

< Back to results | 1 of 2 Next >

Export Download Print E-mail Save to PDF Add to List More... >

[Full Text](#) View at Publisher

Bulletin of Electrical Engineering and Informatics
Volume 8, Issue 2, September 2019, Pages 960-969

Design and implementation of visible light communication based toys

(Article)

Baharudin, A.N.B.^{a,b}, Habaebi, M.H.^a, Rahman, F.A.^{a,c}

^aDepartment of Electrical and Computer Engineering, International Islamic University Malaysia, Malaysia

^bDepartment of Electrical and Computer Engineering, Kuliyyah of Engineering, International Islamic University Malaysia, P.O. Box 10, Kuala Lumpur, 50728, Malaysia

^cDepartment of Electrical and Electronic Engineering, University of Bristol, United Kingdom

Abstract

View references (15)

This paper presents the design and implementation steps of a smart visible light communication based toy system equipped with laser sensors that can send and receive the data message based on the conversion of data from ASCII to binary code. The toy system intends to offer two-ways communication that will be a new medium for educational purposes for kids in their developmental stages in which both players can send and receive the data to and from each other toys equipped with sound indicator module to alert the player. Lastly, functionality and system testing were conducted to verify the functionalities of the system. A thorough implementation methodology details are presented in the paper. © 2019 Institute of Advanced Engineering and Science. All rights reserved.

Author keywords

Arduino Energy security Laser pointer Smart toys Two-ways communication

Funding details

Funding sponsor	Funding number	Acronym
International Islamic University Malaysia	RIGS16-087-0251	IIUM
International Islamic University Malaysia		IIUM

Funding text

This work was conducted at the IOT and wireless communication protocols lab and is partially supported by the the International Islamic University Malaysia (IIUM) Research Initiative Grant Scheme (RIGS) with the grant number RIGS16-087-0251.

ISSN: 20893191

Source Type: Journal

Original language: English

DOI: 10.11591/eei.v8i3.1506

Document Type: Article

Publisher: Institute of Advanced Engineering and Science

Metrics



PlumX Metrics

Usage, Captures, Mentions, Social Media and Citations beyond Scopus.

Cited by 0 documents

Inform me when this document is cited in Scopus:

[Set citation alert >](#)

[Set citation feed >](#)

Related documents

Design and implementation of a multi-colour visible light communication system based on a light-to-frequency receiver

Martínez-Ciro, R.A. , López-Giraldo, F.E. , Betancur-Perez, A.F.
(2019) *Photonics*

A Laser Pointer Communicating Toy

Baharudin, A.N. , Habaebi, M.H. , Rahman, F.A.
(2018) *Proceedings of the 2018 7th International Conference on Computer and Communication Engineering, ICCCE 2018*

Key aspects of infrastructure-to-vehicle signaling using visible light communications

Marcu, A.E. , Dobre, R.A. , Vlădescu, M.
(2018) *Lecture Notes of the Institute for Computer Sciences, Social-Informatics and Telecommunications Engineering, LNICST*

View all related documents based on references

Find more related documents in Scopus based on:

References (15)

View in search results format >

- 1 Zou, Y., Zhu, J., Wang, X., Hanzo, L.
A Survey on Wireless Security: Technical Challenges, Recent Advances, and Future Trends

(2016) *Proceedings of the IEEE*, 104 (9), art. no. 7467419, pp. 1727-1765. Cited 310 times.
<http://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=5>
doi: 10.1109/JPROC.2016.2558521

[View at Publisher](#)

- 2 Hole, K.J., Dyrnes, E., Thorsheim, P.
Securing Wi-Fi networks

(2005) *Computer*, 38 (7), pp. 28-34. Cited 27 times.
doi: 10.1109/MC.2005.241

[View at Publisher](#)

- 3 George, J.J., Mustafa, M.H., Ahmed, N.H., Hamed, D.M.
A Survey on Visible Light Communication
(2014) *Int. J. Eng. Comput. Sci.*, 3, pp. 3905-3908. Cited 20 times.

- 4 Pathak, P.H., Feng, X., Hu, P., Mohapatra, P.
Visible Light Communication, Networking, and Sensing: A Survey, Potential and Challenges

(2015) *IEEE Communications Surveys and Tutorials*, 17 (4), art. no. 7239528, pp. 2047-2077. Cited 374 times.
<http://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=9739>
doi: 10.1109/COMST.2015.2476474

[View at Publisher](#)

- 5 Barnes, F., Greenebaum, B.
Some Effects of Weak Magnetic Fields on Biological Systems: RF fields can change radical concentrations and cancer cell growth rates

(2016) *IEEE Power Electronics Magazine*, 3 (1), art. no. 2508699, pp. 60-68. Cited 15 times.
<http://ieeexplore.ieee.org/servlet/opac?punumber=6570649>
doi: 10.1109/MPEL.2015.2508699

[View at Publisher](#)

- 6 Khalighi, M.A., Uysal, M.
Survey on free space optical communication: A communication theory perspective

(2014) *IEEE Communications Surveys and Tutorials*, 16 (4), art. no. 6844864, pp. 2231-2258. Cited 610 times.
<http://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=9739>
doi: 10.1109/COMST.2014.2329501

[View at Publisher](#)

- 7 Janjua, B., Oubei, H.M., Durán Retamal, J.R., Ng, T.K., Tsai, C.-T., Wang, H.-Y., Chi, Y.-C., (...), Ooi, B.S.

Going beyond 4 Gbps data rate by employing RGB laser diodes for visible light communication

(2015) *Optics Express*, 23 (14), pp. 18746-18753. Cited 79 times.

<http://www.opticsexpress.org/>

doi: 10.1364/OE.23.018746

[View at Publisher](#)

- 8 Figueiredo, M., Alves, L.N., Ribeiro, C.

Lighting the Wireless World: The Promise and Challenges of Visible Light Communication

(2017) *IEEE Consumer Electronics Magazine*, 6 (4), art. no. 8048753, pp. 28-37. Cited 11 times.

<https://www.ieee.org/membership-catalog/productdetail/showProductDetailPage.html?product=PER262-EPC>

doi: 10.1109/MCE.2017.2714721

[View at Publisher](#)

- 9 Martínez Ciro, R.A., López Giraldo, F.E., Betancur Perez, A.F.

RGB Sensor Frequency Response for a Visible Light Communication System

(2016) *IEEE Latin America Transactions*, 14 (12), art. no. 7816998, pp. 4688-4692. Cited 4 times.

<http://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=9907>

doi: 10.1109/TLA.2016.7816998

[View at Publisher](#)

- 10 John, D.
Laser Communication Device (Arduino Project)
(2016) *Mechanical Attraction*. Cited 2 times.
-

- 11 Khalil, I., Ibrahim, R.
(2015) *Laser Fight-Hackster.io*. Cited 2 times.
-

- 12 (2016)
D. Jr., "Laser Gun: 6 Steps,"
-

- 13 Baharudin, A.N., Habaebi, M.H., Rahman, F.A.
A Laser Pointer Communicating Toy
(2018) *Proceedings of the 2018 7th International Conference on Computer and Communication Engineering, ICCCE 2018*, art. no. 8539272, pp. 421-425.
<http://ieeexplore.ieee.org/xpl/mostRecentIssue.jsp?punumber=8510540>
ISBN: 978-153866991-4
doi: 10.1109/ICCCE.2018.8539272

[View at Publisher](#)

- 14 Krumin, P.
(2013) *ASCII Cheat Sheet*
browserling, [Accessed: 05-May-2018]
<http://www.catonmat.net/blog/ascii-cheat-sheet/>
-

□ 15 Gunawan, T.S., Yaldi, I.R.H., Kartiwi, M., Ismail, N., Za'bah, N.F., Mansor, H., Nordin, A.N.

Prototype design of smart home system using internet of things [\(Open Access\)](#)

(2017) *Indonesian Journal of Electrical Engineering and Computer Science*, 7 (1), pp. 107-115. Cited 16 times.

<http://www.iaescore.com/journals/index.php/IJEECS/article/download/7996/6935>

doi: 10.11591/ijeecs.v7.i1.pp107-115

[View at Publisher](#)

🔍 Baharudin, A.N.B.; Department of Electrical and Computer Engineering, Kuliyyah of Engineering, International Islamic University Malaysia, P.O. Box 10, Kuala Lumpur, Malaysia; email:ainnajihahbaha@gmail.com

© Copyright 2019 Elsevier B.V., All rights reserved.

< Back to results | 1 of 2 Next >

^ Top of page

About Scopus

[What is Scopus](#)

[Content coverage](#)

[Scopus blog](#)

[Scopus API](#)

[Privacy matters](#)

Language

[日本語に切り替える](#)

[切换到简体中文](#)

[切换到繁體中文](#)

[Русский язык](#)

Customer Service

[Help](#)

[Contact us](#)

ELSEVIER

[Terms and conditions](#) ↗ [Privacy policy](#) ↗

Copyright © Elsevier B.V. ↗. All rights reserved. Scopus® is a registered trademark of Elsevier B.V.

We use cookies to help provide and enhance our service and tailor content. By continuing, you agree to the use of cookies.

 RELX