULUAN.....</b>	<b>1</b>
<b>1.1 Latar Belakang .....</b>	<b>1</b>
<b>1.2 Rumusan Masalah .....</b>	<b>3</b>
<b>1.3 Tujuan Penelitian .....</b>	<b>4</b>
<b>1.4 Batasan Masalah.....</b>	<b>4</b>
<b>1.5 Metode Penelitian .....</b>	<b>4</b>
<b>1.6 Sistematika Penulisan .....</b>	<b>6</b>
<b>2. BAB II KONSEP DASAR.....</b>	<b>7</b>
<b>2.1 <i>Multiple Object Tracking</i> .....</b>	<b>7</b>
<b>2.2 <i>You Only Look Once</i> .....</b>	<b>8</b>
<b>2.2.1. YOLOv4.....</b>	<b>9</b>
<b>2.3 <i>Deep Simple Online and Realtime Tracking with a Deep Association Metric</i>.....</b>	<b>10</b>
<b>2.3.1 <i>Simple Online and Realtime Tracking</i> .....</b>	<b>11</b>
<b>2.3.2 <i>Kalman Filter</i> .....</b>	<b>11</b>
<b>2.3.3 <i>Hungarian Algorithm</i> .....</b>	<b>12</b>
<b>2.4 <i>Convolutional Neural Network</i> .....</b>	<b>13</b>

2.4.1	<i>Convolutional Layer</i> .....	14
2.4.2	<i>Pooling Layer</i> .....	15
2.4.3	<i>Fully connected layer</i> .....	15
2.5	<i>Python</i> .....	16
2.6	<i>TensorFlow</i> .....	16
3.	<b>BAB III PERANCANGAN SISTEM</b> .....	17
3.1	<b>Desain Sistem</b> .....	17
3.1.1	<i>Membuat Environment</i> .....	18
3.1.2	<i>Load Official Pre-trained YOLOv4 Dataset</i> .....	19
3.1.3	<i>Input Kamera Real-Time</i> .....	20
3.1.4	<i>Gambar Tiap Frame</i> .....	21
3.1.5	<i>YOLOv4 Object Detector</i> .....	22
3.1.6	<i>Object Bounding Box</i> .....	22
3.1.7	<i>Prediksi Kalman Filter</i> .....	23
3.1.8	<i>Hungarian Algorithm</i> .....	24
3.1.9	<i>Kalman Filter Update</i> .....	26
3.1.10	<i>Objek Terdeteksi dengan ID Masing-Masing</i> .....	26
3.1.11	<i>Hitung Akurasi, Presisi, IoU dan Kecepatan Proses</i> .....	27
3.2	<b>Desain Perangkat</b> .....	29
3.3	<b>Parameter Eksploitasi</b> .....	30
3.4	<b>Parameter Performansi</b> .....	31
4.	<b>BAB IV HASIL DAN ANALISIS</b> .....	33
4.1	<b>Skenario Pengujian</b> .....	33
4.2	<b>Data Hasil Pengujian Sistem</b> .....	34
4.3	<b>Analisis Hasil Pengujian</b> .....	36
5.	<b>BAB V SIMPULAN DAN SARAN</b> .....	41
5.1	<b>Kesimpulan</b> .....	41

5.2	Saran.....	41
	<b>DAFTAR PUSTAKA .....</b>	<b>42</b>