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- I. INTRODUCTION
- II. PROPOSED METHOD
- III. RESULTS AND DISCUSSION
- IV. Conclusion



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Abstract:

A cognitive radio network is an intelligent system that can detect the presence of unused spectrum space without affecting the primary user. The CRN is responsible for managing the allocation of channels, which leads to the scarcity of spectrum. This issue should be addressed in order to ensure that the network can continue to provide long-term and profitable service to its users. The issue of spectrum handoff is considered a major issue that needs to be resolved in order to improve the efficiency of the network. One of the most common factors that can affect the network's performance is the power consumption and communication delay. This paper proposes a method that can detect the availability of channels during the handover. The accuracy and network latency of various ML algorithms are evaluated through resampling techniques. The Nave Bayes Classifier and KNN algorithms performed better than their benchmarks. For a total of 500 and 100 users, respectively, the networks experienced a network latency of 10.91 and 13.08 seconds.

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 **Contents**

I. INTRODUCTION

The field of wireless communications has been growing rapidly over the past couple of decades, with both technological advancements and economic advantages being realized by the companies operating in it [1]. But, the remarkable growth of this field is threatened by the fact that most of the spectrum used for wireless transmission already has been allocated to the existing infrastructure. The goal of cognitive radio [2], [3] is to enable terminals to communicate using different standards while maintaining the same frequency range [2], [3]. This is done through the assignment of fixed-frequency bands to primary users, who are expected to prioritize their calls. On the other hand, secondary users are permitted to talk about their activities in non-priority bands.

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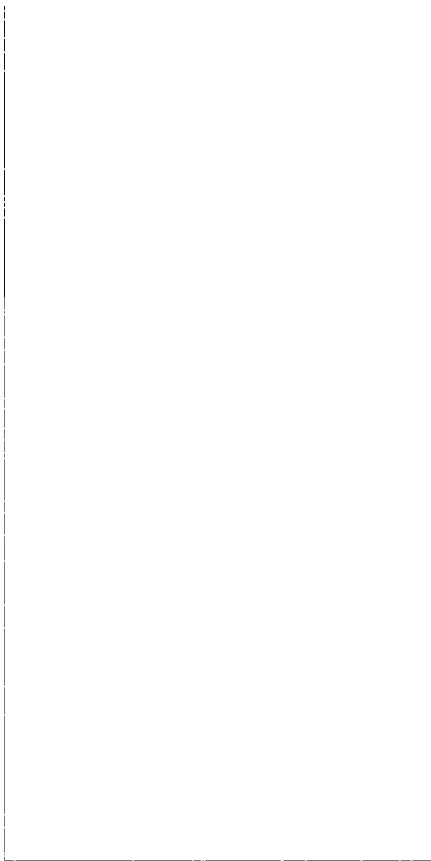
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