REFERENSI

[1] Hidayat and S. Liawatimena. ”Enabling of Technology in Preventing Vandalism in Tower Communication.” *International Journal* 9, no. 5 (2020).

[2] F. Mazunga, T. Romosi, and R. Guvhu, “Manhole intrusion detection system with notification stages,” *Sci. African*, vol. 12, p. e00819, 2021, doi: 10.1016/j.sciaf.2021.e00819.

[3] B. N. Rao and R. Sudheer, ”Surveillance Camera using IoT and Raspberry Pi,” *2020 Second International Conference on Inventive Research in Computing Applications (ICIRCA)*, Coimbatore, India, 2020, pp. 1172-1176, doi: 10.1109/ICIRCA48905.2020.9182983.

[4] M. Ragnoli, V. Stornelli, D. D. Tosto, G. Barile, A. Leoni and G. Ferri, ”Flood monitoring: a LoRa based case-study in the city of L’Aquila,” *2022 17th Conference on Ph.D Research in Microelectronics and Electronics (PRIME)*, Villasimius, SU, Italy, 2022, pp. 57-60, doi: 10.1109/PRIME55000.2022.9816747.

[5] S. Vasyukov and A. Macovey, ”Multifunctional Shock, Tilt and Motion Sensor Based on MEMS Accelerometer,” *2022 International Conference on Industrial Engineering, Applications and Manufacturing (ICIEAM)*, Sochi, Russian Federation, 2022, pp. 936-941, doi: 10.1109/ICIEAM54945.2022.9787253.

[6] Q. Xu and M. I. Younis, “Micromachined Threshold Inertial Switches: A Review,” *Journal of Micromechanics and Microengineering*, vol. 32, no. 6, p. 063001, 2022. doi:10.1088/1361-6439/ac6192.

[7] J. -S. Lee and H. -H. Tseng, ”Development of an Enhanced Threshold-Based Fall Detection System Using Smartphones With Built-In Accelerometers,” in IEEE Sensors Journal, vol. 19, no. 18, pp. 8293-8302, 15 Sept.15, 2019, doi: 10.1109/JSEN.2019.2918690.

[8] N. Zade, S. Deshpande, and Dr D. Sita. ”Analysis of passive infrared detector for target detection in an IOT based outdoor environment.” *Proceedings of the International Conference on Recent Advances in Computational Techniques (IC-RACT)*. 2020.

[9] S. Y. Jang, Y. Lee, B. Shin and D. Lee, ”Application-Aware IoT Camera Virtualization for Video Analytics Edge Computing,” *2018 IEEE/ACM Symposium on Edge Computing (SEC)*, Seattle, WA, USA, 2018, pp. 132-144, doi: 10.1109/SEC.2018.00017.

[10] J. Chen and S. Huang, ”Analysis and Comparison of UART, SPI and I2C,” *2023 IEEE 2nd International Conference on Electrical Engineering, Big Data and Algorithms (EEBDA)*, Changchun, China, 2023, pp. 272-276, doi: 10.1109/EEBDA56825.2023.10090677.

[11] K. Mekki, E. Bajic, F. Chaxel, and F. Meyer, "A comparative study of Lpwan Technologies for large-scale IOT deployment," *ICT Express*, vol. 5, no. 1, pp. 1–7, 2019.

[12] M. Iqbal, A. Y. M. Abdullah and F. Shabnam, "An Application Based Comparative Study of LPWAN Technologies for IoT Environment," *2020 IEEE Region 10 Symposium (TENSYMP)*, Dhaka, Bangladesh, 2020, pp. 1857-1860, doi: 10.1109/TENSYMP50017.2020.9230597.

[13] I G. Desnanjaya, A. A. Ariana, I M. Nugraha, I K. Wiguna, and I M. Sumaharja. "Room Monitoring Uses ESP-12E Based DHT22 and BH1750 Sensors." *Journal of Robotics and Control* (JRC) 3, no. 2 (2022): 205–11. https://doi.org/10.18196/jrc.v3i2.11023.

[14] T. Mahjoub, M. B. Said and H. Boujemaa, "On the Performances of Packet Error Rate for LoRa Networks," *2022 International Wireless Communications and Mobile Computing (IWCMC)*, Dubrovnik, Croatia, 2022, pp. 372-377, doi: 10.1109/IWCMC55113.2022.9824828.

[15] Kementerian Komunikasi dan Informatika. 2019. *Peraturan Menteri Komunikasi dan Informatika Nomor 1 Tahun 2019 tentang Penggunaan Spektrum Frekuensi Radio Berdasarkan Izin Kelas*. Jakarta.

[16] LoRa Alliance, "LoRaWAN® Regional Parameters RP2-1.0.1," p. 62–67, 2020.

[17] STMicroelectronics. "Integrated Development Environment for STM32 Products," p. 2–3, 2021.

[18] Analog Devices, "Datasheet of ADXL345 Digital Accelerometer," [Online] Available: https://www.analog.com/media/en/technical-documentation/data-sheets/ADXL345.pdf

[19] ROHM Semiconductor, "Digital 16bit Serial Output Type Ambient Light Sensor IC BH1750FVI Rev.D," 2011.

[20] Hi-Link, "Datasheet of 3W Ultra-small Power Module PM01," 2018.

[21] Molex, "Product Specification Cellular Quad Band Flex Antenna 146185-100 Rev. B," 2022.

[22] LG Chem, "Product Specification Rechargeable Lithium Ion Battery 18650HE2 2500mAh," 2013.

[23] Texas Instruments, "BQ21040 0.8-A, Single-Input, Single Cell Li-Ion and Li-Pol Battery Charger," 2019. [Online]. Available: https://www.ti.com/lit/ds/symlink/bq21040.pdf. [Diakses 6 Juni 2023].

[24] Shenzhen Fuman Elec, "DW06D," [Online]. Available: https://datasheet.lcsc.com/lcsc/2202252130_Shenzhen-Fuman-Elec-DW06D_C82123.pdf. [Diakses 6 Juni 2023].

[25] Sparkfun, ”Alternating Current (AC) vs. Direct Current (DC),” [Online]. Available: https://learn.sparkfun.com/tutorials/alternating-current-ac-vs-direct-current-dc/all. [Diakses 18 November 2021].

[26] Electrical4U, ”Direct Current: What is it? (AC vs DC and DC Current Symbol),” 1 Agustus 2021. [Online]. Available: https://www.electrical4u.com/dc-current/. [Diakses 18 November 2021].

[27] CircuitBread, ”Voltage and Current Sources,” 4 Oktober 2018. [Online]. Available: https://www.circuitbread.com/tutorials/voltage-and-current-sources. [Diakses 18 November 2021].

[28] Kelas PLC, ”Kelebihan Dan Kekurangan Arus Listrik DC,” 26 September 2021. [Online]. Available: https://www.kelasplc.com/kelebihan-dan-kekurangan-arus-listrik-dc/. [Diakses 18 November 2021].

[29] Z. Peterson, ”What is a PCB?” 28 Agustus 2021. [Online]. Available: https://resources.altium.com/p/what-is-a-pcb. [Diakses 20 April 2023].

[30] Energy Education, ”Battery,” [Online]. Available: https://energyeducation.ca/encyclopedia/Battery. [Diakses 19 November 2021].

[31] Sparkfun, ”What is a Battery?,” [Online]. Available: https://learn.sparkfun.com/tutorials/what-is-a-battery/all. [Diakses 19 November 2021].

[32] Components101, ”Different Types of Batteries and Their Applications,” 21 Agustus 2019. [Online]. Available: https://components101.com/articles/different-types-of-batteries-and-their-uses. [Diakses 19 November 2021].

[33] Sparkfun, ”Logic Levels,” [Online]. Available: https://learn.sparkfun.com/tutorials/logic-levels/all. [Diakses 18 November 2021].

[34] All About Circuits, ”Logic Signal Voltage Levels,” [Online]. Available: https://www.allaboutcircuits.com/textbook/digital/chpt-3/logic-signal-voltage-levels/. [Diakses 18 November 2021].

[35] Electronics Area, ”Digital Logic Levels,” 9 November 2019. [Online]. Available: https://electronicsarea.com/digital-logic-levels/. [Diakses 19 November 2021].

[36] R. Keim, “What Is a Microcontroller? The Defining Characteristics and Architecture of a Common Component - Technical Articles,” All About Circuits, 2021. [Online]. Available: https://www.allaboutcircuits.com/technical-articles/what-is-a-microcontroller-introduction-component-characteristics-component/. [Diakses 25 November 2021]

[37] B. Lutkevich, "What is a Microcontroller and How Does it Work?," 2019. [Online]. Available: https://internetofthingsagenda.techtarget.com/definition/microcontroller. [Diakses 25 November 2021].

[38] D. Lancaster, "What are microcontroller peripherals?," 6 Juli 2020. [Online]. Available: https://electronicguidebook.com/what-are-microcontroller-peripherals/.[Diakses 25 November 2021].

[39] Electricalvoice, "Difference between Wired and Wireless Communication," 2021. [Online]. Available: https://electricalvoice.com/difference-between-wired-and-wireless-communication/ [Diakses 24 November 2021].

[40] T. Agarwal, "Communication Protocols: Basics and Types with Functionality," ElProCus - Electronic Projects for Engineering Students, 2021. [Online]. Available: https://www.elprocus.com/communication-protocols/.[Diakses 21 November 2021].

[41] Yida, "UART vs I2C vs SPI – Communication Protocols and Uses," Latest Open Tech From Seeed, 2021. [Online]. Available: https://www.seeedstudio.com/blog/2019/09/25/uart-vs-i2c-vs-spi-communication-protocols-and-uses/. [Diakses 21 November 2021].

[42] Fikri, "LCD I2C: Memanfaatkan I2C untuk Mengontrol LCD," 2019. https://www.fikrirp.com/2019/08/memanfaatkan-i2c-untuk-lcd/. [Diakses 21 November 2021].

[43] Electronics Hub, "What is a Sensor? Different Types of Sensors, Applications," 6 October 2021. [Online]. Available: https://www.electronicshub.org/different-types-sensors/. [Diakses 20 November 2021].

[44] VectorNav, "What is an Inertial Measurement Unit?," [Online]. Available: https://www.vectornav.com/resources/inertial-navigation-articles/what-is-an-inertial-measurement-unit-imu. [Diakses 20 November 2021].

[45] Premo, "How is Electromagnetic Motion Tracking used in VR/AR?," 23 September 2019. [Online]. Available: https://3dcoil.grupopremo.com/blog/electromagnetic-motion-tracking-virtual-reality/. [Diakses 20 November 2021].

[46] Analog Devices, "What is a Light Sensor?," [Online]. Available: https://www.analog.com/en/design-center/glossary/light-sensor.html. [Diakses 2 Mei 2023].

[47] Seeed Studio, "Grove - Light Sensor," [Online]. Available: https://wiki.seeedstudio.com/Grove-Light_Sensor/. [Diakses 5 Mei 2023].

[48] The Things Network, "What are LoRa and LoRaWAN?," 29 April 2021. [Online]. Available: https://www.thethingsnetwork.org/docs/lorawan/what-is-lorawan/. [Diakses 21 November 2021].

[49] Trend Micro, ”LoRaWAN,” [Online]. Available: https://www.trendmicro.com/vinfo/us/security/definition/lorawan. [Diakses 21 November 2021].

[50] Semtech, ”What is LoRaWAN?” [Online]. Available: https://www.semtech.com/lora. [Diakses 20 Mei 2023].

[51] The Things Network, ”LoRaWAN Architecture,” [Online]. Available: https://www.thethingsnetwork.org/docs/lorawan/architecture/ [Diakses 20 Mei 2023].

[52] LoRa Alliance, ”What is LoRaWAN (R) Specification,” 14 Oktober 2021. [Online]. Available: https://lora-alliance.org/about-lorawan/. [Diakses 22 November 2021].

[53] The Things Network, ”Device Classes,” [Online]. Available: https://www.thethingsnetwork.org/docs/lorawan/classes/. [Diakses 22 November 2021].

[54] Oracle, ”What is IoT?” [Online]. Available: https://www.oracle.com/internet-of-things/what-is-iot/. [Diakses 22 November 2021].

[55] IoT Agenda, ”What is internet of things (IoT)?” 2020. [Online]. Available: https://internetofthingsagenda.techtarget.com/definition/Internet-of-Things-IoT [Diakses 22 November 2021].

[56] The Things Industries, ”What is a LoRaWAN Network Server?” 2020. [Online]. Available: https://www.thethingsindustries.com/news/what-lorawan-network-server. [Diakses 22 Mei 2023].

[57] ChirpStack, ”The ChirpStack Project,” [Online]. Available: https://www.chirpstack.io/docs/. [Diakses 20 Mei 2023].

[58] Amazon AWS, ”Apa itu IDE?” [Online]. Available: https://aws.amazon.com/id/what-is/ide. [Diakses 20 Mei 2023].

[59] Faradilla A. ”Apa Itu Integrated Development Environment (IDE)?” [Online]. Available: https://www.hostinger.co.id/tutorial/integrated-development-environment-adalah. [Diakses 20 Mei 2023].

[60] Seeed Studio. ”Wio-E5 Wireless Module (Bulk) - STM32WLE5JC, ARM Cortex-M4 and SX126x embedded, supports LoRaWAN on EU868 & US915,” [Online]. Available: https://www.seeedstudio.com/LoRa-E5-Wireless-Module-p-4745.html. [Diakses 5 Mei 2023].

[61] CNN Indonesia. ”XL Axiata Ungkap Wilayah Rawan Pencurian BTS, Satu Menara Pernah Raib,” 14 Maret 2023. [Online]. Available: https://www.cnnindonesia.com/teknologi/20230314113011-213-924766/xl-axiata-ungkap-wilayah-rawan-pencurian-bts-satu-menara-pernah-raib. [Diakses 8 Juni 2023].

[62] R. Soelaiman. ”Bongkar Sindikat Pencurian Baterai BTS, Satseskrim Polresta Banjarmasin Ringkus 8 Pelaku”, 10 Mei 2023. [Online]. Available: https://banjarmasin.tribunnews.com/2023/05/10/bongkar-sindikat-pencurian-baterai-bts-satseskrim-polresta-banjarmasin-ringkus-8-pelaku. [Diakses 8 Juni 2023].

[63] N. Fauzy. ”Komponen Tower BTS di Bogor Dicuri, Harganya Capai Miliaran,” 29 Januari 2019. [Online]. Available: https://bogor.tribunnews.com/2019/01/29/komponen-tower-bts-di-bogor-dicuri-harganya-capai-miliaran. [Diakses 8 Juni 2023].

[64] Firman. ”Komplotan pencuri gondol baterai BTS Telkomsel di Batola,” 1 Mei 2023. [Online]. Available: https://kalsel.antaranews.com/berita/369852/komplotan-pencuri-gondol-baterai-bts-telkomsel-di-batola. [Diakses 8 Juni 2023].

[65] I. Munsir. ”Nyamar Jadi Teknisi, 5 Pencuri Baterai BTS di Sulsel Ditangkap,” 12 Juni 2019. [Online]. Available: https://news.detik.com/berita/d-4583108/nyamar-jadi-teknisi-5-pencuri-baterai-bts-di-sulsel-ditangkap. [Diakses 8 Juni 2023].