

BIBLIOGRAPHY

- [1] Republik Indonesia, *Undang-Undang Republik Indonesia Nomor 19 Tahun 2016 tentang Perubahan atas Undang-Undang Nomor 11 Tahun 2008 tentang Informasi dan Transaksi Elektronik*. 2016.
- [2] S. Abdullah, "Implementasi Blockchain untuk Keamanan Data Akademik dalam Sistem Informasi Perguruan Tinggi," *Go Infotech J. Ilm. STMIK AUB*, vol. 31, no. 1, pp. 149–160, 2025, doi: 10.36309/goi.v31i1.371.
- [3] M. H. S. Agus, "Ditemukan 112 ijazah palsu CPNS di Simeulue, Ombudsman dorong polisi segera usut," *Antara News*, 2023. [Online]. Available: <https://aceh.antaranews.com/berita/341475/ditemukan-112-ijazah-palsu-cpns-di-simeulue-ombudsman-dorong-polisi-segera-usut>
- [4] Muzemmil, "Framing Pemberitaan Media Online Detik.com terhadap Isu Ijazah Joko Widodo," *Komun. dan Dakwah Islam*, vol. 3, no. 2, pp. 166–179, 2025, doi: 10.30983/al-jamahiria.v3i2.10007.
- [5] T. R. D. Suseno, I. Afrianto, and S. Atin, "Strengthening data integrity in academic document recording with blockchain and InterPlanetary file system," *Int. J. Electr. Comput. Eng.*, vol. 14, no. 2, pp. 1759–1769, 2024, doi: 10.11591/ijece.v14i2.pp1759-1769.
- [6] H. Wijayanto, "Aplikasi Verifikasi Sertifikat Berbasis Website Menggunakan Blockchain," *J. Sains Dan Komput.*, vol. 8, no. 02, pp. 35–42, 2024, doi: 10.61179/jurnalinfact.v8i02.586.
- [7] B. A. I. Swari and I. M. Suartana, "Pengembangan Decentralized Application (DApp) untuk Manajemen Sertifikat Digital menggunakan Non-Fungible Tokens (NFT) berbasis Standar ERC-721 di Jaringan Ethereum," *J. Informatics Comput. Sci.*, vol. 6, no. 03, pp. 661–668, 2024, doi: 10.26740/jinacs.v6n03.p661-668.
- [8] A. M. Pangidoan, P. W. Buana, and F. Purnama, "Prototype of Implementation of Smart Contract for Blockchain-Based Document Storage," *J. Appl. Informatics Comput.*, vol. 9, no. 4, pp. 1242–1253, 2025, doi: 10.30871/jaic.v9i4.9493.
- [9] Pradana, T. Djatna, I. Hermadi, and I. Yuliasih, "Blockchain-based Traceability System for Indonesian Coffee Digital Business Ecosystem," *Int. J. Eng. Trans. B Appl.*, vol. 36, no. 5, pp. 879–893, 2023, doi: 10.5829/ije.2023.36.05b.05.
- [10] C. Lyman, "Apa itu IPFS dan Cara Kerjanya dalam Crypto." [Online]. Available: <https://pintu.co.id/blog/apa-itu-ipfs>
- [11] Haifaa Ahmed Hasan, Hassan F. Al-Layla, and Farah N. Ibraheem, "A Review of Hash Function Types and their Applications," *Wasit J. Comput. Math. Sci.*, vol. 1, no. 3, pp. 75–88, 2022, doi: 10.31185/wjcm.52.
- [12] D. P. Office, "Public Key Infrastructure." [Online]. Available: <https://www.infosec.gov.hk/en/best-practices/business/public-key-infrastructure>
- [13] A. Nanda Sari and T. Gelar, "Blockchain: Teknologi Dan Implementasinya," *J. Mnemon.*, vol. 7, no. 1, pp. 63–70, 2024, doi: 10.36040/mnemonic.v7i1.6961.
- [14] A. Qalam, J. I. Keagamaan, and K. Kunci, "PENERAPAN TEKNOLOGI BLOCKCHAIN PADA TRANSAKSI ONLINE SHOP Prayitno Wiriyo

- Susanto Fakultas Ilmu Komputer , Program Studi Ilmu Komputer , Universitas Amikom Wahid Miftahul Ashari Fakultas Ilmu Komputer , Program Studi Ilmu Komputer , Universitas Amikom Abs,” vol. 18, no. 1, pp. 654–670, 2024.
- [15] G. Tripathi, M. A. Ahad, and G. Casalino, “A comprehensive review of blockchain technology: Underlying principles and historical background with future challenges,” *Decis. Anal. J.*, vol. 9, no. March, p. 100344, 2023, doi: 10.1016/j.dajour.2023.100344.
 - [16] S. Avasthi, K. Jain, A. Prakash, and T. Sanwal, “A Blockchain Architecture for Secure Decentralized System and Computing,” *2024 3rd Int. Conf. Power Electron. IoT Appl. Renew. Energy its Control. PARC 2024*, pp. 415–420, 2024, doi: 10.1109/PARC59193.2024.10486648.
 - [17] “Struktur dan Cara Kerja Blok dalam Blockchain.” [Online]. Available: <https://bisaioti.com/struktur-dan-cara-kerja-blok-dalam-blockchain>
 - [18] R. Adadi Suparlan, “Implementasi Smart Contract Blockchain Ethereum Pada Aplikasi E-voting,” *Informatics Digit. Expert*, vol. 7, no. 1, pp. 66–70, 2025, doi: 10.36423/index.v7i1.2177.
 - [19] F. Kochan, “How Does Ethereum Virtual Machine (EVM) Work? A Deep Dive into EVM Architecture and Opcodes.” [Online]. Available: <https://www.quicknode.com/guides/ethereum-development/smart-contracts/a-dive-into-evm-architecture-and-opcodes>
 - [20] J. Komunikasi, Y. Universitas, P. Ganesha, P. Studi, and I. Hukum, “ANALISIS KEABSAHAN (SMART CONTRACT) TRANSAKSI ASET DIGITAL DI PLATFORM ETHERUM DALAM TEKNOLOGI BLOCKCHAIN,” vol. 7, no. 1, 2024.
 - [21] H. Dirgantara, “Mengenal Teknologi Smart Contract.” [Online]. Available: <https://pintu.co.id/academy/post/apa-itu-dapps-dan-smart-contract>
 - [22] H. S. Kartiko, T. Rismawan, and I. Ruslianto, “Implementasi IPFS untuk Mengurangi Gas Fee Smart Contract Ethereum pada Aplikasi Penggalangan Dana,” *J. Edukasi dan Penelit. Inform.*, vol. 9, no. 2, p. 195, 2023, doi: 10.26418/jp.v9i2.61876.
 - [23] P. Labs, “A Practical Explainer: IPFS Gateways (Part 2).” [Online]. Available: <https://blog.ipfs.tech/2022-06-30-practical-explainer-ipfs-gateways-2>
 - [24] Pinata, “Uploading Files.” [Online]. Available: <https://docs.pinata.cloud/files/uploading-files>
 - [25] K. Ramadahni, “Penerapan Teknologi Blockchain dalam Sistem Manajemen Kesehatan Elektronik,” *J. Sos. Teknol.*, vol. 4, no. 2, pp. 116–119, 2024, doi: 10.59188/jurnalsostech.v4i2.1097.
 - [26] T. Chadbourne, “Explore Merkle DAGs at ProtoSchool.” [Online]. Available: <https://blog.ipfs.tech/2021-01-14-explore-merkle-dags-at-protoschool>
 - [27] B2BinPay, “On-Chain vs Off-Chain Transactions — Beginner’s Guide.” [Online]. Available: <https://b2binpay.com/id/news/on-chain-vs-off-chain-transactions----beginners-guide>
 - [28] Richard, “Tantangan dalam Membuat Decentralized Applications (DApps) pada Platform Teknologi Blockchain.” [Online]. Available: <https://sis.binus.ac.id/2021/06/18/tantangan-dalam-membuat-decentralized->

- applications-dapps-pada-platform-teknologi-blockchain
- [29] R. Innovation, “7 Stages of New Blockchain Development Process.” [Online]. Available: <https://www.rapidinnovation.io/post/7-stages-of-new-blockchain-development-process>
 - [30] A. Baehaqi, M. S. Basit, R. E. Indrajit, and R. D. Kurniawan, “Pengembangan Front End Learning Management System Menggunakan Framework Nextjs,” *J. Tek. Inform.*, vol. 4, no. 4, pp. 899–911, 2023.
 - [31] Vercel, “Next.js.” [Online]. Available: <https://nextjs.org>
 - [32] Moralis, “Full Guide: What is Ethers.js?” [Online]. Available: <https://moralis.com/full-guide-what-is-ethers-js>
 - [33] M. Y. Samudera, “Metamask Snaps, Inovasi Terbaru dari Metamask.” [Online]. Available: <https://pintu.co.id/news/39363-wallet-crypto-metamask-buat-inovasi-baru>
 - [34] Hardhat, “Getting Started with Hardhat 3.” [Online]. Available: <https://hardhat.org/docs/getting-started>
 - [35] M. Documentation, “MongoDB Documentation.” [Online]. Available: <https://www.mongodb.com/docs>
 - [36] M. Sanjaya and P. R. N. Saputra, “Pemanfaatan Nextjs Dan Mongodb Dalam Sistem Informasi Web Manajemen Data Beras Pada Ud Sri Utami,” *Inf. Syst. Educ. Prof. J. Inf. Syst.*, vol. 8, no. 1, p. 25, 2023, doi: 10.51211/isbi.v8i1.2414.
 - [37] J. Skalka and M. Drlik, “Development of Automatic Source Code Evaluation Tests Using Grey-Box Methods: A Programming Education Case Study,” *IEEE Access*, vol. 11, pp. 106772–106792, 2023, doi: 10.1109/ACCESS.2023.3317694.
 - [38] M. I. Ansar, “Apa itu Grey Box Testing? Teknik dan Cara Pengujiannya.”