



IIT BOMBAY

DUAL DEGREE PROJECT

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# Cognitive Radio using OpenBTS

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## **Abstract**

Target: Sense the presence of calls going on in the primary OpenBTS and as soon as the call drops/ends start the secondary OpenBTS to enable communication among secondary users

Details:

We sensed the energy of the uplink frequency (usually — uplink freq = downlink freq - 45MHz — in the GSM900 band) using GnuRadio. We observed the energy of the uplink frequency is lower when there are no calls. We selected a threshold energy level and let the secondary OpenBTS start as soon as the primary OpenBTS's energy level went below threshold.

# Contents

# Chapter 1

## A cognitive base station using GnuRadio and OpenBTS

### 1.1 Target

Our aim in this project is to start a secondary base station in some predefined frequency band used by a primary base station as soon as that particular frequency band becomes available (i.e. when the calls that were happening through the primary base station end).

# Chapter 2

## GnuRadio

### 2.1 Introduction

GnuRadio is a software blah blah blah!