

**Shri Vile Parle Kelavani Mandal's**  
**Institute of Technology, Dhule**  
**Department of Computer Engineering**  
**Project Base Learning Activity Report**

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**Objective:**

Students are able to apply their technical knowledge, acquire practical skills in programming, get involved into team processes and understand real problem of society and try to provide solution by applying software engineering approaches.

**Methodology Used:**

- Students are informed about important aspects and benefits of Project Base Learning.
- Form project groups for interested students.
- Assigned faculty mentor to project group.
- Try to understand various real problems in different domains and start analysis on them.
- Discuss various problems and start finding the solutions on problem.
- Take weekly review by mentor
- Present current work in front of department faculties after end of every semester.
- Promote project work at different technical platforms like project competitions/conferences/journals.

**CO's:**

CO1. To identify the real world problems and domain specifications with the help of survey in recent trends in computer allied fields.

CO2. To Apply software engineering principles in planning, formulating an innovative design/ approach and computing requirements, appropriate to solve the problem within the context of legal, global and environment constraint.

CO3. To design and develop with appropriate techniques, resources and contemporary tools exhibiting integrity and ethical behaviour in engineering practice.



**CO4. Ability to plan, monitor, and manage project schedule, resources, finance and work assignments to ensure timely completion and accordingly test and defend performance of the implemented project with implication of the solution.**

**CO5. Ability to use formal and informal communication with team members and mentor, to perform professionally as a team member, accepting responsibility, taking initiative, and providing leadership necessary to present and prepare technical document for successful project.**

**POs attained (before)**

1. PO1 (Engineering knowledge)
2. PO2 (Problem analysis)
3. PO4 (Conduct investigations of complex problems).

**POs attained (after)**

1. PO1 (Engineering knowledge)
2. PO2 (Problem analysis)
3. PO3 (Design/development of solutions)
4. PO4 (Conduct investigations of complex problems)
5. PO5 (Modern tool usage)
6. PO6 (The engineer and society)
7. PO7 (Environment and sustainability)
8. PO8 (Ethics)
9. PO9 (Individual and team work)
10. PO10 (Communication)
11. PO11 (Project management and finance)
12. PO12 (Life-long learning)

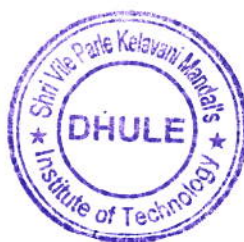
Subject	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Project Base Learning	CO1	1	3		1		1	1	1	2	2	2	2
	CO2	2	2	2	2	1	1	1	1	2	2	2	2
	CO3	2	2	2	2	2	1	1	1	2	2	2	2
	CO4	2	1	2	2	2	1	1	1	2	2	2	2
	CO5	1				1	1	1	2	2	3	2	2
<b>CO-Average</b>		<b>1.6</b>	<b>2</b>	<b>2</b>	<b>1.75</b>	<b>1.5</b>	<b>1</b>	<b>1</b>	<b>1.2</b>	<b>2</b>	<b>1.4</b>	<b>2</b>	<b>2</b>



### PSOs attained (after)

1. PSO1 (Professional Skills)
2. PSO2 (Problem-Solving Skills)
3. PSO3 (Professional Career)

Subject	CO	PSO1	PSO2	PSO3
Project Base Learning	CO1	2	1	
	CO2	2	2	1
	CO3	3	3	2
	CO4	2	2	2
	CO5	2	1	1
<b>CO- Average</b>		<b>2.2</b>	<b>1.8</b>	<b>1.5</b>



## Activity No-01

Welcome to the *Integrated System to Provide the Healthcare for Emergency Patient* project. The goal of these case study is to provide detail journey of this project from second year to the final year and to know the achievements of the team during development. With the help of following points we will know the details of the developments of this project.

**1. Project Title: *Integrated System to Provide the Healthcare for Emergency Patient***

**2. Faculty Mentor: Prof. Bhushan Nandwalkar.**

**3. Students Involve in PBL:**

- Rewa Desale
- Khushboo Chaudhari
- Aarti Patil
- Harshada Pawar

**4. Start/ End Year:**

- Start Year – **Sept 2018**
- End Year – **June 2021**

**5. Work in Second Year (Academic Year 2018-2019): -**

- In the semester –III/IV, Department was conducted one motivational session regarding innovative project development under the **Project Base Learning**.
- During this session all faculties of computer engineering shared their ideas regarding real time problem statements. During this discussion faculty realize that student are interested to work with IOT in medical, traffic, Agriculture, Military, Educational sector, Smart Cities etc.
- After discussion, faculties suggest that to students make group of 4 to 5 students and start to download latest IEEE or Springer papers for said domain and read it 2-3 times. Complete this activity up to November 2018.
- Prof. Khalid Alfatmi, Coordinator of Computer Department appoints Prof. Bhushan Nandwalkar as faculties mentor for PBL.
- Following Students form a group for PBL in second year.
  1. Rewa Desale
  2. Khusbhoo Cjaudhari
  3. Aarti Patil
  4. Harshada Pawar
  5. Ashwini Kulkarni





- Students discussed different topics or problem statements in medical domain with mentor.
- Mentor suggested that try to find out real word problems on road safety and medical emergency.
- At the end of year students discussed some problems with accident patients on road and required medical facilities.

**6. Work in Third Year (Academic Year 2019-2020): -**

- As per discussion held in previous semester team focus on issues of road accidents.
- Initially team reads some papers related to road accidents and services required during such situations.
- Team realize one problem that after accident patient cannot get ambulance service as well as it is very difficult to find vacant bed in nearest hospital.
- Team started detail analysis for the said problem.
- In the month of Dec 2019 team finalize required module for the project as well as technical details for the implementation and start actual implementation.
- In the month of Jan 2020 team register their **LYFsavers project in Smart India Hackathon 2020.**
- In month of April project was selected for finale round of SIH 2020 at Hyderabad but due to lockdown finale competition was postponed.
- In month of Aug SIH conducted this finale in online mode and team was secured 8<sup>th</sup> rank in Hyderabad region.



Certificates:









**7. Work in Final Year (Academic Year 2020-2021): -**

- Now team was in final year and after securing 8<sup>th</sup> rank in SIH 2020 still team wants to add new things to their project and register this project as final year project with major modification.
- Team started new requirement analysis for the project and found something new like required automation as well as hardware part for the project and register final year project as *Integrated System to Provide the Healthcare for Emergency Patient.*

**General abstract of project-**

Healthcare emergency becomes risky when the emergency patients won't get healthcare facility in time and in a proper way. Surveys done by private NGO's, the reports generated by government proves that people/ citizen of India won't get healthcare facility in time because of un-awareness about doctor's list, hospitals services. According to various articles published by newspapers and news shown by electronic media, we observed that people faced issues to get access to these facilities and this is one of the main reasons behind the death. To overcome the problem faced by an emergency patient from getting ambulance service till the acceptance of the patient by the hospital, we proposed a solution which helps patient to get the healthcare service in time, using our website, patient or his/her caretaker may contact to the nearest hospital for the service. Our website contains nearest doctors', hospital's list, phone numbers, mobile numbers, bed available,






services provided by the hospital, total expenses required, etc. All events will be recorded by the system and this helps to strengthen the healthcare system and the needy one. We here also proposed a system for accident detection using IOT, Node MCU- which senses the vehicle parameters like speed, impact, and using smartphone with Blynk application software, we come to know about vehicle accident category like medium or severe. When an accident happens to the vehicle, Node MCU using sensor senses the severeness and accordingly. Node MCU sends an alert message and GPS location of the accident on a smart-phone of the nearest ambulance driver and owner. So that, using location coordinates, he/she will give the service to accident patients.

- Finally, project was completed in month of Feb 2020.
- Team Published Two Research papers on project in international journal.

### 8. Paper Published: -



**INTERNATIONAL JOURNAL OF CREATIVE  
RESEARCH THOUGHTS (IJCRT)**  
An International Open Access, Peer-reviewed, Refereed Journal

## A SURVEY ON INTEGRATED SYSTEMS TO PROVIDE HEALTHCARE FOR EMERGENCY PATIENT

<sup>1</sup>Rewa Desale <sup>2</sup>Kunshboo Chandhari <sup>3</sup>Harshada Pawar <sup>4</sup>Arati Patil <sup>5</sup>Bhaskar Nandwalkar  
<sup>1</sup>B Tech Student <sup>2</sup>B Tech Student <sup>3</sup>B Tech Student <sup>4</sup>B Tech Student <sup>5</sup>Assistant Professor  
Dept. of Computer Engineering  
<sup>1</sup>SVKM's Institute of Technology, Dhule, India

**ABSTRACT:** In India getting healthcare facilities on time and in a proper way is a big issue. Asking questions to many people, by going through surveys and newspapers cutting, we analyze that emergency patient suffers a lot right from getting ambulance service till the proper healthcare facility at hospital and police station too if needed. All these problems are faced by people because there is no system that keeps track of these situations and records all data. To give a solution to all these problems, we designed an integrated system that helps the emergency patient to get ambulance services on time by tracking all ambulances. Also patients get facilities at the nearest hospital and police station too if required. Common people can call ambulance according to location when needed. All this data get recorded digitally and the system will help the community.

**Keywords - Healthcare System, GPS, Bayesian Formula**

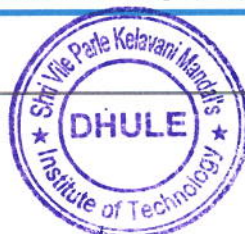
**1. INTRODUCTION**

Every day in the world, so many people die in various accidents like heart fail, sever burn, road injuries, etc. In the world population, India shares the 17.9% of the total population with second ranked and this population is facing the sever causes of the most deaths in India such as heart attack, pulmonary disease, road injury and so on<sup>[1]</sup>. India has the 145<sup>th</sup> rank among 195 countries in healthcare systems accessibility and quality.

In India, every hour 17 people die in road accidents and Uttar Pradesh is at 1<sup>st</sup> position<sup>[2]</sup>. According to Report of 2017 of Ministry of Road Transport & Highways, 1.47 lakhs people died on Indian roads in 4.64 lakhs accident, remaining injured people not get emergency care properly<sup>[3]</sup>. Not only road accidents but the heart attack fails, brain stroke, lung diseases like chronic obstructive pulmonary disease, lower respiratory infection, tuberculosis are also requires the immediate healthcare system. But because of unavailability and inaccessible services people die before reaching to hospital.

Reasons behind the unavailability and inaccessible facilities and services of the healthcare system in India are too different. As the technology developed, government adopt the change and gives the facility of the centralized control of the government ambulance for the help of the community. But the people are not respond such calls, sometimes message delivered late to those ambulance drivers and they may get late to reach at patient's place. government ambulance driver takes patient to only government hospital and this is the troublesome for the patient to survive. In such emergency situations a single minute counts so automated application must be used. Conventional method used by the people in India to provide the healthcare system as soon as possible is calling to the number 108 which is the centralized helpline number given by the government. Another method is took the patient to the hospital in private transport by the road siders or by the family members.

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## A Lifesaver: Healthcare System For Road Accident And Emergency Patient

Rewa Desale<sup>1</sup>, Khushboo Chudhari<sup>2</sup>, Harshada Pawar<sup>3</sup>,  
Arati Patil<sup>4</sup>, Bhushan Nandwalkar<sup>5</sup>

<sup>1</sup>Department of Computer Engineering, SKKM's Institute of Technology, India

<sup>2</sup>Department of Computer Engineering, SKKM's Institute of Technology, India

<sup>3</sup>Department of Computer Engineering, SKKM's Institute of Technology, India

<sup>4</sup>Department of Computer Engineering, SKKM's Institute of Technology, India

<sup>5</sup>Department of Computer Engineering, SKKM's Institute of Technology, India

**Abstract.** Healthcare emergency becomes risky when the emergency patients won't get healthcare facility in time and in a proper way. Surveys done by private NGOs, the reports generated by government proves that people/citizen of India won't get healthcare facility in time because of an awareness about doctor's list, hospitals services. According to various articles published by newspapers and news shown by electronic media, we observed that people faced issues to get access to these facilities and this is one of the main reasons behind the death. To overcome the problem faced by an emergency patient from getting ambulance service till the acceptance of the patient by the hospital, we proposed a solution which helps patient to get the healthcare service in time using our website, patient or his/her caretaker may contact to the nearest hospital for the service otherwise if road accident happen to car then system is design to sense the accident and contact the nearest ambulance service. Our website contains nearest doctors', hospital's list, phone numbers, mobile numbers, bed available, services provided by the hospital, total expenses required, etc. All events will be recorded by the system and this helps to strengthen the healthcare system and the needy one.

**Keywords:** GPS, Haversine Formula, Node MCU, Gyro sensor, Smart Phone, Blynk, Healthcare.

Date of Submission: 25-05-2021

Date of Acceptance: 09-06-2021

### 1. Introduction

Each day there are almost 150000 people die in the world [7]. Reasons behinds the deaths are various diseases or road accidents or any other incident. But most of the people die because of diseases and road accidents. The diseases that can cause death are – cancer, cardiovascular diseases, respiratory diseases, dementia, diarrheal diseases, etc. These infection diseases are very fatal in nature. Not only diseases but road accidents are also the major cause of deaths.

In India, out of 1000 people, 7.3 people are dying per day [9]. According to the statistics generated by the Indian government, the national newspaper Times of India done the analysis and according to them, there are top 10 reasons behind this huge number of death rate, out of which heart attack failure is at 1<sup>st</sup> position. Likewise lung diseases, stroke, pneumonia, diarrheal diseases, tuberculosis, diabetes, problems regarding kidney, preterm birth, and road accidents [8]. Since 2020, covid-19 is also one of the reason behind deaths. These diseases are categories into types – communicable and non-communicable diseases. In the case of communicable diseases, the patient can express the pain that they are feeling. But this is not possible in the case of non-communicable diseases and this is very risky because the person who suffers is not able to take the help of service or call the service. When such a situation occurs every patient requires immediate help from the healthcare system. Because of inaccessible as well as unavailability of healthcare services people won't get proper medical facilities and they may die before reaching the hospital.

In India, unavailability, as well as the inaccessibility of resources, is a big issue. Technology is enhancing day by day and becoming a part of each and every field. As the government of India adopt the technology and did the changes in the healthcare system too. They make centralized control of ambulance service by connecting all government ambulance to a single system to help the community. But the rate of illiteracy regarding technology in society is high and people won't know how to use it. People involved in the healthcare system won't reply when common people want to reach out to them. When people call for ambulance service they won't reply to their calls. Otherwise, the message delivers late to the authentic person and the ambulance gets late to reach the desired destination. If the ambulance came then the patient is taken to the government hospital for most of the time instead of taking them to the nearest hospital. This can cause an



**Certificate**

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**9. Patent**

- Department file patent of this project in month of March 2022.
- Principal, HOD of Computer Engg. and all staff congratulate the team for patent filed.

IITE Code: 5449

**SVKM**

**Shri Vile Parle Kelavani Mandal's  
INSTITUTE OF TECHNOLOGY, DHULE**

Approved by AICTE, New Delhi, Govt. of Maharashtra and Affiliated to DBATU, Lonere  
Behind Gurudwara, Mumbai-Agra Highway, Dhule 424001.

**Congratulations!**



**Miss. Reva Desale**  
Alumni- Dept. of Computer Engg 2021

Published Patent on  
**Integrated System To Provide The Healthcare For Emergency Patient.**  
Under "Project Based Learning"

*Congratulation & Best Wishes.*

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#### Application Details

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APPLICANT NAME	1 . Mr. Bhushan Nandwalkar 2 . Dr. Makrand Shahade 3 . Mr. Khalid Alfatmi 4 . Mr. Tukaram Gawali 5 . Mr. Ashish Awate 6 . Ms. Vijaylaxmi Bittal 7 . Ms. Mayuri Kulkarni 8 . Mr. Umakant Mandawkar 9 . Mr. Ranjit Fule 10 . Ms. Rewa Desale
TITLE OF INVENTION	INTEGRATED SYSTEM TO PROVIDE THE HEALTHCARE FOR EMERGENCY PATIENT
FIELD OF INVENTION	COMPUTER SCIENCE
E-MAIL (As Per Record)	dr.bksarkar2003@yahoo.in
ADDITIONAL-EMAIL (As Per Record)	dr.bksarkar2003@gmail.com
E-MAIL (UPDATED Online)	
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## 10. Student Profiles:

### 1. Rewa Desale

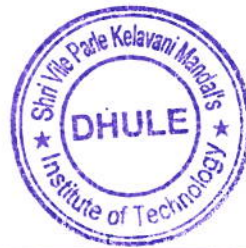


1. Name :Rewa Narendra Desale
2. Date of Birth :5 December 1999
3. Gender : Female
4. Permanent Address :20 B, Nutan Krushi Nagar, Near Malaria Office, Sakri Road, Dhule
5. E-Mail : rndesale99@gmail.com
6. Mobile/Contact No. :7420851677
7. Placement Details :Tata Consultancy Services, Accenture, Capgemini
8. Paper Published : 2

### 2. Khushboo Chaudhari



1. Name :Khushboo Kiran Chaudhari
2. Date of Birth :12 December 1999
3. Gender : Female
4. Permanent Address :House No.2344, Lane No.6, Dhule
5. E-Mail : chandharikhushboo12@gmail.com
6. Mobile/Contact No. :9579476074
7. Placement Details :Accenture
8. Paper Published : 2



### 3. Harshada Pawar




1. Name :Harshada Vilas Pawar
2. Date of Birth :23 February 1999
3. Gender : Female
4. Permanent Address :2, D.D.C.C. bank colony, near tulja bhavani nagar, Dhule
5. E-Mail : pawarharshada526@gmail.com
6. Mobile/Contact No. :9764035443
7. Placement Details :Tata Consultancy Services
8. Paper Published :2

### 4. Aarti Patil



1. Name :Arati Dhanraj Patil
2. Date of Birth :6 February 1998
3. Gender : Female
4. Permanent Address :Plot No.8, Shani Mandir Chowk Fagne, Dhule
5. E-Mail : artipatil702@gmail.com
6. Mobile/Contact No. :9373248040
7. Placement Details :NA
8. Paper Published :2

  
Prof. Bhushan Nandwalkar  
PRBL, COORDINATOR

  
Dr. Makand Shahade  
HOD, Dept. of Comp. Engg  
H.O.D. Computer Dept.  
SVKM's Institute of Technology, Dhule

