

DAFTAR PUSTAKA

- [1] Super Admin, “Apa yang Membuat Indonesia Jadi Salah Satu Pusat Keanekaragaman Hayati Terbesar Dunia?,” <https://ditsmp.kemdikbud.go.id/>.
- [2] D. A. Fordham *et al.*, “Using paleo-archives to safeguard biodiversity under climate change,” *Science (1979)*, vol. 369, no. 6507, p. eabc5654, 2020, doi: 10.1126/science.abc5654.
- [3] T. A. Sari, W. Atmodjo, and R. Zuraida, “Studi bahan organik total (BOT) sedimen dasar laut di Perairan Nabire, Teluk Cendrawasih, Papua,” *J Oceanogr*, vol. 3, no. 1, pp. 81–86, 2014.
- [4] R. NAHDRUL, “RANCANG BANGUN ATM BERAS INTERNET OF THINGS (IoT) DENGAN REAL-TIME DATABASE BERBASIS ESP32,” 2023.
- [5] G. Y. Pramana and I. Arfiani, “Penerapan metode image stitching pada pembuatan virtual reality pengenalan islamic center universitas ahmad dahlan,” *JIKO (Jurnal Inform. dan Komputer)*, vol. 20, pp. 1–8, 2019.
- [6] K. L. Hidup, “Tentang Perlindungan dan Pengelolaan Lingkungan Hidup,” 2009, *Retrieved from Undang-Undang*.
- [7] S. N. Indonesia, “Sistem manajemen lingkungan–Persyaratan dan panduan penggunaan,” *Badan Standarisasi Nasional*, 2005.
- [8] A. Laitly, C. T. Callaghan, K. Delhey, and W. K. Cornwell, “Is color data from citizen science photographs reliable for biodiversity research?,” *Ecol Evol*, vol. 11, no. 9, pp. 4071–4083, 2021.
- [9] A. Wijayono, V. G. V. Putra, and others, “Implementation of Digital Image Processing and Computation Technology on Measurement and Testing of Non Woven Fabric Parameters,” *arXiv preprint arXiv:1810.07650*, 2018.
- [10] U. A. Madaminov and M. R. Allaberganova, “Firebase Database Usage and Application Technology in Modern Mobile Applications,” in *2023 IEEE XVI International Scientific and Technical Conference Actual Problems of Electronic Instrument Engineering (APEIE)*, Nov. 2023, pp. 1690–1694. doi: 10.1109/APEIE59731.2023.10347828.
- [11] esp32io.com, “ESP32 - Joystick,” esp32io.com. Accessed: Jun. 13, 2025. [Online]. Available: <https://esp32io.com/tutorials/esp32-joystick?utm>

- [12] electromaker.io, “Buddybot: Controlling A Stepper Motor With An Android Smartphone,” electromaker.io. Accessed: Jun. 13, 2025. [Online]. Available: https://www.electromaker.io/project/view/buddybot-controlling-a-stepper-motor-with-an-android-smartphone?srsId=AfmBOopSQLUPirp854hMoDt7UqB7P_2OeiLpVULEFmgiaYBFeyV4S3p4&utm
- [13] esp32io.com, “ESP32 - Stepper Motor and Limit Switch,” esp32io.com. Accessed: Jun. 13, 2025. [Online]. Available: <https://esp32io.com/tutorials/esp32-stepper-motor-and-limit-switch?utm%20>
- [14] M. S. Hossain, A. Khatun, S. M. Khiroul Bashar, and M. Golam Moazzam, “Automatic Image Stitching Using Feature Based Approach”, doi: 10.35629/6734-0907022130.
- [15] Ihsan Rifky, “Mikrokontroler ESP32,” raharja.ac.id. Accessed: Jun. 13, 2025. [Online]. Available: <https://raharja.ac.id/2021/11/16/mikrokontroler-esp32-2/>
- [16] M. Azhar and L. Narpulaela, “IMPLEMENTASI PENGGUNAAN ESP32 SEBAGAI IOT PADA PROJECT SMART CHARGER DI PT. PASIFIK SATELIT NUSANTARA BEKASI,” *JATI (Jurnal Mahasiswa Teknik Informatika)*, vol. 8, pp. 7248–7253, Jun. 2024, doi: 10.36040/jati.v8i4.10201.
- [17] mechtex.com, “What is a NEMA 17 Stepper Motor?,” mechtex.com. Accessed: Jun. 13, 2025. [Online]. Available: <https://mechtex.com/blog/what-is-a-nema-17-stepper-motor?utm>
- [18] Makerguides.com, “Learn How To Drive Stepper Motor Using A4988 IC And ESP32,” Makerguides.com. Accessed: Jun. 13, 2025. [Online]. Available: <https://www.makerguides.com/how-to-drive-stepper-motor-using-a4988-ic-and-esp32/>
- [19] howtomechatronics.com, “How To Control a Stepper Motor with A4988 Driver and Arduino,” howtomechatronics.com. Accessed: Jun. 13, 2025. [Online]. Available: <https://howtomechatronics.com/tutorials/arduino/how-to-control-stepper-motor-with-a4988-driver-and-arduino/>
- [20] “Features and Benefits ▪ Low R DS(ON) outputs ▪ Automatic current decay mode detection/selection ▪ Mixed and Slow current decay modes ▪ Synchronous rectification for low power dissipation ▪ Internal UVLO ▪ Crossover-current protection ▪ 3.3 and 5 V compatible logic supply ▪ Thermal

shutdown circuitry ▪ Short-to-ground protection ▪ Shorted load protection ▪ Five selectable step modes: full.” [Online]. Available: www.allegromicro.com

[21] lastminuteengineers.com, “How 2-Axis Joystick Works & Interface with ESP32 + Processing,” lastminuteengineers.com. Accessed: Jun. 13, 2025. [Online]. Available: <https://lastminuteengineers.com/joystick-interfacing-arduino-processing/>

[22] schindlerelectronics.com, “JOYSTICKS AND HOW TO USE THEM,” schindlerelectronics.com. Accessed: Jun. 13, 2025. [Online]. Available: <https://www.schindlerelectronics.com/joysticks#:~:text=Nilai%20untuk%20stik%20analog%20akan,atau%20pada%20tautan%20di%20atas.>

[23] mcbestari.com, “Push Button Switch: Memahami Pengertian Hingga Pengaplikasiannya,” mcbestari.com. Accessed: Jun. 13, 2025. [Online]. Available: <https://mcbestari.com/pengetahuan-listrik/push-button-switch-memahami-pengertian-hingga-pengaplikasiannya/>

[24] binus.ac.id, “Apa itu Pull Down Resistor dan Pull Up Resistor?,” binus.ac.id.

[25] alvindocs.com, “Limit Switch: Definisi, Cara Kerja, dan Aplikasinya,” alvindocs.com. Accessed: Jun. 13, 2025. [Online]. Available: <https://www.alvindocs.com/blog/limit-switch>

[26] nusabot.id, “Menggunakan Output LCD I2C,” nusabot.id. Accessed: Jun. 13, 2025. [Online]. Available: <https://nusabot.id/blog/menggunakan-output-lcd-i2c/#:~:text=Maksudnya%20adalah%20ada%2016%20kolom,antar%20kabelnya%20untuk%20wiring%20nya.>

[27] misel.co.id, “Mengenal Perbedaan Saklar dengan Relay,” misel.co.id. Accessed: Jun. 13, 2025. [Online]. Available: <https://misel.co.id/mengenal-perbedaan-saklar-dengan-relay/>

[28] gnscomponent.com, “DC-DC DC adjustable step-down diatur papan modul catu daya,” gnscomponent.com. Accessed: Jun. 13, 2025. [Online]. Available: <https://id.gnscomponent.com/power-module/dc-dc-dc-adjustable-step-down-regulated-power.html%20>

[29] randomnerdtutorials.com, “How to Use I2C LCD with ESP32 on Arduino IDE (ESP8266 compatible),” randomnerdtutorials.com. Accessed: Jun.

13, 2025. [Online]. Available: <https://randomnerdtutorials.com/esp32-esp8266-i2c-lcd-arduino-ide/?utm>