**Electronic Tracking Collar**

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# Declaration of Joint Authorship

We, Gurpreet Singh and Simarjeet Brar, confirm that this work submitted for assessment is the joint work of ourselves, and is expressed in our own words. Any uses made within of other works of any other author, in any form (ideas, equations, figures, previous technologies, tables, programs, texts) are properly acknowledged at the point of use. A list of the references used is included. Simarjeet handled web interface and database and Gurpreet handled android application and hardware.

Approved Proposal

## Executive Summary

As a student in the Computer Engineering Technology program, I will be integrating the knowledge and skills I have learned from our program into this Internet of Things themed capstone project. This proposal requests the approval to build a device that is used to track animals for safty and research purposes. The internet connected hardware will include a custom PCB with sensors and actuators for the measuring of light, distance travelled per day, and geological locaition (latitiude and longitude using Gps). We will be using Firebase to store all the data and readings from sensor on the interenet. The android application will be used to get all that data from the database and display it in user freiendly manner. In the winter semester I work on light sensor to use it as an automatic switch to save energy. The hardware was set up in CENG 317 Hardware Production Techniques independently and the application was designed in CENG 319 Software Project. These will be integrated together in the subsequent term in CENG 355 Computer Systems Project as a member of a 2 student group.

## Background

ET-Collar is a device that ensures the safety of your pet or animals at zoo. As we all know life these days is extremely busy so if have pets its not only a great responsibility but also their safety is the biggest concern. Our device there help your pets to ensure they are safe and sound at home when you’re not around. Our Product is small lightweight enough to not affect your pet anyway. It uses GPS chip track down exact location of the animal. So if you’re pet accidentky got lost you can always check their location on your phone.

## Concluding remarks

This proposal presents a plan for providing a solution for the green house at Humber College. This is an opportunity to integrate the knowledge and skills developed in our program to create a collaborative capstone project demonstrating my ability to learn how to support projects. I request approval of this project

# Abstract

There are is a high demand of people that studies animal and wants to track them down and learn about the environment they live in. To solve this issue, a system that monitors the movement of animals and the environment they are in is being created.

The mentioned system should determine the location where the animal is and the level of lighting around the animal/pet wearing the device. Moreover, the system should allow to track the distance cover by them.

This technical report discusses the Et-Collar, a system designed fulfill all the requirements mentioned above.

The device will calculate the location, the level of lighting and the distance travelled by the one wearing the device.  Once the data is calculated by the device, the information will be sent to a database.

The database, will hold all the real time information and goes in parallel with an android application.

Moreover, the android application will display the most recent data (real time data).

 Devices as the one being designed already exists in the market, however we are designing a device that can be reproduced by anyone with no specific knowledge in programming or microcontroller as all the necessary instruction and code are going to be made available.

Table of Contents

Declaration of Joint Authorship……………………………………………………………………….iii

Approved Proposal…………………………………………………………………………………….iv

Executive Summary...................................................................................................................v

Background................................................................................................................................v

Concluding remarks...................................................................................................................v

Abstract......................................................................................................................................v

Introduction…………………………………………………………………………..……………….. viii

Project Description………………………………………………………………………………ix

Requirement Specifications………………………………………………………………….……….ix

1. Software Requirements………………………………………………………………………ix
2. Mobile Application………………………………………………………………..………ix
3. Database……………………………………………………………………………….…ix
4. Hardware Requirements…………………………………………………………………….ix
5. Development Platform………………………………………………………………..…ix
6. Interface boards and Sensors……………………………………………………….....ix
7. Other Hardware and Enclosures…………………………………………………….…ix

Reference……………………………………………………………………………………………....x

Introduction

Project Description

The aim of the project is to design and implement a device that can track and monitor animals activity.

The final product will be different than others already on the market as the device can be reproduced by anyone without any specific knowledge.

The approach adopted to walk through this project is using all the skills learned throughout the program, the hardware used is: TSL2561 (Light sensor), LIS3DH (accelerometer), GP-20U7 (GPS).

The main issue is to integrate this three sensors, make them work together while pushing data on the DB.

The database adopted to work along the three sensor is Firebase, which will store the readings of the three sensors, additionally some more information about the user will be stored on the DB.

To overcome the issue of integrating the three sensors at once is to work on the single sensors first and then integrate each other. The first step on getting the DB up and running is being able to get the connection working from the device to Firebase.

The purpose of this project is to, let animal lover, keep track of animals and help them study and monitor them with the best accuracy.

Furthermore, other aspects such as size and portability are very important and considered in the development of the final product. This problem is overcome by designing and cutting a case to protect and make the product look more professional.

Requirement Specifications

1. Software Requirements
2. Mobile Application

Mobile Application will be used to display sensor data on screen from firebase database it requires a multiple screens for user that will not only display the readings but also the guidelines of the project and how to use the device. It uses google maps to display location of the animal.

1. Database

Database is used to store sensor data on the internet for easy access through application. Gurpreet will be handling all the sensor data that is to retrieve readings and upload them on cloud using python code.

1. Hardware Requirements
2. Development Platform

The platform chosen to work on the sensors is the raspberry pi 3, as it has built in Wi-Fi, which makes it easier on to work on.

Moreover, Gurpreet Singh will work on the platform and integrate the different sensors accordingly. Simarjeet Brar will assist in troubleshooting any problem and take care of any portability issue.

1. Interface Boards and Sensors

Sensor that are used in the project are Light/Lux Sensor (TSL2561), accelerometer (LIS3DH) and GPS (GP20u7). These sensors will be used to get readings about lux and distanced by the animal GPS will be used to get location. All the sensors are first tested separately and then put together on single Printed Circuit Board (PCB) designed by both of us.

1. Other Hardware and enclosure

We will designing a case to protect our sensors from physical damage so for that we need acrylic sheets to create a perfect case. It should a compact and low weight product that will make animals feel comfortable wearing around their neck.

References

# Technology Report Guidelines Computer Project under blackboard.

# Example of Technical Report Computer Project under blackboard.