

## DAFTAR PUSTAKA

- [1] F. Tamimi and S. Munawaroh, “Teknologi Sebagai Kegiatan Manusia Dalam Era Modern Kehidupan Masyarakat,” *Saturnus J. Teknol. dan Sist. Inf.*, vol. 2, no. 3, pp. 66–74, 2024, doi: <https://doi.org/10.61132/saturnus.v2i3.157>.
- [2] B. M. Danta, S. R. Sentinuwo, and M. D. Putro, “Implementasi Teknologi Radio Frequency Identification untuk Identifikasi dan Autentikasi pada Gerbang Masuk di Universitas Sam Ratulangi Manado,” *J. Tek. Inform.*, vol. 9, no. 1, pp. 1–9, 2016, doi: [10.35793/jti.9.1.2016.13458](https://doi.org/10.35793/jti.9.1.2016.13458).
- [3] Nurhanudin and Kartimi, “Memahami Penciptaan, Perkembangan, dan Tantangan Manusia di Era Digital,” *J. Educ.*, vol. 7, no. 2, pp. 9283–9292, 2025, doi: <https://doi.org/10.31004/joe.v7i2.7868>.
- [4] R. Parlika, D. C. M. Wijaya, and A. Pratama, “BOT PENYIMPAN DATA PENGUMPULAN TUGAS PESERTA ELEARNING BERBASIS TELEGRAM [ER-BOT PDPT],” *SCAN - J. Teknol. Inf. dan Komun.*, vol. 16, no. 1, pp. 34–41, 2021, doi: <https://doi.org/10.33005/scan.v16i1.2352>.
- [5] D. Sinaga and Peniarsih, “MENGHADAPI PERUBAHAN DUNIA MELALUI TRANSFORMASI DIGITAL MENUJU KESUKSESAN PADA ERA DIGITALISASI,” *JSI (Jurnal Sist. Informasi) Univ. Suryadarma*, vol. 11, no. 2, pp. 51–58, 2024, doi: <https://doi.org/10.31219/osf.io/gdm68>.
- [6] M. R. Fahlevi, V. Naubnome, and F. C. Suci, “Rancang Bangun Mesin Belt Conveyor Dengan Speedcontrol Sebagai Pengatur Kecepatan,” *Patria Artha Technol. J.*, vol. 7, no. 1, pp. 20–26, 2023, doi: [10.33857/patj.v7i1.593](https://doi.org/10.33857/patj.v7i1.593).
- [7] B. D. Ushofa, L. Anifah, I. G. P. A. Buditjahjanto, and Endryansyah, “Sistem Kendali Kecepatan Putaran Motor DC pada Conveyor dengan Metode Kontrol PID,” *J. Tek. Elektro*, vol. 11, no. 2, pp. 332–342, 2022, doi: <https://doi.org/10.26740/jte.v11n2.p332-342>.
- [8] M. R. A. N. Putera and R. Hidayat, “Kendali Kecepatan Motor DC Menggunakan Pengendali PID dengan Encoder sebagai Feedback,” *STRING (Satuan Tulisan Ris. dan Inov. Teknol.)*, vol. 7, no. 1, pp. 50–56, 2022, doi: [10.30998/string.v7i1.13026](https://doi.org/10.30998/string.v7i1.13026).
- [9] N. Soedjarwanto, “PENGENDALIAN KECEPATAN MOTOR DC MENGGUNAKAN BUCK-BOOST CONVERTER BERBASIS IoT,” *J. Inform. dan Tek. Elektro Terap.*, vol.

- 11, no. 3s1, pp. 943–950, 2023, doi: 10.23960/jitet.v11i3s1.3399.
- [10] M. Diah Ika Putri, A. Ma’arif, and R. Dwi Puriyanto, “Pengendali Kecepatan Sudut Motor DC Menggunakan Kontrol PID dan Tuning Ziegler Nichols,” *Techno (Jurnal Fak. Tek. Univ. Muhammadiyah Purwokerto)*, vol. 23, no. 1, pp. 9–18, 2022, doi: 10.30595/techno.v23i1.10773.
  - [11] K. Gunawan, Sugiarto, and J. Prasjo, “SISTEM KENDALI KECEPATAN MOTOR DC MENGGUNAKAN HYBRID PID-PSO,” *JMTE (Jurnal Mhs. Tek. Elektro)*, vol. 5, no. 1, pp. 1–9, 2024, [Online]. Available: <https://journal.itny.ac.id/index.php/JMTE/article/view/4915>.
  - [12] K. J. Åström and T. Hägglund, “The future of PID control,” *Control Eng. Pract.*, vol. 9, no. 11, pp. 1163–1175, Nov. 2001, doi: 10.1016/S0967-0661(01)00062-4.
  - [13] K. J. Åström and T. Hägglund, “Revisiting the Ziegler–Nichols step response method for PID control,” *J. Process Control*, vol. 14, no. 6, pp. 635–650, 2004, doi: 10.1016/j.jprocont.2004.01.002.
  - [14] A. R. Utami, R. J. Yuniar, A. Giyantara, and A. D. Saputra, “Cohen-Coon PID Tuning Method for Self-Balancing Robot,” in *2022 International Symposium on Electronics and Smart Devices (ISESD)*, IEEE, 2022, pp. 1–5. doi: 10.1109/ISESD56103.2022.9980830.
  - [15] C. Kravaris and I. K. Kookos, *Understanding Process Dynamics and Control*, vol. 27, no. 2. Cambridge University Press, 2021. doi: 10.1017/9781139565080.
  - [16] D. D. O. Francisco, J. O. Trierweiler, and M. Farenzena, “A novel PID autotuning approach: how to correct bad tuning by closed-loop performance assessment,” *IFAC-PapersOnLine*, vol. 52, no. 1, pp. 184–189, 2019, doi: 10.1016/J.IFACOL.2019.06.058.
  - [17] D. C. Nunes, J. E. M. G. Pinto, D. G. V. Fonseca, A. L. Maitelli, and F. M. U. Araújo, “Relay Based PID Auto-tuning Applied to a Multivariable Level Control System,” in *Proceedings of the 11th International Conference on Informatics in Control, Automation and Robotics*, SCITEPRESS - Science and Technology Publications, 2014, pp. 741–748. doi: 10.5220/0005063907410748.
  - [18] A. Ma’arif, *Dasar Kendali Sistem: Pemodelan, Pengendalian, Analisis, Simulasi, dan Implementasi*, 1st ed. Yogyakarta: UAD PRESS, 2021. [Online]. Available: <https://eprints.uad.ac.id/32516/>.
  - [19] B. Rahmat and Muljono, *Pemrograman Internet of Things (IoT) DENGAN ARDUINO DAN*

- PYTHON Jilid 1*, 1st ed. Purbalingga: CV. EUREKA MEDIA AKSARA, 2024. [Online]. Available: <https://repository.penerbiteureka.com/publications/568337/pemrograman-internet-of-things-iot-dengan-arduino-dan-python-jilid-1>.
- [20] Z. Jamal, “IMPLEMENTASI KENDALI PID PENALAN ZIEGLER-NICHOLS MENGGUNAKAN MIKROKONTROLER,” *J. Inform.*, vol. 15, no. 1, pp. 81–88, 2015, doi: <https://doi.org/10.30873/ji.v15i1.410>.
  - [21] A. R. J. Wiriawan and A. Irawan, “Motor DC Speed Adjustment By Propotional Integral Derivative (PID) Based on LabView,” *Telekontran J. Ilm. Telekomun. Kendali dan Elektron. Terap.*, vol. 4, no. 2, pp. 13–24, 2016, doi: [10.34010/telekontran.v4i2.1886](https://doi.org/10.34010/telekontran.v4i2.1886).
  - [22] R. Hansza and S. I. Haryudo, “Rancang Bangun Kontrol Motor DC dengan PID Menggunakan Perintah Suara dan Monitoring Berbasis Internet of Things ( IOT ),” *J. Tek. Elektro*, vol. 9, no. 2, pp. 477–485, 2020, doi: <https://doi.org/10.26740/jte.v9n2.p%25p>.
  - [23] D. Setiawan, “Sistem Kontrol Motor Dc Menggunakan Pwm Arduino Berbasis Android System,” *J. Sains, Teknol. dan Ind.*, vol. 15, no. 1, pp. 7–14, 2017, doi: [http://dx.doi.org/10.24014/sitekin.v15i1.4131](https://doi.org/10.24014/sitekin.v15i1.4131).
  - [24] D. C. M. Wijaya, “Kendali dan Monitoring pH Air Akuaponik Berbasis IoT Dengan Metode Fuzzy Type-2,” UPN “Veteran” Jawa Timur, 2022. [Online]. Available: <http://repository.upnjatim.ac.id/id/eprint/7014>.
  - [25] Rosalina, I. Qosim, and M. Mujirudin, “Analisis Pengaturan Kecepatan Motor DC Menggunakan Kontrol PID (Proportional Integral Derivative),” *Proceeding TEKNOKA Natl. Semin.*, vol. 2, pp. 89–94, 2017, doi: <https://doi.org/10.30595/techno.v23i1.10773>.
  - [26] M. Nizam, H. Yuana, and Z. Wulansari, “MIKROKONTROLER ESP 32 SEBAGAI ALAT MONITORING PINTU BERBASIS WEB,” *JATI (Jurnal Mhs. Tek. Inform.*, vol. 6, no. 2, pp. 767–772, 2022, doi: [10.36040/jati.v6i2.5713](https://doi.org/10.36040/jati.v6i2.5713).
  - [27] Espressif Systems, “ESP32-DevKitC Getting Started Guide,” 2024. [Online]. Available: <https://docs.espressif.com/projects/esp-dev-kits/en/latest/esp32/esp32-devkitc/index.html>.
  - [28] CNC Store, “MOTOR DC JGA25-370 DC 12V GEARBOX HIGH TORQUE DINAMO WITH DISC ENCODER,” CNC Store. Accessed: May 21, 2025. [Online]. Available: <https://shopee.co.id/MOTOR-DC-JGA25-370-DC-12V-GEARBOX-HIGH-TORQUE-DINAMO-WITH-DISC-ENCODER-i.62956347.26412883166>.
  - [29] R. Sinaga, “Pengendali Kecepatan Motor Dc Menggunakan Sensor Hall Berbasis

- Mikrokontroler Atmega 8535,” *Saintia Fis.*, vol. 1, no. 1, 2013.
- [30] I. Hudati, A. P. Aji, and S. Nurrahma, “Kendali Posisi Motor DC dengan Menggunakan Kendali PID,” *J. List. Instrumentasi dan Elektron. Terap.*, vol. 2, no. 2, pp. 25–30, 2021, doi: 10.22146/juliet.v2i2.71148.
  - [31] F. Musthofa and H. Winarno, “SISTEM DESELERASI KECEPATAN OTOMATIS PADA MOBIL BERDASARKAN JARAK MENGGUNAKAN SENSOR ULTRASONIK HC-SR04 BERBASIS ARDUINO MEGA 2560,” *Gema Teknol.*, vol. 18, no. 3, pp. 110–116, 2015, doi: 10.14710/gt.v18i3.21933.
  - [32] Y. A. R. A. P. M. V. K. P. Kishor Jadhav Nagnath V. Khandekar, “DC Motor Speed Control Using Arduino & L298N Motor Driver,” *Journal of Mechatronics and Automation*, 2024, pp. 1–7.
  - [33] A. Y. Raisal *et al.*, “Perancangan Sistem Monitoring Suhu dan Kelembaban Berbasis Arduino UNO pada Kubah Observatorium Ilmu Falak Universitas Muhammadiyah Sumatera Utara ( OIF UMSU ),” vol. 9, no. 1, pp. 1–11, 2025.
  - [34] T. Rohman and W. Aribowo, “Perancangan Sistem Pengendali Kecepatan Motor DC Menggunakan Kontroler Proporsional Integral Derivative pada Palang Pintu Parkir,” *J. Tek. ELEKTRO*, vol. 12, no. 2, pp. 48–54, Jul. 2023, doi: 10.26740/jte.v12n2.p48-54.
  - [35] C. Anjali, G. Dropadi, P. Sakshi, K. Gayatri, and V. V Sarwadnya, “Measurement of Angular Displacement Using Potentiometer,” *Int. J. Res. Appl. Sci. Eng. Technol.*, vol. 13, no. IV, 2025.
  - [36] M. D. Riski, “Rancang Alat Lampu Otomatis Di Cargo Compartment Pesawat Berbasis Arduino Menggunakan Push Botton Switch Sebagai Pembelajaran Di Politeknik Penerbangan Surabaya (udah),” *Pros. Semin. Nas. Inov. Teknol. Penerbangan*, vol. 3, no. 2, pp. 1–9, 2019, doi: <https://doi.org/10.46491/snitp.v3i2.414>.
  - [37] T. Sulistyorini, N. Sofi, and E. Sova, “PEMANFAATAN NODEMCU ESP8266 BERBASIS ANDROID (BLYNK) SEBAGAI ALAT ALAT MEMATIKAN DAN MENGHIDUPKAN LAMPU,” *J. Ilm. Tek.*, vol. 1, no. 3, pp. 40–53, 2022, doi: 10.56127/juit.v1i3.334.
  - [38] P. S. Maria and E. Susianti, “Implementasi Algoritma Kalkulasi Interupsi pada Rancang Bangun Tachometer Digital,” *J. Tek. Elektro*, vol. 10, no. 2, pp. 47–53, 2018, doi: 10.15294/jte.v10i2.16350.

- [39] S. A. Sukarno, N. Lilansa, N. W. Nugraha, and A. F. Rifai, “RANCANG BANGUN GRAPHICAL USER INTERFACE PADA SISTEM KENDALI SUHU NIRKABEL PEMANAS TANGKI BERPENGADUK KONTINYU,” *J. Inform. dan Tek. Elektro Terap.*, vol. 12, no. 1, pp. 155–166, 2024, doi: 10.23960/jitet.v12i1.3953.
- [40] J. G. Ziegler and N. B. Nichols, “Optimum Settings for Automatic Controllers,” *J. Dyn. Syst. Meas. Control. Trans. ASME*, vol. 115, no. 2B, pp. 759–765, Jun. 1993, doi: 10.1115/1.2899060.
- [41] M. Effendy, *Pengetahuan Dasar Sistem Kendali*. Surakarta: MUP UMS, 2019. [Online]. Available: [https://www.researchgate.net/publication/335854419\\_Pengetahuan\\_Dasar\\_Sistem\\_Kendali](https://www.researchgate.net/publication/335854419_Pengetahuan_Dasar_Sistem_Kendali).
- [42] K. H. Ang, G. Chong, and Y. Li, “PID control system analysis, design, and technology,” *IEEE Trans. Control Syst. Technol.*, vol. 13, no. 4, pp. 559–576, 2005, doi: 10.1109/TCST.2005.847331.
- [43] M. Santo Gitakarma, *Sistem Kendali : Disertai Contoh Soal dan Penyelesaian*, 1st ed. Yogyakarta: GRAHA ILMU, 2014. [Online]. Available: <https://grahailmu.co.id/previewpdf/978-602-262-367-0-1364.pdf>.
- [44] R. Muhandian and Krismadinata, “Kendali Kecepatan Motor DC Dengan Kontroler PID dan Antarmuka Visual Basic,” *J. Tek. Elektro Dan Vokasional*, vol. 06, no. 01, pp. 328–339, 2020, doi: <https://doi.org/10.24036/jtev.v6i1.108034>.
- [45] O. M. Prabowo, “Pembatasan Definisi Things Dalam Konteks Internet of Things Berdasarkan Keterkaitan Embedded System dan Internet Protocol,” *J. Inf. Technol.*, vol. 1, no. 2, pp. 43–46, Aug. 2019, doi: 10.47292/joint.v1i2.8.
- [46] G. Y. Saputra, A. D. Afrizal, F. K. R. Mahfud, F. A. Pribadi, and F. J. Pamungkas, “Penerapan Protokol MQTT Pada Teknologi Wan (Studi Kasus Sistem Parkir Universitas Brawijaya),” *Inform. Mulawarman J. Ilm. Ilmu Komput.*, vol. 12, no. 2, pp. 69–75, 2017, doi: 10.30872/jim.v12i2.653.
- [47] M. A. Alqarni, “Priority-enabled MQTT: A Robust Approach to Emergency Event Detection in IoT,” *J. Electr. Appl. Syst.*, vol. 3, 2024.
- [48] Tristuti Aulia, “Belajar Software Ubidots Untuk IoT Enthusiast!,” [kmtech.id](https://www.kmtech.id/post/belajar-software-ubidots-untuk-iot-enthusiast). Accessed: May 22, 2025. [Online]. Available: <https://www.kmtech.id/post/belajar-software-ubidots-untuk-iot-enthusiast>.

- [49] Ubidots, “Platform Overview.” [Online]. Available: <https://ubidots.com/platform>.
- [50] I. A. Rozaq and N. Y. D. Setyaningsih, “Pengembangan Tempat Sampah Otomatis Berbasis Internet of Things (IoT) untuk Pengelolaan Sampah Logam dan Non-Logam,” *JEECOM J. Electr. Eng. Comput.*, vol. 5, no. 2, pp. 250–257, Oct. 2023, doi: 10.33650/jeeecom.v5i2.6908.