Abstract

The principle of cognitive radio systems is to utilize the licensed spectrum when their interference to primary users can be maintained below a certain threshold. Thus, to successfully coexist, cognitive users must have awareness of primary user's presence in the vicinity. As most communication signals exhibit statistical periodicities, Cyclostationary feature detection can be used to perform the task of sensing the spectrum for primary user's presence. A second-order statistical approach is most widely used to perform
Cyclostationary Feature Detection in which a set of lags should be chosen for statistical testing. The optimal method for choosing multiple lags requires knowledge of the 4th-order cyclic cumulated of Primary user’s signals, which can be a burden in practice. In this work, a new idea for lag set selection is presented, which avoids the mentioned 4th-order cumulated burden. The results are verified via analysis and simulation. It shows that the performance of the proposed method is comparable to the optimal one in the low signal to noise ratio region where it is most critical for CR applications.

References


Index Terms

Computer Science  
Applied Science
Keywords
Cognitive Radio  Cyclostationary Characteristic Recognition  Range Sensing