

Final Year Project Report

Indoor Localization



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Dedication

We are dedicating this project to our parents and teachers.

Final Approval

Panel of Examiners:

- **Head of Department** _____
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Acknowledgment

We are grateful to the general population associated with this venture who made this conceivable and furthermore to their most extreme endeavors that drove it to an entire achievement. Above all else, we are grateful to our maker, **Almighty Allah** Who helped us in each minute and part of our life. A short time later, our extraordinary appreciation goes to our instructors and guides that incorporates our esteemed counsel **Mr. Hassan Maqbool** who edified us with their inside and out information and anticipated our endeavors into productive item.

We are thankful to express our profound love and warmth to the Dean, SST, and Chairman of software engineering office, **Dr. Adnan Abid** and furthermore to our venture co consultant, **Mr. Abu bakar Siddique , Muhammad Nabeel** for their sharp position with respect to our venture and furthermore towards our instructive strengthening. Our affirmation likewise contemplates upon the workplace staff of SST office. In conclusion, our most profound thankfulness has a place with our unparalleled guardians for their endless supplications and trouble amid our entire instructive period. Notwithstanding our parent's purpose, we wouldn't accomplish this development.

Project Title: Indoor Localization
Objective: To make our university a smart campus

Undertaken by: Zain UIAbdeen
Rehman Ali
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Supervised by: Mr. Hassan Maqbool
Starting Date: 15/04/2016

Completion Date: 17/08/2017

Tools Used: X-code 8, Virtual machine, iPhone, Swift, Objective-C
Operating System: Mac OS

Plagairism Report

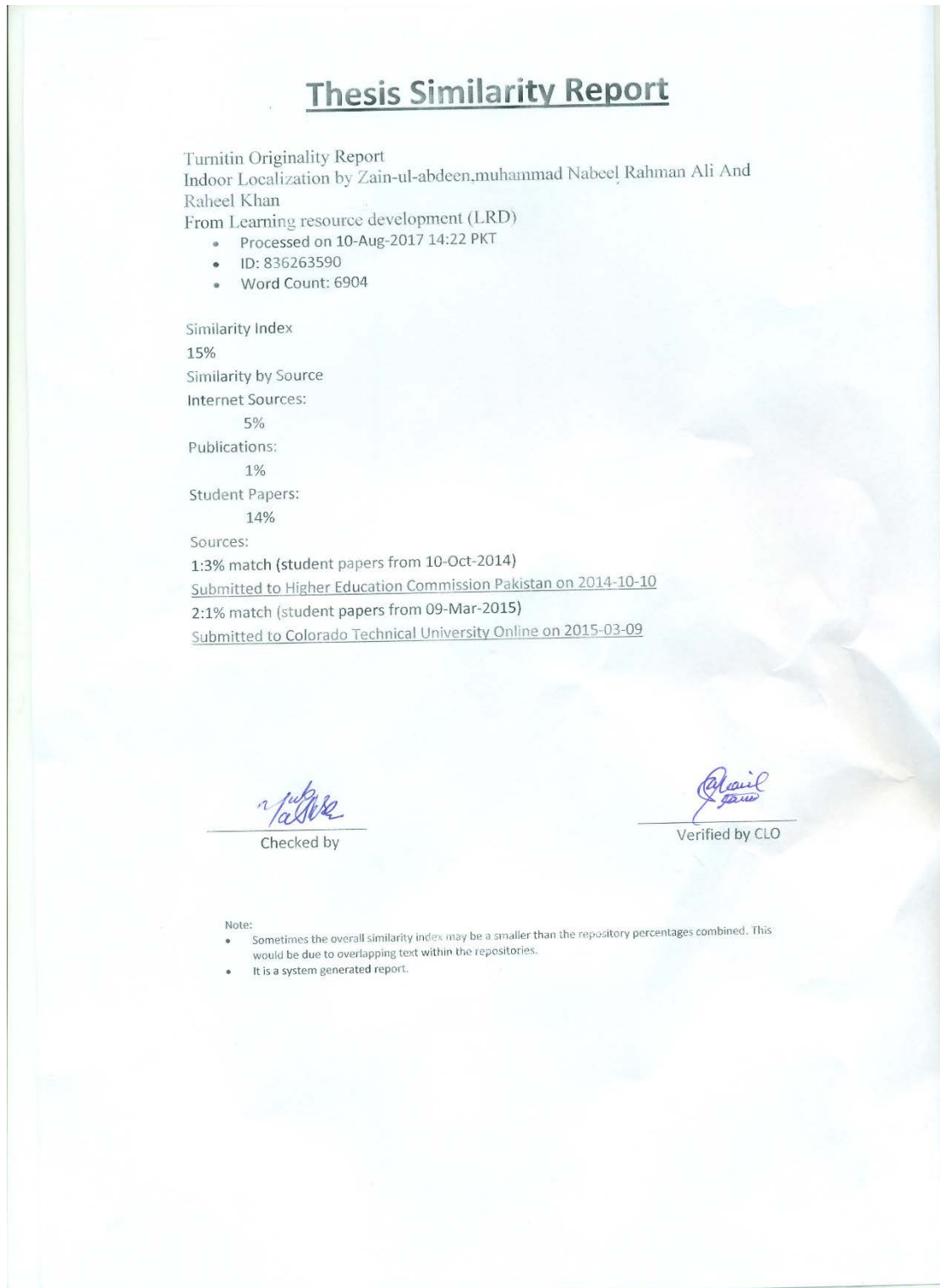


Figure 1: Plagiarism Report

Abstract

When we talk about navigation towards a specific place globally we observe that Google map has made it very simple and much more efficient in guiding a simple person to a specific place. But on the contrary when we talk about large scale indoor places like **shopping malls, educational institutes** and **building** having large infrastructures Google map doesn't support us. Our main idea is to fill this gap introducing indoor navigation platform based on smart phone where user can use our navigation based application and can easily locate specific place, not only this but we will also provide **Context Aware Platform** making **Smart Environment** where manual interaction of user with environment will be much more less and smart interaction will be increased. User will get notified whenever passed through a specific place.

For that purpose a good navigation tool is required having both a good positioning accuracy and an accessible interface? Thus, our first goal is to advance the performance of the indoor positioning system on IOS Apple.

The proposed Indoor Navigation is based on the **Beacons** technology that uses **Radio Waves Signals** received by Bluetooth module in our smart phone and measures distance of device from Beacon. Every beacon has its own Signal strength that makes it differentiable from other devices. I.e. The perfect accuracy can be done by getting devices into range through **RSSI (Received Signal Strength Indicator)** of beacon.

The implementation of the Indoor Localization based on **IOS Application** has been done by using the Integrated Development Environment **IDE** named as **X Code 8**.

REVISION CHART

| Version | Primary Author(s) | Description of Version | Date Completed |
|----------------|--------------------------|--|-----------------------|
| Draft | Rehman Ali | Initial draft created for distribution and review comments | 19/10/2016 |
| Preliminary | Raheel Khan | Second draft incorporating initial review comments, distributed for final review | 25/11/2016 |
| Final | Muhammad Nabeel | First complete draft, which is placed under change control | 25/07/2017 |
| Revision 1 | Zain ul abdeen | Revised draft, revised according to the change control process and maintained under change control | 19/08/2017 |

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Definitions and Acronyms

| Acronym | Definition |
|---------|---|
| UMT | University of Management and Technology |
| IL | Indoor Localization |
| RSSI | Received Signal Strength Indicator |
| IOS | iPhone mobile operating system created and developed by Apple Inc. |

Table 1: table of acronyms and definitions

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1. INTRODUCTION

1.1 Motivations

In this upcoming era of 20 century the world has becoming more and more global and smart. The concept of pervasive environment has becoming more practical and applicable which is providing easiness to users. GPS (Global positioning system) is well known system provided by Google for the users to locate their position but when we talk about the indoor localization it fails. Although with the passage of time buildings have been created on large scales like shopping malls, universities and large organizations in which to locate a specific location for a normal user it is quite difficult to approach a specific area.

As our project scope is to facilitate users need to save their precious time if they are in a hurry. It will make indoor navigation easier ever by displaying on-screen directions. IL will make user experience good by using additional features which are not available in outdoor positioning system.