

Smart Lock Technology: Developing and Enhancing Home Security using Android-Based Controlled Door Locking App's

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Abstract: *This study presents an overview of the study on the implementation and potential of a novel Android-based controlled door locking app to advance home security in the context of smart homes. The app leverages the capabilities of android devices to offer remote access and management of door locks, empowering homeowners with seamless control over their access points. The study evaluates the app's performance in usability, accuracy, efficiency, portability, security, and maintainability, revealing its commendable capabilities with an average score of 4.17 out of 5. With minor enhancements, the app shows promising potential as a reliable and user-friendly access control solution, driving the evolution of smart lock technology and home security in the modern era.*

Keywords: Android-based, evaluation, controlled locking apps, home security, home security

REFERENCES

- [1]. Yar, H., Imran, A. S., Khan, Z. A., Sajjad, M., & Kastrati, Z. (2021). Towards smart home automation using IoT-enabled edge-computing paradigm. *Sensors*, 21(14), 4932.
- [2]. Ray, A. K., & Bagwari, A. (2020, April). IoT based Smart home: Security Aspects and security architecture. In 2020 IEEE 9th international conference on communication systems and network technologies (CSNT) (pp. 218-222). IEEE.
- [3]. Aung, Y. N., & Tantidham, T. (2017, November). Review of Ethereum: Smart home case study. In 2017 2nd International Conference on Information Technology (INCIT) (pp. 1-4). IEEE.
- [4]. Shruthi, C. M., Bandari, S. K., Ala, C. K. R., & Reddy, M. (2023). Locker Security System using Internet of Things. In *E3S Web of Conferences* (Vol. 391, p. 01153). EDP Sciences.
- [5]. Siegel, J. E., Erb, D. C., & Sarma, S. E. (2017). A survey of the connected vehicle landscape—Architectures, enabling technologies, applications, and development areas. *IEEE Transactions on Intelligent Transportation Systems*, 19(8), 2391-2406.
- [6]. Mocrii, D., Chen, Y., & Musilek, P. (2018). IoT-based smart homes: A review of system architecture, software, communications, privacy and security. *Internet of Things*, 1, 81-98.
- [7]. Zhou, W., Jia, Y., Peng, A., Zhang, Y., & Liu, P. (2018). The effect of iot new features on security and privacy: New threats, existing solutions, and challenges yet to be solved. *IEEE Internet of things Journal*, 6(2), 1606-1616.
- [8]. Philip, N. Y., Rodrigues, J. J., Wang, H., Fong, S. J., & Chen, J. (2021). Internet of Things for in-home health monitoring systems: Current advances, challenges and future directions. *IEEE Journal on Selected Areas in Communications*, 39(2), 300-310.
- [9]. Patil, B. S., Mahajan, V. A., Suryawanshi, S. A., & Pawar, M. B. (2018). Automatic door lock system using pin on android phone. *International Research Journal of Engineering and Technology (IRJET)*, 5(11), 1007-1011.
- [10]. Rajpoot, Q. M. (2016). Enhancing Security and Privacy in Video Surveillance through Role-Oriented Access Control Mechanism.

- [11]. Basole, R. C., & Karla, J. (2012). Value transformation in the mobile service ecosystem: A study of app store emergence and growth. *Service Science*, 4(1), 24-41.
- [12]. Taivalsaari, A., Mikkonen, T., & Pautasso, C. (2021, May). Towards Seamless IoT Device-Edge-Cloud Continuum: Software Architecture Options of IoT Devices Revisited. In *International Conference on Web Engineering* (pp. 82-98). Cham: Springer International Publishing.
- [13]. Enck, W., Ongtang, M., & McDaniel, P. (2009, November). On lightweight mobile phone application certification. In *Proceedings of the 16th ACM conference on Computer and communications security* (pp. 235-245).
- [14]. Macis, S., Loi, D., Ulgheri, A., Pani, D., Solinas, G., La Manna, S., ... & Raffo, L. (2019). Design and usability assessment of a multi-device SOA-based telecare framework for the elderly. *IEEE Journal of Biomedical and Health Informatics*, 24(1), 268-279.
- [15]. Dabekar, S. B., Lahade, S. A., Lunge, M. S., & Yewale, D. IOT Based Smart Door Locked System Using Node MCU.
- [16]. Liao, L. D., Wang, Y., Tsao, Y. C., Wang, I. J., Jhang, D. F., Chu, T. S., ... & Ger, T. R. (2019). Design and validation of a multifunctional android-based smart home control and monitoring system. *IEEE Access*, 7, 163313-163322.
- [17]. Duong, L. (2023). The techniques of IoT and its applications for smart homes: internet of things techniques and standards for building smart homes.
- [18]. Lang, N., von Szczepanski, K., & Wurzer, C. (2019). The emerging art of ecosystem management. Boston Consulting Group, 1-20.
- [19]. Prasad, S., Harshe, D., Kaur, N., Jangannavar, S., Srivastava, A., Achanta, U., ... & Harshe, G. (2018). A study of magnitude and psychological correlates of smartphone use in medical students: A pilot study with a novel telemetric approach. *Indian journal of psychological medicine*, 40(5), 468-475.
- [20]. Abdulla, A. I., Abdulraheem, A. S., Salih, A. A., Sadeeq, M. A., Ahmed, A. J., Ferzor, B. M., ... & Mohammed, S. I. (2020). Internet of things and smart home security. *Technol. Rep. Kansai Univ*, 62(5), 2465-2476.
- [21]. Abawajy, J., Huda, S., Sharmeen, S., Hassan, M. M., & Almogren, A. (2018). Identifying cyber threats to mobile-IoT applications in edge computing paradigm. *Future Generation Computer Systems*, 89, 525-538.
- [22]. Liu, H. (2022, July). Privacy Computing Issues in Collecting and Using Customer Data of Mobile Devices. In *2022 7th International Conference on Signal and Image Processing (ICSIP)* (pp. 382-389). IEEE.
- [23]. Elahi, H., Wang, G., & Chen, J. (2020). Pleasure or pain? An evaluation of the costs and utilities of bloatware applications in android smartphones. *Journal of Network and Computer Applications*, 157, 102578.