

认知无线电中基于截断序贯检测的频谱感知技术

闫琦* 杨家玮 张雯*

西安电子科技大学综合业务网理论及关键技术国家重点实验室 西安 710071

Truncated Sequential Detection for Spectrum Sensing in Cognitive Radio

Yan Qi Yang Jia-wei Zhang Wen*

State Key Laboratory of Integrated Service Networks, Xidian University, Xi'an 710071, China

摘要

参考文献

相关文章

Download: PDF (234KB) [HTML](#) 1KB Export: BibTeX or EndNote (RIS) [Supporting Info](#)

摘要 序贯检测的检测时间是随实际接收信号采样点的变化而不同的随机变量, 在平均意义上, 序贯检测有较高的检测速度, 但是个别情况下可能需要很长时间的检测时间, 为了避免这种现象的发生, 同时提高认知无线电中频谱感知的速度, 该文提出了一种截断序贯检测算法。首先分析了截断对传统序贯检测性能的影响, 给出了虚警概率和漏检概率的上限, 然后基于该性能上限得到了截断序贯检测的检测门限, 最后给出了截断序贯检测算法的流程。仿真结果表明, 该算法在有限的检测时间内, 能够满足系统的性能要求, 且其平均检测时间小于传统的能量检测。

关键词: 认知无线电 频谱感知 序贯检测 检测时间

Abstract: The detection time required to reach a decision in sequential detection is a random variable. Although the sequential detection has a high average detection speed, very long detection time may be required in some specific cases. In order to improve the speed of spectrum sensing as well as to avoid some too-long-sensing-time tests in cognitive radio, a truncated sequential detection algorithm is proposed. Firstly, the effect of truncation on the performance of conventional sequential detection is analyzed, and the upper bounds of the false alarm and the miss detection probability are derived. Then the detection thresholds of truncated sequential detection are derived based on the upper bounds. Finally, the process of the truncated sequential detection algorithm is proposed. The simulation results show that the proposed algorithm, under the constraint of limited sensing time, can satisfy the performance requirement, and still have a shorter average sensing time than the conventional energy detection does.

Keywords: Cognitive Radio (CR) Spectrum sensing Sequential detection Sensing time

Received 2011-01-14;

本文基金:

国家973计划项目(2009CB320404), 国家自然科学基金(60902033)和中央高校基本科研业务费专项基金(K50510010022)资助课题

通讯作者: 闫琦 Email: yanqi419@gmail.com

引用本文:

闫琦, 杨家玮, 张雯. 认知无线电中基于截断序贯检测的频谱感知技术[J] 电子与信息学报, 2011, V33(7): 1532-1536

Yan Qi, Yang Jia-Wei, Zhang Wen. Truncated Sequential Detection for Spectrum Sensing in Cognitive Radio[J], 2011, V33(7): 1532-1536

链接本文:

<http://jeit.ie.ac.cn/CN/10.3724/SP.J.1146.2011.00042> 或 <http://jeit.ie.ac.cn/CN/Y2011/V33/I7/1532>

Service

- ▶ [把本文推荐给朋友](#)
- ▶ [加入我的书架](#)
- ▶ [加入引用管理器](#)
- ▶ [Email Alert](#)
- ▶ [RSS](#)

作者相关文章

- ▶ [闫琦](#)
- ▶ [杨家玮](#)
- ▶ [张雯](#)