

1. [Home](#)
2. [Hybrid Intelligent Systems](#)
3. Conference paper

Internet of Things: Applications, Adoptions and Components - A Conceptual Overview

- Conference paper
- First Online: 17 April 2021
- pp 494–504
- [Cite this conference paper](#)

Hybrid Intelligent Systems(HIS 2020)

- [Kefas Yunana](#),
- [Abraham Ayegba Alfa](#),
- [Sanjay Misra](#),
- [Robertas Damasevicius](#),
- [Rytis Maskeliunas](#) &
- [Jonathan Oluranti](#)

Part of the book series: [Advances in Intelligent Systems and Computing](#) ((AISC, volume 1375))

Included in the following conference series:

- [International Conference on Hybrid Intelligent Systems](#)

- 877 Accesses
- 9 Citations

Abstract

Internet of things (IoT) is a disruptive technology of technical, economic and social consequence, where consumer durable goods, cars, utility components, sensors and other daily objects are linked with internet connectivity and data analysis capability tools that have changed the way, and manner people live and work. The massive deployment of IoT gadgets guarantees numerous ways our lives will be revolutionized, and from the consumers' point of view, IoT aspects which include home automation, internet-enabled appliances and power management devices are making mankind to realize the smart-home vision thereby bringing more security and energy efficacy. In this paper, an extensive review of IoT devices and its application is provided. The emerging areas, components, and adoption driven factors are discussed and summarized. The Internet of Things adoption by individuals and organizations is feasible owing to the fact that the prices of sensors have fallen significantly, and more connected devices are projected to reach 75 billion by the year 2025.

This is a preview of subscription content, [log in via an institution](#) to check access.

Similar content being viewed by others

A Survey on Internet of Things: Case Studies, Applications, and Future Directions

Chapter © 2017

Internet of Things (IoT) Enabling Technologies and Applications—A Study

Chapter © 2021

Impact of Internet of Things on Societal Applications

Chapter © 2020

References

1. Packard, N.: Three kinds of demand pull for the ARPANET into the Internet. *Cogent Soc. Sci.* **6**(1), 1–21 (2020)

[MathSciNet](#) [Google Scholar](#)

2. Dechouniotis, D., Athanasopoulos, N., Leivadeas, A.: Edge computing resource allocation for dynamic networks: the DRUID-NET vision and perspective. *Sensors* **20**(2191), 1–18 (2020)

[Google Scholar](#)

3. Amalraj, J.J., Banumathi, S., John, J.J.: IOT sensors and applications: a survey. *Int. J. Sci. Technol. Res.* **8**(8), 998–1003 (2019)

[Google Scholar](#)

4. Asghari, M., Yousefi, S., Niyato, D.: Pricing strategies of IoT wide area network service providers with complementary services included. *J. Netw. Comput. Appl.* **147**, 1–19 (2019)

[Article](#) [Google Scholar](#)

5. Hassan, M.U., Rehmani, M.H., Chen, J.: Privacy preservation in blockchain based IoT systems: integration, issues, prospects, challenges, and future research directions. *Future Gener. Comput. Syst.* **97**, 512–529 (2019)

[Article](#) [Google Scholar](#)

6. de Moraes, C.M., Sadok, D., Kelner, J.: An IoT sensor and scenario survey for data researchers. *J. Braz. Comput. Soc.* **25**(1), 1–17 (2019). Article number: 4

[Google Scholar](#)

7. Mistry, I., Tanwar, S., Tyagi, S., Kumar, N.: Blockchain for 5G-enabled IoT for industrial automation: a systematic review, solutions, and challenges. *Mech. Syst. Sig. Process.* **135**, 106382 (2019)

[Article](#) [Google Scholar](#)

8. AlMetwally, S.A.H., Hassan, M.K., Mourad, M.H.: Real time Internet of Things (IoT) based water quality management system. *Procedia CIRP* **91**, 478–485 (2020)

[Article Google Scholar](#)

9. Buyya, R., Dastjerdi, A.V. (eds.): *Internet of Things: Principles and Paradigms*. Elsevier, Amsterdam (2016)

[Google Scholar](#)

10. Pratap, R., Javaid, M., Haleem, A., Suman, R.: Internet of Things (IoT) applications to fight against COVID-19 pandemic. *Diabetes Metab. Syndr. Clin. Res. Rev.* **14**(4), 521–524 (2020)

[Article Google Scholar](#)

11. Hassan, W.H.: Current research on Internet of Things (IoT) security: a survey. *Comput. Netw.* **148**, 283–294 (2019)

[Article Google Scholar](#)

12. Ye, L.: Study on embedded system in monitoring of intelligent city pipeline network. *Comput. Commun.* **153**, 451–458 (2020)

[Article Google Scholar](#)

13. Rathee, G., Sharma, A., Kumar, R., Iqbal, R.: A secure communicating things network framework for using blockchain technology. *Ad Hoc Netw.* **94**, 1–15 (2019)

[Article Google Scholar](#)

14. Cao, K., Liu, Y., Meng, G., Sun, Q.: An overview on edge computing research. *IEEE Access* **8**, 85714–85728 (2020)

[Article Google Scholar](#)

15. Song, Y., Jiang, J., Wang, X., Yang, D., Bai, C.: Clinical eHealth prospect and application of Internet of Things technology for prevention of SARIs. *Clin. eHealth* **3**, 1–4 (2020)

[Article Google Scholar](#)

16. Moyer, S.: IoT sensors and actuators. IEEE Internet Things Mag. **2**(3), 10 (2019)

[Article Google Scholar](#)

17. Sehrawat, D., Gill, N.S.: Smart sensors: analysis of different types of IoT sensors. In: Proceedings of the International Conference on Trends in Electronics and Informatics, pp. 523–528. IEEE (2019)

[Google Scholar](#)

18. Tobin, C., Bailey, D.W., Trotter, M.G., O'Connor, L.: Sensor based disease detection: a case study using accelerometers to recognize symptoms of Bovine Ephemeral Fever. Comput. Electron. Agric. **175**, 105605 (2020)

[Article Google Scholar](#)

19. Phan, L.A., Kim, L.: Breaking down the compatibility problem in smart homes: a dynamically updatable gateway platform. Sensors **20**(10), 2783 (2020)

[Article Google Scholar](#)

20. Minh, P., An, L., Kim, T.: A study of the Z-wave protocol: implementing your own smart home gateway. In: 3rd International Conference on Computer and Communication Systems, pp. 411–415 (2018)

[Google Scholar](#)

21. Zeadally, S., Siddiqui, F., Baig, Z.: 25 years of bluetooth technology. Future Internet **11**(194), 1–24 (2019)

[Google Scholar](#)

22. Lee, I.: The Internet of Things for enterprises: an ecosystem, architecture, and IoT service business model. Internet Things **7**, 100078 (2019)

[Article Google Scholar](#)

23. Asghari, M., Yousefi, S., Niyato, D.: Pricing strategies of IoT wide area network service providers with complementary services included. *J. Netw. Comput. Appl.* **147**, 102426 (2019)

[Article Google Scholar](#)

24. Adenugba, F., Misra, S., Maskeliūnas, R., Damaševičius, R., Kazanavičius, E.: Smart irrigation system for environmental sustainability in Africa: an Internet of Everything (IoE) approach. *Math. Biosci. Eng.* **16**, 5490–5503 (2019)

[Article MathSciNet Google Scholar](#)

25. Arshad, J., Azad, M.A., Abdeltaif, M.M., Salah, K.: An intrusion detection framework for energy constrained IoT devices. *Mech. Syst. Sig. Process.* **136**, 106436 (2019)

[Article Google Scholar](#)

26. Deng, Z.W.: The embedded modules solution of household Internet of Things System and the future development. *Procedia Comput. Sci.* **166**, 350–356 (2020)

[Article Google Scholar](#)

27. Wang, J., Chen, M., Zhou, J., Li, P.: Data communication mechanism for greenhouse environment monitoring and control: an agent-based IoT system. *Inf. Process. Agric.* **7**(3), 444–455 (2019)

[Google Scholar](#)

28. Glaroudis, D., Iossifides, A., Chatzimisios, P.: Survey, comparison and research challenges of IoT application protocols for smart farming. *Comput. Netw.* **168**, 107037 (2020)

[Article Google Scholar](#)

29. Bruneo, D., Distefano, S., Giacobbe, M., Minnolo, A.L., Longo, F., Merlino, G., Puliafito, C.: An IoT service ecosystem for smart cities: the SMARTME project. *Internet Things* **5**, 12–33 (2019)

[Article Google Scholar](#)

30. Sestino, A., Irene, M., Piper, L., Guido, G.: Internet of Things and Big Data as enablers for business digitalization strategies. *Technovation* **98**, 102173 (2020)

[Article Google Scholar](#)

31. Tang, L., Hu, H.: computation offloading & resource allocation for the Internet of Things in energy-constrained MEC-enabled HetNets. *IEEE Access* **8**, 47509–47521 (2020)

[Article Google Scholar](#)

32. Hernandez, J., Daza, K., Florez, H., Misra, S.: Dynamic interface and access model by dead token for IoT systems. In: *International Conference on Applied Informatics*, pp. 485–498. Springer, Cham, November 2019

[Google Scholar](#)

33. Samuel, V., Misra, S., Nicholas, O.: Internet of Things (IoTs) and its application to road navigation and usage problem. In: *Asia-Pacific World Congress on Computer Science and Engineering*, pp. 1–5. IEEE, November 2014

[Google Scholar](#)

34. Atayero, A.A., Popoola, S.I., Williams, R., Badejo, J.A., Misra, S.: Smart city waste management system using Internet of Things and cloud computing. In: *International Conference on Intelligent Systems Design and Applications*, pp. 601–611, December 2019

[Google Scholar](#)

35. Olowu, M., Yinka-Banjo, C., Misra, S., Oluranti, J., Ahuja, R.: Internet of Things: demystifying smart cities and communities. In: *International Conference on Advances in Computational Intelligence and Informatics*, pp. 363–371. Springer, December 2019

[Google Scholar](#)

[Download references](#)

Author information

Authors and Affiliations

- 1. Nassarawa State University, Keffi, Nigeria**
Kefas Yunana
- 2. Kogi State College of Education, Ankpa, Nigeria**
Abraham Ayegba Alfa
- 3. Covenant University, Otta, Nigeria**
Sanjay Misra & Jonathan Oluranti
- 4. Kaunas University of Technology, Kaunas, Lithuania**
Robertas Damasevicius & Rytis Maskeliunas

Corresponding author

Correspondence to [Kefas Yunana](#).

Editor information

Editors and Affiliations

- 1. Scientific Network for Innovation and Research Excellence, Machine Intelligence Research Labs (MIR Labs), Auburn, WA, USA**
Ajith Abraham
- 2. Institute for Information Systems, University of Applied Sciences and Arts Northwestern Switzerland, Olten, Solothurn, Switzerland**
Thomas Hanne
- 3. Division of Graduate Studies, Tijuana Institute of Technology, Tijuana, Mexico**
Oscar Castillo
- 4. Scientific Network for Innovation and Research Excellence, Machine Intelligence Research Labs (MIR Labs), Auburn, AL, USA**
Niketa Gandhi
- 5. Universidade Federal da Bahia, Salvador, Bahia, Brazil**
Tatiane Nogueira Rios
- 6. Computer Science and Information Engineering, National University of Kaohsiung, Kaohsiung, Taiwan**
Tzung-Pei Hong

Rights and permissions

[Reprints and permissions](#)

Copyright information

© 2021 The Author(s), under exclusive license to Springer Nature Switzerland AG

About this paper

Cite this paper

Yunana, K., Alfa, A.A., Misra, S., Damasevicius, R., Maskeliunas, R., Oluranti, J. (2021). **Internet of Things: Applications, Adoptions and Components** - A Conceptual Overview. In: Abraham, A., Hanne, T., Castillo, O., Gandhi, N., Nogueira Rios, T., Hong, TP. (eds) Hybrid Intelligent Systems. HIS 2020. Advances in Intelligent Systems and Computing, vol 1375. Springer, Cham. https://doi.org/10.1007/978-3-030-73050-5_50

Download citation

- [.RIS](#)
- [.ENW](#)
- [.BIB](#)
- DOI https://doi.org/10.1007/978-3-030-73050-5_50
- Published 17 April 2021
- Publisher Name Springer, Cham
- Print ISBN 978-3-030-73049-9
- Online ISBN 978-3-030-73050-5
- eBook Packages [Intelligent Technologies and Robotics](#) [Intelligent Technologies and Robotics \(R0\)](#)

Publish with us

[Policies and ethics](#)

Access this chapter

[Log in via an institution](#)

Chapter

EUR 29.95

Price includes VAT (Nigeria)

-
- Available as PDF

- Read on any device
- Instant download
- Own it forever

Buy Chapter

eBook

EUR 160.49

Softcover Book

EUR 199.99

Tax calculation will be finalised at checkout

Purchases are for personal use only

Institutional subscriptions

- Sections
- References

•

165.73.223.224

Covenant University Ota (3006481499)

© 2024 Springer Nature