

# Spectrum Sensing in Cognitive Radios

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as the strategy is unable to distinguish between signal power and noise power. We decided to focus on wavelet transform spectrum sensing, and cyclostationary based spectrum sensing as they tie the sensing measurements to the signal structure, which can be extracted even when the signal power is low. We then implemented the algorithms in MATLAB, and are still continuing to work on implementing a detection decision strategy.

## Introduction

The RF environment is becoming increasingly crowded, leading to the desire for more intelligent opportunistic radios. These radios, termed cognitive radios, opportunistically access the spectrum based on the spectrum utilization they measure through a spectrum sensing process. This independent study focuses on alternative spectrum sensing strategies to energy detection.

## Motivation

Our motivations for this study was to survey existing spectrum sensing algorithms and to examine the performance of signal-structure based sensing algorithms as compared to simple energy detection.

## Research Overview

We first conducted a literature review to identify potential strategies that could provide better performance than energy detection in low-SNR environments. It was found that energy detection generally performs poorly in low-SNR environments,