GOA COLLEGE OF ENGINEERING
FARMAGUDI, GOA

DEPARTMENT OF ELECTRONICS & TELECOMMUNICATION ENGINEERING

**2016 - 2017**


# HUMAN IDENTIFICATION USING GAIT RECOGNITION

*by*

**Azfar Khoja (P.R.No.: 201305838)**
**John George (P.R.No.: 201305821)**
**Mrinal Shinde(P.R.No.: 201305759)**
**Neviya Prakash (P.R.No.: 201305942)**

**A project submitted**
**in partrial fulfilment of the requirements**
**for the degree of**
**Bachelor of Engineering**
**in**
**Electronics and Telecommunication Engineering**
**GOA UNIVERSITY**

***under the guidance of***

**Prof. MILIND FERNANDES**
**Assistant Professor,**
**Electronics & Telecommunication Department**
**Goa College of Engineering**

# CERTIFICATE

This is to certify that the project entitled

**"HUMAN IDENTIFICATION USING GAIT RECOGNITION"**

**submitted by**


| | |
|---|---|
| **Azfar Khoja** | **P.R. No.: 201305838** |
| **John George** | **P.R. No.: 201305821** |
| **Mrinal Shinde** | **P.R. No.: 201305759** |
| **Neviya Prakash** | **P.R. No.: 201305942** |


has been successfully completed in the academic year 2016-2017 as a partial fulfilment of the requirement for the degree of BACHELOR OF ENGINEERING in Electronics and Telecommunication Department, at Goa College of Engineering, Farmagudi.

_____ _____

(Internal Examiner) (External Examiner)

Place: Farmagudi, Ponda, Goa
Date:

# PROJECT APPROVAL SHEET

**The project entitled**

## "HUMAN IDENTIFICATION USING GAIT RECOGNITION"

*by*

| | |
|---|---|
| **Azfar Khoja** | **P.R. No.: 201305838** |
| **John George** | **P.R. No.: 201305821** |
| **Mrinal Shinde** | **P.R. No.: 201305759** |
| **Neviya Prakash** | **P.R. No.: 201305942** |

completed in the year 2016-2017 is approved as a partial fulfilment of the requirements for the degree of **BACHELOR OF ENGINEERING in Electronics and Telecommunication Engineering** and is a record of bonafide work carried out successfully under our guidance.

_____

(Project Guide)
Milind Fernandes
Assistant Professor,
ETC Dept.

_____

(Head of Department)
Dr. H. G. Virani
Professor, ETC Dept.

_____

(Principal)
Dr. V. N. Shet
Goa College of Engineering

Place: Farmagudi, Ponda, Goa
Date:

# Acknowledgement

The success of our work is incomplete unless we mention the names of our respected taechers who made it possible, whose guidance and encouragement served to beacon light and crowned our efforts with success.

Next paragraph

Next paragraph

# Contents

# List of Figures

# List of Tables

# Abstract

The need for person Identification using biometric features has risen considerably during recent times. The reason being since biometric traits are part of the individuals being, they are remarkably unique and can verify an individuals identity with utmost accuracy. One biometric technique for unintrusive identification is gait recognition which basically identifies people by the way they walk. In former work, gait recognition is mainly achieved with camera systems. In this study, we present an approach for gait recognition using Microsoft Kinect V2, a peripheral for the gaming console XBOX One, which provides us with marker less tracking of human motion in real time. We extract and evaluate a number of static and kinematic features and present the results of various classification algorithms for person identification.

# Chapter 1

# Introduction

## 1.1 Preamble

1st para of first section

second para

## 1.2 Motivation

This is how you create bullets:

- First bullet
- second bullet

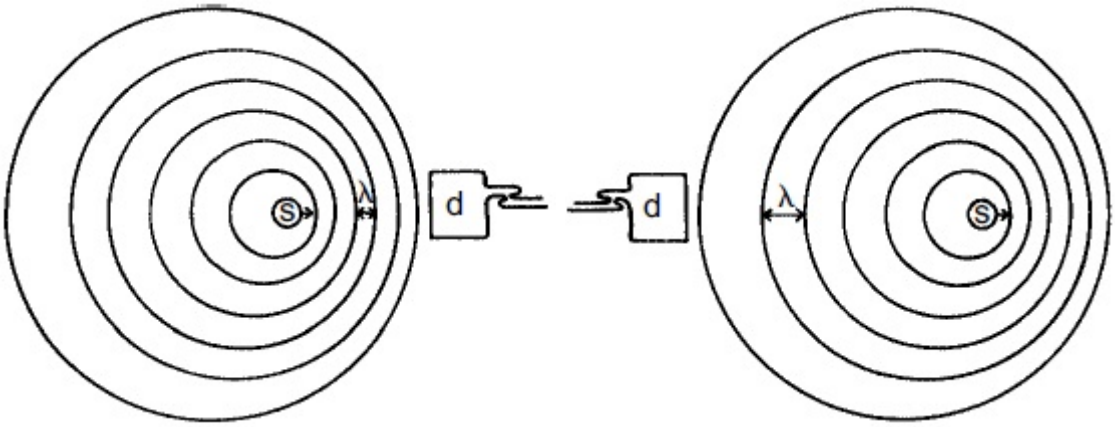
## 1.3 Objective

same way

## 1.4 Outline

### 1.4.1 This is a sub section

Mention some figure like this Fig.1.1. which is saved at the location where this file is saved. This is an example of subfigure. You do not need to number the figure, latex will automatically number it for you! And it will appear automatically in the list of figures too!All you need to do is caption it.




(a) Source moving to stationary detector d (b) Source moving from stationary detector d

Figure 1.1: Principles of Doppler Ultrasound

This is how you write equations and mathematical symbols:

In the Fig.1.1(a), an ultrasound source is moving with velocity $v_s$ toward the detector. After time $t$ following the production of any particular wave front, the distance between the wave

front and the source is $(c - v_s)t$ , where $c$ is the velocity of ultrasound in the medium. The wavelength $\lambda$ of the ultrasound in the direction of motion is shortened to

$$\lambda = \frac{(c - v_s)}{\nu_0} \tag{1.1}$$

#### 1.4.1.1 This is a subsubsection

This is how you enter a single figure.Entering the caption automatically gives the figure its number, and the caption appears in the list of figures

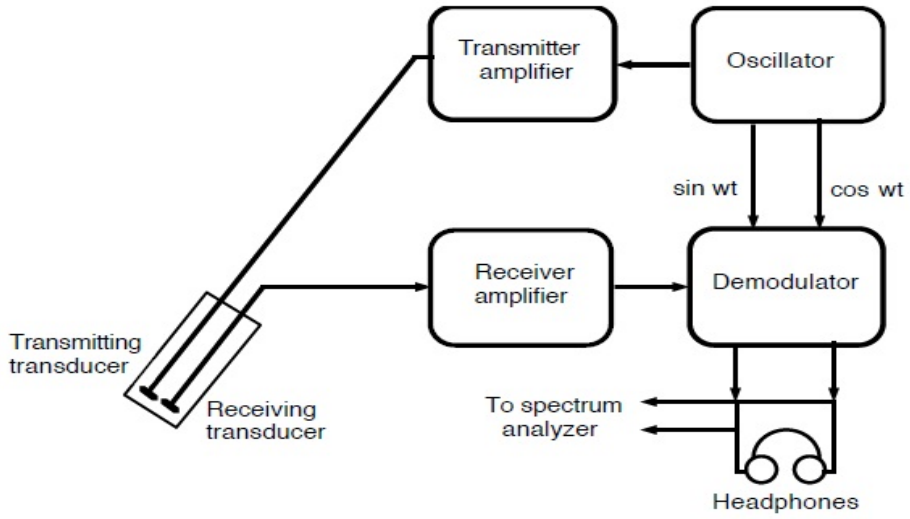



Figure 1.2: The Continuous Wave Doppler system. Signals from the receiving transducers are compared in frequency to those transmitted.

This is an example of a table. You need to write the caption so that it appears here with its table no. as well as in the List of Tables.

| column1 | column2 |
|---|---|
| 1st row 1st column | 1st row second column |
| 2nd row 1st column | 2nd row 2nd column |

Table 1.1: A test table.

# Chapter 2

# Literature Review

## 2.1 Introduction

Hey you!! Trying if the header and footer works for the second chapter

### 2.1.1 This is a sub section

Yes, true, It is indeed a subsection.

will be trying now to continue this chapter to the next page to see if the header and footer appear there on the second page too.

Hey this is supposed to be the next page. See if header and footer are there.

**Please feel free to add intermediate sections according to your project requirement.**

## 2.2 Conclusion

Trying if the header and footer works for the second chapter

### 2.2.1 This is a sub section

Yes, true, It is indeed a subsection.

# Chapter 3

# Design/Implementation(whichever applicable)

## 3.1 Problem Statement

This is the first section of the third chapter.

### 3.1.1 This is a sub section

Yes, true, It is indeed a subsection.

will be trying now to continue this chapter to the next page to see if the header and footer appear there on the second page too.

**Please feel free to add intermediate sections according to your project require-**

**ment. Work done: Block diagram, design(software, hardware), Implementation**

Hey this is supposed to be the next page. See if header and footer are there.

# Chapter 4

# System Analysis

## 4.1 Observations

This is the first section of the fourth chapter.

### 4.1.1 This is a sub section

will be trying now to continue this chapter to the next page to see if the header and footer appear there on the second page too.

## 4.2 Results

This is the second section of the fourth chapter.

## 4.3 Discussion

This is the third section of the fourth chapter.

# Chapter 5

# Conclusion

## 5.1 General Conclusion

This is the first section of the fifth chapter.

### 5.1.1 This is a sub section

will be trying now to continue this chapter to the next page to see if the header and footer appear there on the second page too.

## 5.2 Challenges

This is the second section of the fifth chapter.

## 5.3 Future Work

This is the third section of the fifth chapter.

# Bibliography

[1] Kenneth J. W. Taylor, Peter N. Burns, Peter N. T. Wells. Clinical Applications of Doppler Ultrasound Second Edition, pages 1-3.

[2] http://www.genesis-ultrasound.com/history-of-ultrasound.html

[3] https://wiki.engr.illinois.edu/display/BIOE414/History+of+Color+Doppler+Ultrasound

[4] William R. Hendee and E. Russell Ritenour. Medical Imaging Physics, Fourth Edition, pages 344 - 346, 2002.

second page of bibliography

# Appendices

# Appendix A

# Appendix

First page of Appendix A

Second page of Appendix A.

# Appendix B

# Data Sheets

Put your data sheets here.

second page of Appendix B.