DAFTAR GAMBAR

Gambar II-1 Contoh Troli [11] 15
Gambar II-2 Sensor IMU MPU6050 [12] 16
Gambar II-3 *Motor* DC 16
Gambar II-4 Keluaran PWM [13] 17
Gambar II-5 *Driver Motor* [14] 18
Gambar II-6 VRLA *battery* 12V 9Ah [15] 19
Gambar II-7 *Sensor* Arus ACS712 [16] 20
Gambar II-8 Mikrokontroler Arduino UNO [17] 21
Gambar II-9 Diagram Blok Sistem *Open Loop* 21
Gambar II-10 Diagram Blok Sistem *Closed Loop* 22
Gambar II-11 Tampilan Pemodelan Matlab 23
Gambar III-1 Gambaran Umum Sistem 24
Gambar III-2 *Wiring* Komponen Sistem 25
Gambar III-3 Diagram Blok Sistem *Self-balancing* Troli 26
Gambar III-4 Diagram Blok *Monitoring* Daya 26
Gambar III-5 Desain 3D Mekanik Troli 27
Gambar III-6 Arduino UNO [17] 28
Gambar III-7 *Motor Driver* L298N [14] 30
Gambar III-8 *Motor* DC Parvalux 12V 30
Gambar III-9 *Sensor* IMU MPU6050 31
Gambar III-10 LCD 20x4 + I2C [18] 32
Gambar III-11 Baterai VRLA (Aki Kering) 12V 9Ah 33
Gambar III-12 Meja Troli 34
Gambar III-13 *Flow Chart Self-balancing Trolley* 35

Gambar III-14 *Flow Chart Monitoring* Daya 37

Gambar IV-1 Pengujian ACS712 1A 40

Gambar IV-2 Pengujian ACS712 2A 40

Gambar IV-3 Pengujian ACS712 3A 40

Gambar IV-4 Pengujian *Motor* DC 41

Gambar IV-5 Pengujian *Self-balancing* Tanjakan 1kg..... 42

Gambar IV-6 Pengujian *Self-balancing* Tanjakan 2kg..... 42

Gambar IV-7 Pengujian *Self-balancing* Tanjakan 3kg..... 43

Gambar IV-8 Pengujian *Self-balancing* Tanjakan 4kg..... 43

Gambar IV-9 Pengujian *Self-balancing* Tanjakan 5kg..... 43

Gambar IV-10 Pengujian *Self-balancing* Tanjakan 6kg..... 44

Gambar IV-11 Pengujian *Self-balancing* Turunan 1kg 45

Gambar IV-12 Pengujian *Self-balancing* Turunan 2kg 45

Gambar IV-13 Pengujian *Self-balancing* Turunan 3kg 45

Gambar IV-14 Pengujian *Self-balancing* Turunan 4kg 46

Gambar IV-15 Pengujian *Self-balancing* Turunan 5kg 46

Gambar IV-16 Pengujian *Self-balancing* Turunan 6kg 46

Gambar IV-17 Pengujian *Self-balancing* Ubin 2 kg..... 47

Gambar IV-18 Pengujian Pengosongan Aki 48

Gambar IV-19 Pengujian Pengisian Aki..... 49