

**Visvesvaraya Technological University  
Belgaum, Karnataka- 590014**



**Project Report On  
SMART ELEVATOR USING WIRELESS MULTI-HOP  
AD-HOC NETWORK**

Submitted in the partial fulfillment of the requirements for the award of the Degree of

**BACHELOR OF ENGINEERING  
in  
INFORMATION SCIENCE AND ENGINEERING**

Submitted by

<b>MANJUNATH P</b>	<b>1DS09IS041</b>
<b>NITILAKSHA S HALAKATTI</b>	<b>1DS09IS053</b>
<b>RUSHABH B P</b>	<b>1DS09IS073</b>
<b>SANTHOSH BHARADWAJ K R</b>	<b>1DS09IS076</b>

Under the Guidance of  
**Dr. K N RAMA MOHAN BABU**  
Associate Professor, Dept. of ISE



2012-2013

**DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING  
DAYANANDA SAGAR COLLEGE OF ENGINEERING  
SHAVIGE MALLESHWARA HILLS, KUMARASWAMY LAYOUT, BANGALORE-78**

# DAYANANDA SAGAR COLLEGE OF ENGINEERING

Shavige Malleshwara Hills, Kumaraswamy Layout  
Bangalore-560078

## Department of Information Science and Engineering



2012-2013

### Certificate

This is to certify that the Project Work entitled “**SMART ELEVATOR USING WIRELESS MULTI-HOP AD-HOC NETWORK**” is a bonafide work carried out by **Manjunath P(1DS09IS041)**, **Nitilaksha S Halakatti(1DS09IS053)**, **Rushabh B P (1DS09IS073)** and **Santhosh Bharadwaj K R(1DS09IS076)** in partial fulfillment for the 8<sup>th</sup> semester of Bachelor of Engineering in Information Science & Engineering of the Visvesvaraya Technological University, Belgaum during the year 2012-2013. The Project Report has been approved as it satisfies the academics prescribed for the Bachelor of Engineering degree.

\_\_\_\_\_  
Signature of Guide

[Dr.K N Rama Mohan Babu]

\_\_\_\_\_  
Signature of HOD

[Dr.M Ravishankar]

\_\_\_\_\_  
Signature of Principal

[Dr.A.N.N. Murthy]

Name of the Examiners

Signature with Date

1. \_\_\_\_\_

\_\_\_\_\_

2. \_\_\_\_\_

\_\_\_\_\_

## **ACKNOWLEDGEMENT**

It is great pleasure for us to acknowledge the assistance and support of a large number of individuals who have been responsible for the successful completion of this project.

We take this opportunity to express our sincere gratitude to **Dayananda Sagar College of Engineering** for having provided us with a great opportunity to pursue our Bachelor Degree in this institution.

In particular we would like to thank **Dr. A.N. N Murthy**, Principal, Dayananda Sagar College of Engineering for his constant encouragement and advice.

Special thanks to **Dr. M. Ravishankar**, HOD, Department of Information Science & Engineering, Dayananda Sagar College of Engineering for his motivation and invaluable support well through the development of this project.

We are highly indebted to our internal guide **Dr. K N RAMA MOHAN BABU**, Associate Professor, Department of Information Science & Engineering, Dayananda Sagar College of Engineering for his constant support and guidance. He has been a great source of inspiration throughout the course of this project.

Finally, we gratefully acknowledge the support of our families during the completion of the project.

**Manjunath P** **1DS09IS041**

**Nitilaksha S Halakatti** **1DS09IS053**

**Rushabh B P** **1DS09IS073**

**SanthoshBharadwaj K R** **1DS09IS076**

## **ABSTRACT**

In modern day world, time has become a precious resource. Therefore, different strategies and techniques are constantly being employed in all fields of life to save every bit of time. Increasingly many of such applications involve wireless Ad-hoc networks. A highly potential system that can be made significantly more efficient using Wireless Ad-hoc networks is an elevator system. There have been numerous attempts to improve the serving efficiency of the elevator system over the course of time. This project proposes to utilize the elevator system effectively so that more number of people can be served in a lesser time. To achieve this goal, we implement the elevator system based on a wireless ad-hoc network. of intelligent floors which can communicate with each other in a multi-hop fashion. In this way, every floor is aware of the traffic conditions, i.e., the number of upward/downward requesting-passengers, waiting at every other floor and make efficient decisions of where to direct/stop the elevator. To design the GUI we have used NetBeans IDE. NetBeans IDE provides first-class comprehensive support for the newest Java technologies and latest Java enhancements before other IDEs. With its constantly improving Java Editor, many rich features and an extensive range of tools, templates and samples, NetBeans IDE sets the standard for developing with cutting edge technologies out of the box.

# **CONTENTS**

• Chapter 1: Introduction.....	1
1.1 Motivation.....	3
1.2 Problem Statement.....	3
1.3 Purpose.....	3
1.4 Scope.....	3
1.5 Report Organisation.....	4
• Chapter 2: Literature Survey.....	5
2.1 Existing system.....	8
2.2 Proposed System.....	9
2.3 JDK.....	9
2.3.1 Java.....	9
2.3.2 Swings.....	9
2.3.3 Socket Programming.....	10
2.4 Ad-hoc Network.....	10
• Chapter 3: System Design.....	12
3.1 Requirements Specification.....	13
3.2 Assumptions & Constraints.....	13
3.3 Methodology.....	14
3.4 Flow Diagram of the Proposed Method.....	15
3.5 Communication.....	17
3.5.1 Information Awareness Mechanism.....	17
• Chapter 4: Implementation .....	19

4.1 Elevator Dispatching Method.....	20
4.2 Interfacing.....	21
4.3 Module 1: Elevator in current floor.....	23
4.4 Module 2: Elevator not in current floor.....	25
• <b>Chapter 5: Testing .....</b>	<b>28</b>
5.1 The Graphical User Interface (GUI).....	29
5.2 A Sample Test Case.....	30
• <b>Chapter 6: Results.....</b>	<b>32</b>
6.1 Applications.....	37
• <b>Chapter 7: Conclusion.....</b>	<b>38</b>
7.1 Conclusion.....	39
7.2 Future Work.....	39
• <b>References.....</b>	<b>40</b>
• <b>Appendix.....</b>	<b>42</b>

## List of Diagrams

List of Diagrams	Page numbers
Figure 3.1 Laptops connected in multi-hop fashion	15
Figure 3.2 Flow diagram of Elevator system	16
Figure 3.3 Flow diagram of run algorithm	17
Figure 4.1 Proposed Elevator dispatching algorithm	22
Figure 4.2 GUI for Elevator system	23
Figure 5.1 A snapshot for GUI	30
Figure 5.2 Sample test case	31
Figure 6.1 Initial state of Elevator	34
Figure 6.2 Second state of Elevator	35
Figure 6.3 Third state of Elevator	36
Figure 6.4 Fourth state of Elevator	37