An Effective Hybrid Spectrum Sensing Methodology in Cognitive Radio Network Using Deep Temporal Convolution Network

Publisher: IEEE

R. KoteswaraRao ; C. Sharanya **All Authors**

Abstract

Document Sections

I. Introduction

II. Existing Works

III. Intelligent Framework of Spectrum Sensing in Cognitive Radio Network

IV. Deep Learning-Based Prediction for Spectrum Sensing in Cognitive Radio Network

V. Results and Discussion

Show Full Outline

Authors

Figures

References

Keywords

Abstract:
“Spectrum sensing is a crucial component in Cognitive Radio Networks (CRN)”. CRN systems' capacity to reliably and quickly sense the principal signal is a vital requireme... **View more**

Metadata

Abstract:
“Spectrum sensing is a crucial component in Cognitive Radio Networks (CRN)”. CRN systems' capacity to reliably and quickly sense the principal signal is a vital requirement. One effective technique to detect activity in Primary Users (PU) is Hybrid Spectrum Sensing (HSS). It involves various detectors to reach an agreement regarding the PU state. The ineffective use of the permitted frequency makes CR a promising technology for current and future communications. The ability to use the available bandwidth of other wireless networks for communication to boost their use is the reason for this. A novel methodology for HSS in CR utilizing deep learning is offered to get around this. The proposed framework comprises several phases; initially, the model utilizes the energy from energy detection. The collected data are fed into the deep learning model as Deep Temporal Convolutional Network (DTCN) for the prediction objective. Finally, the validation is carried out and compared with different schemes. Hence, the proposed model outperforms with better energy detection than existing radio technologies.

Published in: 2023 4th International Conference on Smart Electronics and Communication (ICOSEC)

Metrics

More Like This

Date of Conference: 20-22 September 2023

DOI: 10.1109/ICOSEC58147.2023.10276060

Date Added to IEEE *Xplore*: 16 October 2023

Publisher: IEEE

ISBN Information:

Conference Location: Trichy, India

Contents

I. Introduction

SS is a critical responsibility of the “secondary user (SU)” in a CRN. SS monitors PU activity to avoid clashes with SU, which should be silent when PU operates on a particular channel [1]. HSS is the method for detecting activity in PU that works well. Deciding the PU's status involves merging different sensors [2]. How to optimally utilize spectrum resources in mobile phone networks has been the subject of extensive research in recent years. “Dynamic Spectrum Access (DSA)” is the primary approach for using resources of the spectrum. “Reinforcement Learning (RL)” for DSA has garnered much interest because of its exceptional efficiency. Spectrum inefficiencies and underutilization must be rectified. With CR [3], a successful solution for the problems has evolved. CR has made it possible for SU to recognize and use the gaps of frequency left by PU, decreasing spectrum scarcity and increasing spectrum usage.

Authors

Figures

References

Keywords

Metrics

More Like This

Deep Learning with Wireless Sensor Network Platform for Multimedia Data Modeling
2023 Annual International Conference on Emerging Research Areas: International Conference on Intelligent Systems (AICERA/ICIS)
Published: 2023

An effective mechanism for early chronic illness detection using multilayer convolution deep learning predictive modelling
2021 International Conference on Technological Advancements and Innovations (ICTAI)
Published: 2021

Show More