

Document details

[Back to results](#) | 1 of 1
[Export](#)
[Download](#)
[Print](#)
[E-mail](#)
[Save to PDF](#)
[Add to List](#)
[More...](#)
[Full Text](#)
[View at Publisher](#)

2016 International Conference on Advances in Electrical, Electronic and Systems Engineering, ICAEES 2016

27 March 2017, Article number 7888042, Pages 224-229

2016 International Conference on Advances in Electrical, Electronic and Systems Engineering, ICAEES 2016; Putrajaya Marriott Hotel Putrajaya, Malaysia; 14 November 2016 through 16 November 2016; Category number CFP16F52-ART; Code 127100

Performance analysis on spectrum coexistence between Wi-Fi networks and ground based radar using database assisted spectrum sensing scheme (Conference Paper)

Mohamoud, M.A., Elsheikh, E.M.A., Habaebi, M.H.

Electrical and Computer Engineering Department, International Islamic University Malaysia, Kuala Lumpur, Malaysia

Abstract

[View references \(13\)](#)

Cognitive Radio (CR) is an intelligent method for opportunistic access of idle resources and a solution for spectrum resources scarcity. In this article a new technique for spectrum access is proposed. This technique combines spectrum sensing with geolocation database. The proposed technique is employed in radar bands of (960-1400 MHz, 2.7-3.6 GHz and 5-5.85 GHz). These bands occupy quite large bandwidth and they are utilized only about 5% of the time. The new proposed technique is expected to solve the problem of hidden receivers faced by spectrum sensing. It also poses a solution for the static nature of geolocation database method. It minimizes the interference caused by secondary users by improving the probability of detection. Furthermore, this technique takes advantage of the temporal spectrum opportunities resulting from Radar rotation. In this article, primary systems protection distance and resultant secondary Wi-Fi network is analyzed. It is found that when blind sensing without any information about Radar rotation and Antenna pattern is employed the primary protection distance is very large, also the Wi-Fi network can achieve required throughput only when it is located beyond the protection region. On the other hand, when information about Radar rotation and Antenna pattern is provided through database, the secondary devices can coexist with Radar and the protection distance will minimal as the Wi-Fi network is allowed to operate on the same band when the Radar main Beam is not directed at it. © 2016 IEEE.

Author keywords

[Cognitive radio](#)
[Geolocation Database](#)
[Radar](#)
[Spectrum sensing](#)
[Wi-Fi](#)

Indexed keywords

Engineering controlled terms: [Database systems](#) [Directional patterns \(antenna\)](#) [Radar](#) [Radar antennas](#) [Systems engineering](#) [Tracking \(position\)](#) [Wi-Fi](#) [Wireless local area networks \(WLAN\)](#)

Compendex keywords: [Geo-location database](#) [Ground based radar](#) [Hidden receivers](#) [Intelligent method](#) [Opportunistic access](#) [Performance analysis](#) [Probability of detection](#) [Spectrum sensing](#)

Engineering main heading: [Cognitive radio](#)

Funding details

Funding number	Funding sponsor	Acronym
RIGS15-154-0154	International Islamic University Malaysia	IUM

Funding text

This work is supported by the Research Initiative Grant scheme (RIGS) provided by International Islamic University Malaysia No. RIGS15-154-0154.

ISBN: 978-150902889-4
 Source Type: Conference Proceeding
 Original language: English

DOI: 10.1109/ICAEEES.2016.7888042
 Document Type: Conference Paper
 Volume Editors: Nordin R., Mansor M.F., Ismail M.
 Sponsors: Bel Construction Sdn Bhd, Emerald Systems, Silterra
 Publisher: Institute of Electrical and Electronics Engineers Inc.

Metrics

0 Citations in Scopus
 0 Field-Weighted Citation Impact

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

[A comparative study of energy detector performance under AWGN and fading](#)

Mohamoud, M.A., Elsheikh, E.M.A., Habaebi, M.H.
 (2017) 2016 International Conference on Advances in Electrical, Electronic and Systems Engineering, ICAEES 2016

[Energy detector assisted by geolocation database scheme utilizing radar bands](#)

Mohamoud, M.A., Ahmed, E.M., Habaebi, M.H.
 (2015) ARPJ Journal of Engineering and Applied Sciences

[Spectrum sharing between a surveillance radar and secondary Wi-Fi networks](#)

Hessar, F., Roy, S.
 (2016) IEEE Transactions on Aerospace and Electronic Systems

[View all related documents based on references](#)

[Find more related documents in Scopus based on:](#)

[Authors >](#) [Keywords >](#)