Alard Charitable Trust's

Alard College of Engineering & Management

DEPARTMENT OF COMPUTER ENGINEERING

SE A.Y.:2021-22 TERM-II

Sr. No.	Name of Students	Groups	Project Topic Name
1	KANDHARE NEHA	1	Library Management System in C++
2	PARGE SHREEDHAR		
3	VARAD PAWALE		
4	SONAR YASHASHRI		
5	NAGARSE ROHIT	2	Batt Velocity (Website Development)
6	KULKARNI VARAD		
7	BIRADI SANDIP		
8	BHAD PRAJWAL		
9	WAKURE VIJAY		
10	CHOUDHARY SAVITA	3	Face Mask Detection
11	KALE SEJAL		
12	NIKAT DNYANESHWARI		
13	DEVKAR SAKSHI		
14	AKASH VISHWKARMA	4	Sports Club using Python
15	PRABHUNE DEVANG ABHAY	5	Tic Tac Toe using JAVA Scripts
16	MAHESH AKHILESH UPADHYAY		
17	NERKAR SHREYASH ANIL		
18	AKHIL AHMED		
19	BEDRE NAMRATA SUNIL	6	Flappy Bird using Python
20	PATIL VAISHNAVI VISHWAS		
21	BANSODE MEGHMALA YUVRAJ		
22	SNEHAL PRAKASH JAGDALE		
23	KALE SANKET BAPU		
24	MUSALE ABHISHEK KHANDU	7	Conversion of Voice into Text
25	BANGAL SANKALP K.		
26	YADAV YADUNATH AJAY		
27	THORAT AARTI TUKARAM	8	Fire Alarm
28	NIGADE SRUSHTI VIJAY		
29	YADAV HARSHAD ASHOK		
30	PAWAR DHANRAJ ANANDA		
31	KANAME HARIOM VENKATRAO	9	XO Tic Tac Toe in PYTHON
32	GIRGUNE VAIBHAV SANTOSH		
33	MAYUR SUNIL SHINDE		
34	GAVHANE ABHISHEK ASHOK		
35	ASHISH BABURAO BHUSAGARE		
36	SAWALKAR SNEHA GANESH	10	Phonebook Application using C++
37	AWATE VAISHNAVI DNYANESHWAI		
38	DHAMANE PRACHI VIJAY		
39	BIJAGARE VIVEK VIJAY		
40	GAVHANE KUNAL DATTU	11	Portfolio Website (Website Development)
41	PIYUSH DIGAMBAR PATIL		
42	KADAM PRADEEP NIVRATIRAO		
43	TALEKAR KIRAN BALU		

44	PAREKAR SAKSHI SHIVAJI	12	Mini Bank Management System
45	KHANDAGALE VAISHNAVI HANAM		
46	SHRADDHA AMBADAS GHAGARE		
47	CHAVAN PRATHAMESH LAXMAN	13	Miwok Android Application
48	PATIL SHAILESH SATISH		
49	ADITYA KARANDE		
50	TODKAR PRATIK KISAN		
51	SHUBHANKAR SHIRISH VELAPURI		
52	GHORPADE ROHAN RAJENDRA	14	Random Password Generator
53	SAMARTH PRAMOD TIWATANE		
54	ADSUL GANESH SHIVAJI		
55	SHUBHAM ASHOK ZAMBRE		
56	OMKAR RAJENDRA GAIKWAD	15	OTP Verification System Using PYTHON
57	DHUMAL VISHAL BALAJI		
58	SHINDE DHIRAJ RAJENDRA		
59	OMKAR RAVINDRA DHEKALE		
60	ADITYA SURESH DESHMUKH	16	GYM Management System
61	AJAGEKAR SHREYAS SUNIL		
62	BHAVIK VINOD PATIL		
63	DESHMUKH ROMIL ANIL		
64	GAIKWAD RHUSHIKESH TANAJI	17	Student Management System
65	KHANDAGALE MAYUR SANJAY		
66	PRASHAD SAURABH DHARMARAJ		
67	VINOD GUPTA		
68	KATBANE OMKAR SANJAY		
69	DHENDE DEEP BALAJI	18	OSCORP Energy Manufacuring of Lithium
70	HANNURE SHAHID KHAJABHAI	19	GUI Based PC Utility Tool

Subject Teacher

For

HOD

Head of Department
Computer Engineering
[illegible] COLLEGE OF ENGINEERING
& MANAGEMENT, MAPUSA
At No 56, Rajiv Gandhi Infotech Park,
Hinjewadi, Pune [illegible]

Alard Charitable Trust
ALARD COLLEGE OF ENGINEERING AND MANAGEMENT
We are the Way Finder
S.No. 50, Marunje, Rajiv Gandhi InfoTech Park, Pune-411 057
Ph.No:020-66523701 Website: www.alardinstitues.com
Department of Civil Engineering

B.E. Civil (Project Phase-I & II) 2021-22

SavitribaiPhule Pune University
Alard College of Engineering and Management
Academic Year 2021-22 BE Student Project List
Civil Engineering Department 2021-22

Sr. No	GROUP NO	Student Name	Name of Topic	Name of Guide	Remark(In-house/Sponsor)
1	1	Faisal Khan	BACTERIAL CONCRETE AND IT'S EFFECT	Prof .Rachana Vaidya	In-house
2		Juhi Chavan			
3		Omkar Khumbhar			
4		Sayali Nalawade			
5	2	Mahesh Dahatonde	USE OF NON-BIODEGRADEBLE WASTE BITUMINUS	Prof .Rachana Vaidya	Sponsor
6		Saurabh gaware			
7		Dhiraj Patil			
8		Shubham Dhake			
9	3	Akash Auti	SAW DUST IN CONSTRUCTI	Prof .Rachana Vaidya	Sponsor
10		Sukanya Satpute			
11		Sayali Davane			
12	4	Rahul Londhe	DESIGN OF SEWAGE TREATMENT PLANT	Prof.Rachana Vaidya	In-house
13		Survesh khule			
14		Vishal Kharche			
15		Hummer Mansuri			
16	5	Shubhangi bodke	DOMESTIC SAND FILTER USING COCONUT SHELL AS FILTER MEDIA	Prof.Rachana Vaidya	In-house
17		Sandesh Kedar			
18		Saurabh Singh Yadav			
19		Ajay tawale			
20	6	Saurabh Jadhav	MAKING ECONOMIC TILES USING PLASTIC WASTE	Prof.Rachana Vaidya	In-house
21		Sujeet gupta			
22		Pramod Patil			
23		Ravindra sangale			
24	7	Mohit Thakur	U BOOT TECHNOLOGY	Prof.Rachana Vaidya	In-house
25		Omkar Chinchwade			
26		Akshay Jadhav			
27	8	Prasad Sawant	DESIGN OF MOVABLE DIVIDER	Prof.Rachana Vaidya	In-house
28		Mayur Borate			
29		Omkar kautkar			
30		Ritesh lokhande			
31	9	Shubham Bedke	EFFECT OF MAGNETIIC WATER ON CONCRETE PARAMETERS	Prof.Rachana Vaidya	In-house
32		Sanket Bhondve			
33		Omkar Bhondve			
34		Akash Bodke			

Prof.Rajasree Saha
Project Co-coordinator

Prof .Rachana K Vaidya
HOD
Head Of Department
Civil Engineering
Alard College Of Engineering & Management, Marunji - 411057

ALARD COLLEGE OF ENGINEERING & MANAGEMENT PUNE

203152: Project Based Learning

Teaching Scheme Practical : 04 Hrs/ Week	Credits PR:02	Examination Scheme [Marks] Term Work: 50 Marks

Preamble: For better learning experience, along with traditional classroom teaching and laboratory learning, project-based learning has been introduced to motivate students to learn by working in a group cooperatively to solve a problem. Project-Based Learning (PBL) is a student-centered and experimental approach to education promoting 'deeper learning' through active exploration of real-world problems and challenges. A central goal of PBL is to facilitate the deeper learning process and support students' acquisition of complex cognitive competencies, e.g., rigorous content knowledge and critical thinking skills. The PBL engages students in the problem definition, design process, contextual understanding, and systems thinking approaches. In the PBL approach, learning based on memorization is de-emphasized and more emphasis is given on understanding and application of engineering design principles. Because of frequent assessments throughout the course, plagiarism can be more easily controlled.

Course Objectives: Objectives of this course are to

1. Impart technical knowledge and skills, and develop deeper understanding to integrate knowledge and skills from various areas.
2. Build critical thinking, problem-solving, communication, collaboration and creativity, and innovation amongst students
3. Make students aware of their own academic, personal, and social developments.
4. Develop habits of self-evaluation and self-criticism, against self-competency and trying to see beyond own ideas and knowledge

Course Outcomes: At the end of this project-based learning, students will be able to

CO1: Identify, formulate, and analyze the simple project problem.

CO2: Apply knowledge of mathematics, basic sciences, and electrical engineering fundamentals to develop solutions for the project.

CO3: Learn to work in teams, and to plan and carry out different tasks that are required during a project.

CO4: Understand their own and their team-mate's strengths and skills.

CO5: Draw information from a variety of sources and be able to filter and summarize the relevant points.

CO6: Communicate to different audiences in oral, visual, and written forms.

Procedure: A group of 4-5 students will be assigned to a faculty member called a mentor. Based on the engineering knowledge of a group and societal and industry problems, the mentor has to guide a group to identify project problems and plan the work schedule. Here, the expected outcomes of the project must be noted. The complete work-plan should be divided in the form of the individual tasks to be accomplished with targets. Weekly review of the completed task should be taken and further guidelines are to be given to a group. The final activity will be presenting the work completed and submitting the report. A group should be promoted to participate in a competition or write a paper.

A problem needs to refer back to a particularly practical, scientific, social, and/or technical domain. The problem should stand as one specific example or manifestation of more general learning outcomes related to knowledge and/or modes of inquiry. There are no commonly shared criteria for what constitutes an acceptable project. Projects vary greatly in the depth of the questions explored, the clarity of the learning goals, the content, and the structure of the activity. It may have

- ✓ A few hands-on activities that may or may not be multidisciplinary.
- ✓ Use of technology in meaningful ways to help them investigate, collaborate, analyze, synthesize, and present their learning.
- ✓ Activities on solving real-life problems, investigation /study, and writing reports of in-depth study, fieldwork.

Assessment:

The department/mentor is committed to assess and evaluate both students' performance and course effectiveness. The progress of PBL is monitored regularly every week. During the process

of monitoring, continuous assessment and evaluation the individual and team performances are to be measured by supervisor /mentor and authorities.

Students must maintain an institutional culture of authentic collaboration, self-motivation, peer-learning, and personal responsibility. The institution/department should support students in this regard through guidance/orientation programs and the provision of appropriate resources and services. Supervisor/mentor and students must actively participate in the assessment and evaluation processes. Groups may demonstrate their knowledge and skills by developing a solution to the problem, public product, and/or report and/or presentation.

- ✓ Individual assessment for each student (Understanding individual capacity, role, and involvement in the project)
- ✓ Group assessment (roles defined, distribution of work, intra-team communication and togetherness)
- ✓ Documentation and presentation

Evaluation and Continuous Assessment:

It is recommended that all activities are to be recorded in a PBL workbook regularly, regular assessment of work to be done and proper documents are to be maintained at the department level by both students as well as a mentor. Continuous Assessment Sheet (CAS) is to be maintained by all mentors/department. Recommended parameters for assessment, evaluation, and weightage are as follows.

- ✓ Idea Inception **(5%)**
- ✓ Outcomes of PBL/ Problem Solving Skills/ Solution provided/ Final product **(50%)** (Individual assessment and team assessment)
- ✓ Documentation (Gathering requirements, design and modeling, implementation/execution, use of technology and final report, other documents) **(25%)**
- ✓ Demonstration (Presentation, User Interface, Usability, etc.) **(10%)**
- ✓ Contest Participation/ publication **(5%)**
- ✓ Awareness /Consideration of -Environment/ Social /Ethics/ Safety measures/Legal aspects **(5%)**
- ✓ PBL workbook will serve the purpose and facilitate the job of students, mentors, and project coordinator. This workbook will reflect accountability, punctuality, technical writing ability and work flow of the work undertaken

Alard college of Engineering and management

Department of Electrical Engineering

Project Based Learning

Student list (2021-22)

Sr No	Topic Name	Group Students Name
1	Smart Grid System	1. Pradnya Thorat 2. Prachi Mohan Jadhav 3. Pratiksha Nikam
2	Field oriented control of AC electric machine	1. Akash Kumar 2. Sanjana Darade 3. Prajakta Walake 4. Akash Mane
3	Repair and Maintenance of hotline	1. Sanjana Jadhav 2. Prajakta Kumbar 3. Shubhangi Kumbhar 4. Gurudas Pisal
4	Temperature controlled DC fan using Thermistor	1. Bhandewar Sandeep 2. Nalabale Satish 3. Shinde Shweta 4. Walke Rasika 5. Yadav Ashwini
5	Electric vehicles	1. Aditya Dalavi 2. Ankita Jadhav 3. Rishikesh Asabe 4. Dipraj Panchal
6	Mat lab based classical optimization of transmission losses	1. Nilima Bachav 2. Sayali Pagar

ALARD COLLEGE OF ENGINEERING & MANAGEMENT * PUNE * EN 6325

Head of Department
Electrical Engineering
ALARD COLLEGE OF ENGINEERING
& MANAGEMENT, MARUNJE
Sr. No.50, Rajiv Gandhi Infotech Park,
Hinjewadi, Pune- 411 057

Alard College of Engineering & Management
Department of Electrical Engineering

SE2019 T-I AY: 2021-22

Subject:- PBL

Name of Faculty:- Mukund Gidd

No. of lectures:-		4hr	4hr	2H	4H	4H	2H	4H	4H	4H	2H	1H						
Roll No	Name of Student	24/3	5/4	12/4	8/4	10/5	17/5	24/5	31/5	7/6	14/6	21/6						
1	YADAV ASWINI JAGANNATH	AB	P	P	AB	P	P	P	P	P	P	P						
2	SHINDE SHWETA SANJAY	P	P	P	P	P	P	P	P	P	P	P						
3	DARDE SANJANA BHAGOJI	P	P	P	P	P	AB	P	P	P	P	P						
4	NIKITA KIRAN MAGARE	P	P	AB	P	P	P	P	P	AB	P	P						
5	MANDAKE PRATIK JAYAWANT	P	P	P	P	P	P	P	P	P	P	P						
6	THORAT PRADNYA SANJAY	P	P	P	P	AB	P	P	P	P	P	P						
7	NIKAM PRATIKSHA RAJENDRA	P	P	P	P	P	P	AB	P	P	P	P						
8	JADHAV PRACHI MOHAN	P	P	P	P	P	P	P	P	P	P	P						
9	JADHAV ANKITA ASHOK	P	P	P	P	P	P	P	P	P	P	P						
10	MANE AYUSH JOTIRAM	AB	P	P	P	P	P	P	P	P	P	P						
11	KUMBHAR PRAJAKTA DINKAR	P	P	P	P	AB	P	P	P	P	P	P						
12	PANCHAL DIPARAJ PRABHAKAR	P	P	P	P	P	P	P	P	P	P	P						
13	DALAVI ADITYA ANIL	P	P	AB	P	P	P	AB	P	P	P	P						
14	KHADEKAR SNEHA SUDHAKAR	P	P	P	P	P	P	P	P	AB	P	P						
15	GAWAS PRAGATI DNYANESHWAR	P	P	P	P	P	P	P	P	P	P	P						
16	RAHATE MANSI KISHOR	P	P	P	AB	P	AB	P	P	P	P	P						
17	WALKE RASIKA SANTOSH	P	P	P	P	P	P	P	P	P	P	P						
18	UMA VIJAY LOHAR	P	P	P	P	P	P	P	P	P	P	P						
19	JADHAV SANJANA DEELIP	AB	P	P	P	P	P	P	P	P	P	P						
20	BHANDEWAR SANDEEP PANDHARINATH	P	P	AB	P	P	P	P	P	P	P	P						
21	BACHHAV NILIMA ASHOK	P	P	P	P	P	P	P	P	P	P	P						
22	KHAROTE VAISHNAVI GOPAL	P	P	P	P	P	P	P	P	P	P	P						
23	NALABALE SATISH SHIVAJI	P	P	P	P	P	P	P	P	P	P	P						
24	GURUDAS VASANT PISAL	P	P	P	P	P	P	P	P	P	P	P						
25	KUMBHAR SHUBHANGI SHRISHAIL	P	P	P	AB	P	P	P	P		P	P						
26	GUTTE NANDKISHOR ANANTRAO	P	P	P	P	P	P	P		P	P	P						
27	PAGAR SAYALI SANTOSH	P	P	P	P	P	P	P	AB	P	P	P						
28	VISHWAKARMA SHUBHAM VINOD	P	P	P	P	P	P	P	P	P	AB	P						
29	PRAJAKTA UTTAM WALKE	AB	P	P	P	P	P	P	P	P	P	P						
30	MONALI KRUSHNAT CHAVAN	P	P	P	P	P	AB	P	P	P	P	P						
31	ASABE RISHIKESH SAMBHAJI	P	P	AB	P	P	P	P	P	P	P	P						

32	PRAJAWAL GORE	P	P	AB	P	P	P	P	AB	P	AB	P	P					
33	AAKASH KUMAR	P	P	P	P	AB	P	P	P	P	P	P	AB	P	P	P	P	
34																		
35																		
Sign of Faculty :									Mukadd									
Sign of HOD :																		

203152 : Audit Course-III

List of three audit course is provided. Students can choose any one from 203152(A) 203152(B) and 203152(C)

203152 (A) : Solar Thermal System

Teaching Scheme	Credits	Examination Scheme [Marks]
Lectures: 2hrs/week	No credit	Grade: PP/NP Quiz and term paper

Description: The course will introduce the basics of: solar energy, availability, applications, heat transfer as applied to solar thermal systems, various types of solar thermal systems, introduction to manufacturing of the systems, characterization, quality assurance, standards, certification and economics. The following topics may be broadly covered in the classroom. The field visits will be designed for first-hand experience and basic understanding of the system elements.

Course Objective:

- To understand basics and types of solar thermal systems.
- To get knowledge of various types of concentrators.
- To make students aware of different Standards and certification for Concentrator Solar Power.

Course Outcome: Student will be able to

CO1: Differentiate between types of solar Concentrators

CO2: Apply software tool for solar concentrators

CO3: Design different types of Solar collectors and balance of plant

Course Contents:

- Sun, Earth and seasons
- Solar Radiation
- Basics of heat transfer
- Absorption, reflection and transmission of radiation
- Types of Solar thermal systems
- Basic design of different types of systems
- Applications of solar thermal systems and their economics
- Need for solar concentration
- Various types of solar concentrators
- Movement of Sun and tracking
- Control systems for solar tracking
- Concentrating solar thermal (CSP)
- Concentrating solar PV (CPV)
- Balance of plant for CSP
- Critical points in concentrating solar system installation
- Operation and maintenance of CSP
- Typical financial analysis of CSP
- Software tools for concentrating solar power
- Environmental impact assessment
- Standards and certification for CSP
- Basics of solar thermal (STH) systems
- Elements of various STH systems
- Design, materials and manufacturing of
  - Flat plate solar collector
  - Evacuated tube solar collector
  - Parabolic trough collector
  - Dish type solar concentrators
  - Concentrating PV systems
  - Balance of plant
- Manufacturing standards

- Quality assurance and standards
- Certification
- Special purpose machines and Automation in manufacturing
- Site assembly and fabrication
- Typical shop layouts
- Inventory management
- Economics of manufacturing

Assignment

- Design of solar thermal system for residential/ commercial building.

References:

1. Trainers Textbook Solar Thermal Systems Module, Ministry of New and Renewable Energy, Government of India
2. Students Workbook for Solar Thermal Systems Module, Ministry of New and Renewable Energy, Government of India

Alard College of Engineering & Management
Department of Electrical Engineering

AY 2021-22

Subject:- AC

Name of Faculty:- Kalyani Salunkhe (P Patil)

No. of lectures:-																								
Roll No	Name of Student	31/3/22	1/4/22	7/4/22	8/4/22	21/4/22	22/4/22	28/4/22	29/4/22	5/5/22	6/5/22	12/5/22	13/5/22	19/5/22	20/5/22	21/5/22	26/5/22	2/6/22	9/6/22	16/6/22	16/6/22	16/6/22	23/6/22	
1	AAKASH KUMAR	P	P	AB	P	P	AB	P	P	AB	P	P	P	AB	P	P	P	P	AB	P	P	P		
2	ANKITA ASHOK JADHAV	P	P	P	P	AB	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
3	ASABE RISHIKESH SAMBHAJI	P	AB	P	P	AB	P	P	AB	AB	P	P	P	P	P	P	P	P	P	AB	P	P		
4	BACHHAV NILIMA ASHOK	AB	P	AB	P	AB	P	P	P	P	P	P	P	P	P	P	AB	P	AB	P	P	P		
5	BHANDEWAR SANDEEP PANDHARINATH	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	AB		
6	DALAVI ADITYA ANIL	P	P	P	P	P	P	P	P	P	AB	P	P	AB	P	P	P	P	P	P	P	P		
7	DARDE SANJANA BHAGOJI	AB	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
8	DIPARAJ PRABHAKAR PANCHAL	P	P	AB	P	P	P	P	P	P	P	P	P	P	P	P	P	P	AB	P	P	P		
9	GADEKAR SNEHA SUDHAKAR	P	AB	P	P	AB	P	P	P	P	P	P	P	P	P	P	P	P	AB	P	P	P		
10	GAWAS PRAGATI DNYANESHWAR	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
11	GUTTE NANDKISHOR ANANTRAO	P	P	AB	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
12	JADHAV PRACHI MOHAN	P	P	P	P	P	P	P	P	P	P	P	AB	P	P	AB	P	P	P	P	P	AB		
13	JADHAV SANJANA DEELIP	P	P	P	P	AB	P	AB	P	AB	P	P	P	P	P	P	P	P	P	AB	P	P		
14	KHAROTE VAISHNAVI GOPAL	P	P	AB	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	AB	P	P		
15	KUMBHAR PRAJAKTA DINKAR	P	P	P	P	P	P	P	P	P	AB	P	P	P	P	P	P	P	P	AB	P	P		
16	KUMBHAR SHUBHANGI SHRISHAIL	AB	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	AB		
17	MAGARE NIKITA KIRAN	P	P	AB	P	AB	P	P	P	P	P	P	P	P	P	P	P	P	AB	P	P	P		
18	MANDAKE PRATIK JAYAWANT	P	P	P	P	P	P	P	P	P	P	P	P	AB	P	P	P	P	P	P	P	P		
19	MANE AYUSH JOTIRAM	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
20	MANSI KISHOR RAHATE	P	P	P	P	P	P	P	P	P	P	P	AB	P	P	P	P	P	P	P	P	P		
21	MONALI KRUSHNAT CHAVAN	P	P	P	P	P	P	P	P	P	P	P	AB	P	P	P	P	P	P	AB	P	P		
22	NALABALE SATISH SHIVAJI	P	P	P	P	P	P	P	AB	P	P	P	P	P	AB	P	P	P	P	P	P	P		
23	NIKAM PRATIKSHA RAJENDRA	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
24	PAGAR SAYALI SANTOSH	P	P	P	P	AB	P	AB	P	P	P	P	P	P	P	P	P	P	AB	P	P	AB		
25	PISAL GURUDAS VASANT	P	P	AB	P	AB	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
26	SHINDE SHWETA SANJAY	P	P	P	P	P	P	P	AB	P	AB	P	P	P	P	P	P	P	P	P	P	P		
27	THORAT PRADNYA SANJAY	AB	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
28	UMA VIJAY LOHAR	P	P	P	P	P	P	P	P	P	P	AB	P	P	P	P	P	P	P	P	AB	P		
29	VISHWAKARMA SHUBHAM VINOD	P	P	AB	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
30	WALKE PRAJAKTA UTTAM	P	P	P	P	P	P	AB	P	P	P	P	P	P	P	P	P	P	AB	P	P	P		
31	WALKE RASIKA SANTOSH	P	P	P	P	P	P	P	P	P	P	P	AB	P	P	P	P	P	P	P	P	P		
32	YADAV ASHWINI JAGANNATH	P	P	P	P	AB	P	P	P	P	P	P	AB	P	P	P	P	P	P	P	AB	P		
33	Parajwal Chore	P	AB	P	P	P	P	AB	P	P	P	AB	P	P	P	P	AB	P	P	P	AB	P		
34																								
35																								
Sign of Faculty :		(P Patil)	(P Patil)	(P Patil)	(P Patil)	(P Patil)	(P Patil)	(P Patil)																
Sign of HOD :																								

203153: Audit Course-IV

List of three audit course is provided. Students can choose any one from 203153(A) 203153(B) and 203153(C)

203153(A): Solar Photovoltaic Systems

Teaching Scheme	Credits	Examination Scheme [Marks]
Lectures: 2hrs/week	No credit	Grade: PP/NP Quiz and term paper

Prerequisite: Completion of FE or equivalent

Description: The course will introduce the basics of: solar energy, availability, semiconductors as photovoltaic convertors and solar cells, applications of photovoltaic, various types of solar photovoltaic systems, and introduction to manufacturing of the systems, characterization, quality assurance, standards, certification and economics. The following topics may be broadly covered in the classroom. The practical will be designed for basic understanding of the system elements.

Course Objective:

- To learn Solar PV system and its appliances
- To get knowledge of balance of PV system, batteries, inverters etc.
- To understand grid tied SPV solar plants

Course Outcome: Students will be able to

CO1: design of Solar PV system for small and large installations

CO2: handle software tools for Solar PV systems

Course Contents:

- Physics of photovoltaic (PV) electricity
- Photodiode and solar cell
- Solar radiation spectrum for PV
- Types of solar cell and comparison
- Introduction to various types of solar module manufacturing
- Basic system design and economics
- Types of systems
- Common applications of solar PV
- Introduction to solar PV (SPV) systems
- SPV appliances
- Small capacity SPV power plants
- Grid tied SPV power plants
- Large scale SPV power plants
- Balance of system
- Solar inverters
- Batteries
- Financial modelling of SPV
- Operation and maintenance of SPV
- Software tools for SPV
- Environmental impact assessment
- Standards and certification for SPV
- Basics of SPV systems
- Elements of SPV appliances and power plants Procurement versus production
- Bought-outs, assemblies, sub-assemblies
- Manufacturing and assembly
- Manufacturing standards
- Quality assurance and standards
- Certification
- Special purpose machines and Automation in manufacturing
- Site assembly and fabrication

- Typical shop layouts
- Inventory management
- Economics of manufacturing

Practical:

- PV characterization
- Batteries and energy storage
- PV system design

Assignment

- Design of solar PV system for department / college.

References:

[1] A.S.Kapur -A Practical Guide for Total Engineering of MW capacity Solar PV Power Project
[2] Solanki C.S- Solar Photovoltaic Technology and Systems: A Manual for Technicians, Trainers and Engineers- PHI
[3] Solanki C.S- SolarPhotovoltaics - Fundamentals, Technologies and Applications- PHI
[4] S. Sukhatme -Solar Energy : Principles of Thermal Collection and Storage- McGraw Hill

A PROJECT REPORT
ON

"GREEN GUARDIAN"

SUBMITTED IN THE PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF

BACHELOR OF COMPUTER ENGINEERING

SUBMITTED BY

NEHA SUTAR	EXAM NO: 72007317M
MAYUR SHELKE	EXAM NO: 72007315E
JATIN GODHWANI	EXAM NO: 72014418D
KUNDAN TENDOLKAR	EXAM NO: 72007320M

UNDER THE GUIDANCE OF
PROF. PRIYADARSHANI DOKE

DEPARTMENT OF COMPUTER ENGINEERING
ALARD COLLEGE OF ENGINEERING AND MANAGEMENT, PUNE
SAVITRIBAI PHULE PUNE UNIVERSITY

2021-2022

A PROJECT REPORT
ON

"Green Guardian"

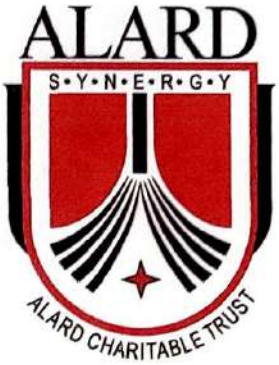
SUBMITTED IN THE PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE AWARD OF THE DEGREE
OF

BACHELOR OF COMPUTER ENGINEERING

SUBMITTED BY

Neha Sutar	Exam No: 72007317M
Mayur Shelke	Exam No: 72007315E
Jatin Godhwani	Exam No: 72014418D
Kundan Tendolkar	Exam No: 72007320M

Under the Guidance of
Prof. Priyadarshani Doke



DEPARTMENT OF COMPUTER ENGINEERING
ALARD COLLEGE OF ENGINEERING AND MANAGEMENT, PUNE

SAVITRIBAI PHULE PUNE UNIVERSITY
2021-2022

ALARD
S·Y·N·E·R·G·Y
ALARD CHARITABLE TRUST

CERTIFICATE

This is to certify that the project report entitles

"Green Guardian"
Submitted by

Neha Sutar	Exam No: 72007317M
Mayur Shelke	Exam No: 72007315E
Jatin Godhwani	Exam No: 72014418D
Kundan Tendolkar	Exam No: 72007320M

is a bonafide student of this institute and the work has been carried out by him/her under the supervision of **Prof. Priyadarshani Doke** and it is approved for the partial fulfillment of the requirement of Savitribai Phule Pune University, for the award of the degree of **Bachelor of Engineering (Computer Engineering)**.

(Prof. Priyadarshani Doke)
Internal Guide
Dept. of Computer Engg.

(Prof. Priyadarshani Doke)
Head of Dept.
Dept. of Computer Engg.

Head of Department
Computer Engineering
ALARD COLLEGE OF ENGINEERING
& MANAGEMENT, MARUNJE
Sr No.50 Rajiv Gandhi Infotech Park
Hinjewadi Pune 411 057

for

(Dr. K. D. Sapate)
Principal,
Alard College of Engineering, Pune

Place: Pune.
Date : 27/5/22

PRINCIPAL
Alard Charitable Trust's
Alard College of Engineering
And Management
Marunjee, Pune -411057

COLLEGE OF ENGINEERING & MANAGEMENT
EN 6325
ALARD PUNE

Acknowledgments

Efforts have been taken in this project. However, it would not have been possible without the kind support and help of many individuals and organizations. We would like to extend our sincere thanks to all of them.

We are highly indebted to ***Prof. Priyadarshani Doke*** *for his guidance and constant supervision as well as for providing necessary information regarding the project & also for their support in completing the project.*

We would like to express our gratitude towards my parents & member of the Computer Department of Alard College of Engineering, Pune for their kind cooperation and encouragement which help us in the completion of this project.
We would like to express our special gratitude and thanks to All other Professors in the Department for giving us such attention and time.

Our thanks and appreciations also go to our colleagues in developing the project and people who have willingly helped us out with their abilities.

Last but not the least, we are grateful to all our friends and our parents for their direct or indirect constant moral support throughout the course of this project.

Ms. Neha Sutar
Mr. Mayur Shelke
Mr. Jatin Godhwani
Mr. Kundan Tendolkar

(B.E. Computer Engg.)

Abstract

The identification of plant disease is the premise for preventing plant diseases efficiently and precisely. With the rapid development of smart farming, the identification of plant disease will become digitalized and data-driven, enabling advanced support, smart analyses, and planning. This project proposes a model of plant disease detection and solution based on deep learning, which improves accuracy, training, and provides a solution to said disease. We are using the deep learning-based approach for image recognition to detect plant diseases. We have examined the main Architecture of the Neural Network: Convolution Neural Network. This model examines diseases like Black Rot, Cedar Apple Rust, Leaf Blight, etc. The current results show the accuracy of the method around to be very high, which is better than traditional methods, thus reducing the influence of disease on agricultural production and being favorable to the sustainable development of agriculture. Therefore, the deep learning algorithm proposed in the project is of great significance to intelligent agriculture, ecological protection, agricultural production and general convenience.

Keywords: Plant Disease Recognition, Deep Learning, Neural Network, Convolutional Neural Network, Computer Vision, etc.

Contents

List of Figures

List of Tables

CHAPTER 1
INTRODUCTION

1.1 Overview

India is a country which highly depends on agriculture. Today's better technologies have enabled people to provide the adequate nutrition and food needed to meet the needs of the world's growing population. If we talk about India unequivocally, majority of the Indian people are directly or by a stretch related to the cultivating territory, which remains the greatest region in the country. If we explore the broader Picture According to Research Conducted, overall yield creation can be augmented at any rate half putting more weight on the inside and out pushed and cultivating Sector. "Green Guardian" is a web-based system that will be developed using Deep Learning algorithms/techniques. The purpose of building this project is to create a system using a technology that can allow the users to detect whether their plant has disease or not and provide the remedy for it at their own convenience. In Recent Years, Deep Learning has led to great performance in various fields like Image Recognition, Speech Recognition, and Natural Language Processing. The use of the Convolutional Neural Network in the problem of Plant Disease Detection has shown good results.

1.2 Motivation

In Indian economy, most of the rural households depends on agriculture for their livelihood but leaf infection phenomena cause the loss of major crops resulting in economic loss. So they should be tested via non-destructive techniques. For this reason, it is very important to determine the disease at early stage and take necessary precautions to prevent ruining of crops or spreading to other crops. Therefore, this system is suitable for farmers or simply those who want to detect disease in plants. The agronomic requirements though in radically different ways to those currently used. This has given rise to many new chances to service. Hence, classification of leaf disease is necessary in evaluating agricultural produce, increasing market value and meeting quality standards.

1.3 Problem Definition

Early plant disease detection plays a significant role in agriculture field. Traditional method for detecting plant disease is a simple observation with the naked eyes of consulting experts which is cost and time taking process (disease detection might be accurate or may be uncertain). So, this system will help to overcome the traditional drawbacks.

1.4 Objectives

- To develop a plant disease detection system using convolutional neural network algorithm and ResNet model.
- To provide solutions for that particular disease which includes description of disease, pesticides to be used, how to identify and manage disease in future.

1.5 Project Scope

- Prevent diseases on plants for botanists.
- Help pesticide companies in predicting new pesticide solutions (pesticide/fertilizer suggestions).
- Can be used by people who grow plants as a hobby.

1.6 Limitations

- At a time, you can only upload one leaf image for detection.
- Dataset contains limited no. of plants.
- Detection model can only detect plant diseases which are in dataset.

1.7 Methodologies of Problem Solving

- **Image Acquisition -**
  The image taken from a controlled environment is converted from optical format (real-world image) into numerical data which later be manipulated by the model for prediction.
- **Data Preprocessing -**
  The collection of data is the initial step. The dataset we worked on consists different types of plants and their diseases. In order to exploit this model under a real-time scenario, there are thousands of plants images we're dealing with, such as Tomato, Grapes, Apples, Cherry, Strawberry, Potato, etc. We are using New Plant Dataset and it consists 87,000 Images. It also consists healthy and unhealthy plant images.
- **Image Segmentation -**
  Image segmentation is the task of clustering parts of an image together that belong to the same object class. This process is also called pixel-level classification. In other words, it involves partitioning images into multiple segments or objects.
- **Feature Extraction -**
  Feature extraction is a dimensionality reduction process, in which, an initial set of the raw data is divided and reduced to more manageable groups. So, when you want to process it will be easier.
- **Transfer Learning -**
  The reuse of a pre-trained model on a new problem is called "Transfer Learning". This "Transfer Learning" is an optimization technique that improves the performance when modeling the second task. The improvement of learning the new task is done through the concept of learning over a related task that

has already been learned on. We are using the ResNet 152 application provided by Keras API as the model of our choice for Transfer Learning. ResNet is a pre-processed deep neural network consisting of up to 152 layers. The learning in it is done by the unused representation functions instead of examining the signal representation directly. ResNet introduces "skip (or shortcut) connection" to fit the input from the previous layer to the next layer without any modification of the input and later a fully connected/ dense layer is added according to its given output in model.