**Developer report**

**Title**: On The Performance Of Quickest Detection Spectrum Sensing: The Case Of Cumulative Sum.

**Title ID:** Here we need to mention Title ID of the Project.

**Objective of the Project**:.

Quality control, power system line outage detection, spectrum reuse, and resource allocation and scheduling are only a few of the practical uses of the QCD problem. We will focus on spectrum sensing as our application in this letter because it is a fundamental procedure for the effective operation of cognitive radio networks. relying on the total amount (CUSUM), The likelihood of detection and false alarm of CUSUM-based spectrum sensing are calculated. Numerical simulations are used to demonstrate the accuracy of our derivations.

**Development Procedure:**

Here we will present a framework for sequential detection in cognitive radio networks. Here obtained an approximate closed-form formula for the detection latency distribution for fastest detection. The authors provide a joint design based on observation scheduling policy and stopping time that minimises detection latency for shortest detection.

We explore the subject in and propose closed-form formulations for the false-alarm and detection probability under finite sensing interval in this letter, driven by the great need to obtain closed-form expressions for the above-mentioned essential applications.

**Execution Procedure:**

Using our closed-form expressions and for a desired Pf or Pd under finite sensing time, the decision statistic is compared to the threshold which can be calculated according to the desired performance metric. We provide simulation results for the detection of the entrance of the PU signal. We compare the numerical calculations for Pf and Pd with our derived analytical approximations presented in the proposed method, We plot total probability of detection at various samples after the entrance of the PU signal.