

## **LIST OF FIGURES**

Fig 1. 1 Flowchart Research methodology .....	7
Fig 1. 2 Design block diagram .....	9
Fig 2. 1 General Diagram of the Control System.....	13
Fig 2. 2 Open-loop control diagram.....	14
Fig 2. 3 Closed-loop control system.....	15
Fig 2. 4 Fuzzy Logic Control .....	16
Fig 2. 5 Konfigurasi pin arduino 2560 .....	20
Fig 2. 6 Kamera Pixy CMUCam 5.....	22
Fig 2. 7 Tampilan software PixyMon .....	23
Fig 2. 8 IC L293D .....	24
Fig 2. 9 Motor Drive Shield L293D.....	25
Fig 2. 10 nRF24L01 .....	25
Fig 3. 1 Design system .....	27
Fig 3. 2 Block system and object destection diagram.....	28
Fig 3. 3 The coordinates of each target .....	28
Fig 3. 4 The wiring configuration .....	29
Fig 3. 5 AGV robot or receiver system diagram .....	29
Fig 3. 6 AGV robot wiring configuration .....	30
Fig 3. 7 Flow chart of detection system .....	31
Fig 3. 8 Fuzzy logic design .....	32
Fig 3. 9 The size of the angle .....	33
Fig 3. 10 Membership of angles.....	34
Fig 3. 11 Membership function distance.....	35
Fig 3. 12 Membership output right motor.....	37
Fig 3. 13 Membership function left motor.....	38
Fig 3. 14 The data sent .....	40

Fig 3. 15 Library .....	41
Fig 3. 16 Membership function.....	42
Fig 3. 17 Fuzzy rule base .....	42
Fig 3. 18 Data transmission program.....	43
Fig 3. 19 Prototipe AGV robot.....	43
Fig 3. 20 Pictures of robot 1 and robot 2.....	44
Fig 3. 21 Picture of the system.....	44
Fig 3. 22 Robot is detected as shown by pixymon.....	45
Fig 3. 23 Simulation result.....	45
Fig 4. 1 Fuzzy output on the Arduino IDE serial monitor software .....	53
Fig 4. 2 First test is the green target.....	54
Fig 4. 3 The test is carried out by moving the target to another .....	55
Fig 4. 4 First second is the blue target .....	56
Fig 4. 5 target 2 will be positioned as shown.....	57