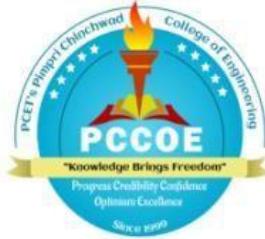


**PCET's
PIMPRI CHINCHWAD COLLEGE OF ENGINEERING
Department of Computer Science and Engineering (AI & ML)**



**B.Tech. Major Project (Scheme A)
Project Work Book**

Academic Year: 2025-2026

Project ID:

Project Title:

Area of Project:

Sponsored by:

Internal Guide:

External Guide:

Name of the

Students:

1.

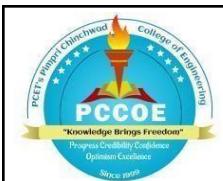
2.

3.

4.

INDEX

Sr. No.	Contents	Page No.
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3	Guidelines for Project Work	7
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**Pimpri Chinchwad Education Trust's
Pimpri Chinchwad College of Engineering
Department of Computer Science and Engineering (AI &
ML)**

Project Group Information

Project ID:

Project Title:

Sr. No	PRN	Name of the Student	Mobile No	Email ID	Internship Detail (Company Name)	Placement detail (Company Name & Offered Package)
1.						
2.						
3.						
4.						

Name of Internal Guide:

Mobile No.

Name of External Guide:

Mobile No.

Email:

Email

 <p>Pimpri Chinchwad Education Trust's Pimpri Chinchwad College of Engineering Department of Computer Science and Engineering (AI & ML)</p>	<p>Course Outcomes, Program Outcomes, Program Specific Outcomes and their Mapping</p>
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Course Objectives

1. To develop problem solving ability by following Software Development Life Cycle meticulously.
2. To review literature for project work from appropriate sources such as books, manuals, research journals and from other sources, and in turn increase analytical skills.
3. To design and implement real world applications using available platforms.
4. To validate and evaluate the work undertaken.
5. To work in a team with individual contribution for the project development.
6. To prepare good quality technical reports based on the selected project statement.

Course Outcomes

CO1: Analyze the literature for various techniques and applications to find the gap and feasible solution.

CO2: Design real world applications considering emerging areas in technology.

CO3: Develop an application by considering actual requirements and social, environmental, ethical and legal issues.

CO4: Test and evaluate the model results to develop a probable solution.

CO5: Work in team with individual contribution for the project development.

CO6: Prepare good quality technical reports and present it effectively.

Program Educational Objectives

PEO	Statement of PEO
PEO1	Graduates of the program will demonstrate world-class expertise in AI and ML and emerging technologies which help them to stand in crowd and grow careers in the technological era.
PEO2	Graduates of the program will exhibit technical competency with learning attitude.
PEO3	Graduates of the program will practice their professional career with ethical and social responsibilities.
PEO4	Graduates of the program will demonstrate research aptitude and innovation throughout their career.

Program Outcomes

PO	Statement of PO
PO1	Engineering Knowledge: Apply knowledge of mathematics, natural science, computing, engineering fundamentals and an engineering specialization as specified in WK1 to WK4 respectively to develop to the solution of complex engineering problems.

PO2	Problem Analysis: Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions with consideration for sustainable development. (WK1 to WK4)
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PO3	Design/Development of Solutions: Design creative solutions for complex engineering problems and design/develop systems/components/processes to meet identified needs with consideration for the public health and safety, whole-life cost, net zero carbon, culture, society and environment as required. (WK5)
PO4	Conduct Investigations of Complex Problems: Conduct investigations of complex engineering problems using research-based knowledge including design of experiments, modelling, analysis & interpretation of data to provide valid conclusions. (WK8).
PO5	Engineering Tool Usage: Create, select and apply appropriate techniques, resources and modern engineering & IT tools, including prediction and modelling recognizing their limitations to solve complex engineering problems. (WK2 and WK6)
PO6	The Engineer and The World: Analyze and evaluate societal and environmental aspects while solving complex engineering problems for its impact on sustainability with reference to economy, health, safety, legal framework, culture and environment. (WK1, WK5, and WK7).
PO7	Ethics: Apply ethical principles and commit to professional ethics, human values, diversity and inclusion; adhere to national & international laws. (WK9)
PO8	Individual and Collaborative Team work: Function effectively as an individual, and as a member or leader in diverse/multi-disciplinary teams.
PO9	Communication: Communicate effectively and inclusively within the engineering community and society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations considering cultural, language, and learning differences
PO 10	Project Management and Finance: Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects and in multidisciplinary environments.
PO 11	Life-Long Learning: Recognize the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change. (WK8)

Program Specific Outcomes (PSO)

PSO	Statement of PSO
PSO 1	To develop computing solutions in specialized areas of Computer Science & Engineering such as Artificial Intelligence, Machine Learning, Deep Learning & Data Science.
PSO 2	To build skills for developing intelligent applications with professional practices in the areas of Natural Language Processing, Robotics, Security, IoT, Cloud Computing and other emerging sectors.

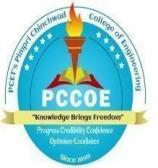
Mapping of CO with PO & PSO

CSE (AI & ML) 2024-25

Course Outcomes	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO 1*	PSO 2*
-----------------	------	-----	-----	-----	-----	-----	-----	-----	-----	------	------	--------	--------

CO1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CO2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CO3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CO4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CO5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CO6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

* Project title specific

 <p>Pimpri Chinchwad Education Trust's Pimpri Chinchwad College of Engineering Department of Computer Science and Engineering (AI & ML)</p>	<p>Guidelines for Project Work</p>
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Project is one of the significant contributory team works that has to be completed with distinct impression. It is necessary to explore the domain of interest / research/ thrust area/ society needs. In Toto one cannot figuratively define best project but still there are certain parameters on which we can gauge the quality of project work done. It will be better suited to go for well-defined and relatively safe projects that provide scope for demonstrating proficiency with a low risk of failure especially at Under Graduate level.

The intention of Project work is to conceive an idea and to implement it systematically by using knowledge derived during the course of education mainly to innovate or facilitate. A group of Under Graduate students at Final Year will undertake project work. Work involves study of feasibility of the project, planning of project, studying existing systems, tools available to implement the project and state of art software testing procedures and technology with use of case tools, design is to be implemented into a working model (software or hardware or both) with necessary software interface as an executable package.

Projects may be in-house research, sponsored or multidisciplinary. Projects can be carried out inside or outside the institute, in any relevant industry/organization or research institution or labs/organization. The project sponsorship can be of following three categories:

1. Self-sponsored project: The expenses incurred towards the completion of the project work will be borne by the students.
2. Industry/Research institutes sponsored project: The expenses incurred towards the completion of the project work will be supported by the sponsoring industry or research institute. Students shall submit the sponsorship letter or relevant document mentioning all the necessary details like student's name, guide name, problem definition, work to be carried out, sponsorship details etc.
3. Institute sponsored project: The expenses incurred towards the completion of the project work will be supported by any of the institutes or organizations. Students shall submit the sponsorship letter or relevant document mentioning the sponsorship in monetary support from the institute or organizations. A special review will be carried out in the department for selecting the project group eligible for college sponsorship.

Process in General:

1. Project teams and their areas of interest is to be registered with project Coordinator preferably in first semester of final year.
2. Team may come up with sponsored project (Title suggestion and associated guidance by external institute/Company).
3. Teams in consultation with guide prepare project proposal(s).
4. Project Proposal must include project title, group members, sponsorship details (if any), detailed problem definition, area, Type of Project [Sponsored/Non Sponsored, AND viz- 1. Framework, 2.

- System as - Application/ Systems Software with or without Hardware 3. Research, 4. Survey], abstract, details of existing similar systems if any, scope of the project and software-hardware requirements. [Sponsorship details include name of sponsoring authority, address, name of guide, sponsorship terms and conditions and respective documents certifying the same from authorities].
5. A Panel of experts will approve the project group and title.
 6. It is recommended to maintain record of all meetings, discussions, suggestions, contributions and roles played by each member of the team.

Dos and Don'ts:

- Project work is expected to involve a combination of study (literature study/ line of investigation), and methodical implementation.
- Instead of fancied and driven behind the gaudy and ostentatious ideas, utility needs to be emphasized. It is also acceptable to identify the discrepancies/ flaws an existing system and work accordingly to rectify or improve.
- It is irrational to select the IDE and the software/ tools before the idea is not yet finalized.
- Identify domain, feasibility and usability of work.
- Understand the way project will materialize and progress is of at most importance.

General Project Evaluation Parameters:

Project work is to be evaluated jointly by both Internal and External examiners, unanimously agreeing upon the following parameters amongst many others.

1. Problem definition and scope of the project.
2. Thorough literature survey done.
3. Exhaustive and rational requirement analysis.
4. Appropriate software engineering approach followed.
5. Use of project management tools.
6. Comprehensive implementation.
7. Optimization considerations (memory, time, resources, costing).
8. Use of parallel/multi-core, embedded, distributed computing approach.
9. Thorough testing of all modules and integration of modules done.
10. Project presentation and demonstration.
11. User interface, ease of use, usability and GUI.
12. Understanding individual capacity, role and involvement in the project.
13. Team work (roles defined, distribution of work, intra-team communication and togetherness).
14. Participation in various contests, publications and IPR.
15. Presentation of work in the form of project report(s).Documents/manuals- project report, quick reference, system, installation guide etc
16. Outcomes/usability/ commercial value/product conversion of work.
17. Consideration of social, safety, environmental, ethical and legal issues.

Project Synopsis :

1. The project coordinator with the Head of the department shall constitute a review committee composed of domain experts and senior faculty members.
2. The review committee will approve the project group and title.
Discussion/presentation may be arranged covering topics listed in the synopsis.
3. The project guide and review committee will evaluate the timely progress of the projects.
4. Students with group members are expected to appear for minimum two reviews as per the project calendar.
5. It is mandatory for students to remain present for all the reviews and examinations well before scheduled time.
6. Assessment criteria for each review in the form of rubrics should be notified to the students in advance by the project coordinator. Students have to read these carefully and accordingly to be prepared for reviews.
7. During reviews, students are required to demonstrate the progress done after the last review.
8. The suggestions or corrections given by the review panel committee should be recorded in the project dairy, incorporated and demonstrated in the consecutive reviews.
9. Final term work will be calculated based on the performance in reviews.

Project Monitoring and Reviews

1. The project coordinator with the Head of the department shall constitute a review committee composed of domain experts and senior faculty members.
2. The project guide and review committee will evaluate the timely progress of the projects.
3. Students with group members are expected to appear for the reviews as per the project calendar.
4. It is mandatory for students to remain present for all the reviews and examinations well before scheduled time.
5. Assessment criteria for each review in the form of rubrics are given in the workbook.
Students have to read these carefully and accordingly to be prepared for reviews.
6. During reviews, students are required to demonstrate the progress done after the last review.
7. The suggestions or corrections given by the review panel committee should be recorded in the project dairy, incorporated and demonstrated in the consecutive reviews.
8. Final term work will be calculated based on the performance in reviews.

Project Report

- Report should be prepared using report writing tools such as MSWord, Latex as per the template provided by the department.
- In case of a Sponsored project, students must submit a completion certificate with the signature of an external guide from the sponsored company.
- In case of an Interdisciplinary project, students must submit a completion certificate

CSE (AI & ML) 2024-25

with signature of both the guides.

- Project Report should begin with cover pages (Front Page, Certificate, and Certificate from

industry if industry sponsored project, Acknowledgement, Abstract, Table of Contents, List of Figures, and List of tables).

- Then the project report should be presented in a number of chapters, starting with Introduction and ending with Summary and Conclusions.
- Each of the other chapters will have a precise title reflecting the contents of the chapter.
- A chapter can be sub divided into sections, subsections and sub subsections so as to present the content discretely and with due emphasis.
- Following Chapter should be included in the report-

 - a. Introduction- It should be Chapter 1 and it should highlight the problem posed, define the topic and explain the aim and scope of the work presented in the project report. It may also highlight the significant contributions from the investigation.
 - b. Literature Review- It should be the Chapter 2 and this Chapter should present a critical appraisal of the previous work published in the literature pertaining to the topic of the investigation. This chapter highlights the identified research gaps. It is recommended to review the recent literature published in reputed journals/conferences.
 - c. Project Design: It should include Dataset design, Architecture diagram/block diagrams and all UML diagrams etc.
 - d. Chapter on proposed work- The proposed work should be presented in one or more chapters with appropriate chapter titles.
 - Due importance should be given to experimental setups, procedures adopted, techniques developed, methodologies, algorithms developed and adopted.
 - While important derivations/formulae should normally be presented in the text of these chapters.
 - Figures and tables should be presented immediately following their first mention in the text.
 - Equations should form separate lines with appropriate paragraph separation above and below the equation line, with equation numbers flushed to the right.
 - e. Results and Discussions- This Chapter should include a thorough evaluation of the investigation carried out and bring out the contributions from the study. Quantitative results should be presented in tabular or graphical form. Interpretations of every table and graph should be given in the text. The discussion shall logically lead to inferences and conclusions as well as scope for possible further future work.
 - f. Summary and Conclusions- This will be the final chapter of the project report. A brief report of the work carried out shall form the first part of the Chapter. Conclusions derived from the logical analysis presented in the Results and Discussions Chapter shall be presented in this chapter. Scope for future work should be stated lucidly in the last part of the chapter.

Plagiarism

A student has to ensure that the Synopsis, Project Report and Research Publications are checked for plagiarism by using plagiarism software such as Grammerly, iThenticate /Turnitin. The maximum similarity allowed is 10%. The plagiarism verification report must be attached in the project report.

Research Outcomes

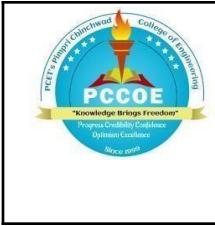
Based on the project results and conclusions, students are recommended to generate the research outcomes in terms of Research Publication, Patents, and Copyrights. This has to be done in consultation with project guides. Guides will decide the appropriateness of the results and converting those into research outcomes.

Publications Guidelines:

The work undertaken is to be appreciated and recognized by the significant publications and/or IPR. The quality of the publications reflects the efforts and recognition of the work. So, it is highly recommended to publish work in consultation with the guide in referred national and international Journals of repute, with high Impact Factor and also in recognized conferences.

IPR Guidelines:

The first legislation in India for protection of Industrial Designs was The Patents & Designs Protection Act, 1872. It supplemented the 1859 Act passed by Governor General of India for granting exclusive privileges to inventors and added protection for Industrial Design. The 1872 Act included the term —any new and original pattern or design, or the application of such pattern or design to any substance or article of manufacture. Hence it is recommended that students should know about Copyright and Patents. Refer-<http://www.ipindia.nic.in>



**Pimpri Chinchwad Education Trust's
Pimpri Chinchwad College of Engineering
Department of Computer Science and Engineering (AI &
ML)**

Project Work Schedule

Sr. No.	Project Activity	Time Line (Tentative)
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1	Registration of Project teams and allotment of guide, Session on Project Guidelines.	5Jan-12 Jan 2026
2	Project Review 1on Project Synopsis Evaluation: Presentation of Project topic, Motivation, Literature Survey, Objectives & Methodology and Objective implementation on Literature Survey	19 Jan 2026
3	Synopsis Submission, Requirement Analysis and Project Design (Implementation of Objective on dataset preparation)	20 Jan 2026
4	Developed algorithms, Implementation of modules (25%) (Implementation of Objective on developing Modules)	31 Jan 2026
5	Developed algorithms, Implementation of modules (50%) (Objective implementation on developing Modules)	7 Feb 2026
6	Project Review 2: Project topic, Literature Survey, Objectives, Project Design and Demonstration of Developed algorithms, Implementation of modules (50%) (Objective implementation on developing modules)	9 Feb -14 Feb 2026
7	Work on suggestions given in the previous review, coding and implementation of the project modules (75%)	2 March 2026
8	Coding and implementation of complete project (100%), testing and validation (Objective implementation on developing and evaluation of Modules)	March 2026
9	Paper writing and submission for publication in quality journal/conference or Patent filing process and Project Report writing	23 March 2026
10	Project Review 3: Demonstration on implementation of complete project (100%), testing and validation, paper and report documents	30 March- 3 April 2026
11	Work on suggestions given in the previous review	3 April 2026- 10 April 2026
12	Submission of Project Report and all related documents (research paper documents, IPR/Copyrights if any, Completion certificate in case of sponsored project, plagiarism report, proofs of Project related competitions etc.)	15 April 2026

Project Coordinator

Head of the Department

ABSTRACT

1. Objectives :

2. Problem Statement

Monthly Planning Sheet

Month: January

In this, the student shall complete the work of the Project which will consist of problem statement, literature review, design, scheme of implementation (Mathematical Model/ SRS/ UML/ ERD/ block diagram/ PERT chart, etc.) and Layout & Design of the Set-up, simulation/testing of the 15% work. The student is expected to complete the project up to the testing phase.

Week No	Activity	Activity Complete d	Signature of Student	Signature of Int/ Ext Guide
1				
2				
3				
4				
5				

Monthly Planning Sheet**Month: February**

Students have to implement and test the work and give the presentation in front of the committee members.

Week No	Activity	Activity Complete d	Signature of Student	Signature of Int/ Ext Guide
1				
2				
3				
4				
5				

Monthly Planning Sheet

Month: March

There should be performance discussions using data tables per parameter considered for the improvement with existing/known algorithms/systems and comparative analysis and validation of results and conclusions. Progress Review 3 on work completed. The discussion on the outcome of the project like publication or patent will be completed. The submission of draft1 of research paper/patent to the guide will be completed.

WeekNo	Activity	Activity Complete d	Signature of Student	Signature of Int/Ext Guide
1				
2				
3				
4				
5				

Monthly Planning Sheet

Month: April

Student should complete project and research paper/patent submission.

Week No	Activity	Activity Complete d	Signature of Student	Signature of Int/ Ext Guide
1				
2				
3				
4				
5				

Rubric R1-Project Synopsis Evaluation (Review1)

Title of the Project						
<p>1. Problem Identification, Novelty and Relevance– Detailed and extensive explanation of the purpose and need of the project, Novelty and usage of the project for the society.</p> <p>2. Literature Survey– Quality of References searched in order of increasing merit –Internet websites, Text Books, Reference Books, Hand Books, Conference papers (National), Conference papers (International), National Journal papers, International Journal Papers, Surveys. The total number should not more than 50 Effectiveness as a team member, Work ability of the project</p> <p>3. Objectives and Methodology: All the objectives of the proposed work are well defined. Objectives are measurable and attainable. Methodology consists of recent algorithms/models/techniques.</p> <p>4. Requirement Analysis : The complete, consistent and accurate information for domain analysis, problem statement categorized in identified area and targeted towards the specific area, external and internal interfacing properly defined, requirements consistent with schedule, resources and budget, all requirements traceable to system level, needs to make the product, all requirements are captured and documented inline with scope.</p> <p>5. Presentation, Question/ Answer</p>						
Out of 10 : 1-2: Poor, 3-4: Fair, 5-6: Good, 7-8:Very Good, 9-10: Excellent						
Performance levels(PL)		1	2	3	4	5
S.N.	Name of the Student ↓ / Maximum Marks →	10	10	10	10	10
Remarks: 						
Name and Signature of the Guide : Name and Signature of the Reviewers: <ol style="list-style-type: none"> 1. 2. 3. 						

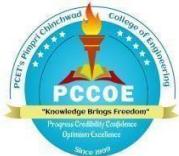
Rubric R2—Project Progress Review Evaluation (Review2)

Rubric R3–Evaluation by Project Guide

Title of the Project							
<p>1. Self-Motivation and Determination Self-motivated and determined towards the implementation of the project, takes initiatives and discuss the different approaches of the implementation</p> <p>2. Technical Knowledge and awareness related project Extensive knowledge of the project, understanding of different tools and techniques.</p> <p>3. Working in a Team & Regularity Collaborates and communicates effectively in the group, express the opinions, takes others view into the consideration. Reports to the guide regularly discuss the project.</p> <p>4. Learn ability (MOOC course): Ability to learn the new tools and techniques through different courses and using requirement of the project development.</p> <p>5. Project Outcome Project outcomes based on Publication, IPR(Patent & Copyright), Proposal, Project competition etc.</p>							
Out of 5 1- Poor, 2- Fair, 3-Good, 4-Very Good, 5-Excellent	Out of 15 1-3: Poor, 4-6:- Fair, 7-9:Good, 10-12 :Very Good, 13-15: Excellent			Out of 20 1-4: Poor, 5-8:- Fair, 9-12:Good, 13-16 :Very Good, 17-20: Excellent			
Performance levels(PL)			1	2	3	4	5
S. N.	Name of the Student ↓ / Maximum Marks →		5	5	5	15	20
Remarks:							
Name and Signature of the Guide : Name and Signature of the Reviewers: 1. 2. 3.							

Rubric R4-End Semester Project Evaluation (Oral Exam)

Title of the Project								
<p>1. Novelty, Innovation and Relevance of the topic-Societal relevance, possible topic leading to patenting.</p> <p>2. Literature survey - Quality of References searched in order of increasing merit – Internet websites, Text Books, Reference Books, Hand Books, Conference papers (National), Conference papers (International), National Journal papers, International Journal Papers, Surveys. The total number should not more than 50. Effectiveness as a team member, Work ability of the project.</p> <p>3. Work done—Apparent quantum of efforts put in the project work, Perseverance, quality and correctness of design, fabrication, analysis, workability of the project, obtaining the results, documentation, success in the outcome.</p> <p>4. Presentation and Communication - Body Language, Effectiveness in technical communication of the project topic, clarity of concepts, clarity in thought process, Technical Content, Depth Listening and comprehension ability, temperament in question answer session</p> <p>5. Quality of the report & Project Outcome Systematic Organization, Syntactical Errors, Technical Content, Depth, apparent efforts put in the preparation of the report i.e., data collection, expression in own language, application of thought process etc. and Project outcomes based on Publication, IPR (Patent & Copyright), Proposal, Project competition etc. achieved.</p>								
Out of 10 1-2: Poor, 3-4:- Fair, 5-6:Good, 7-8 :Very Good, 9-10: Excellent		Out of 20 1-4: Poor, 5-8:- Fair, 9-12:Good, 13-16 :Very Good, 17-20: Excellent			Out of 30 1-6: Poor, 7-12:- Fair, 13-18: Good, 19-24 :Very Good, 25-30: Excellent			
Performance levels(PL)		1	2	3	4	5	Ou t of	
S. N.	Name of the Student ↓ / Maximum Marks →	10	20	30	20	20	100	
Remarks: 								
Name and Signature of the Guide : Name and Signature of the Examiner: 1. 2.								

 <p>PCCOE "Knowledge Brings Freedom" Proprietary Institution Gujarat Gurukul Since 1999</p>	Pimpri Chinchwad Education Trust's Pimpri Chinchwad College of Engineering Department of Computer Science and Engineering (AI & ML)
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Summary of Project Work Evaluation

Sr. No.	Name of the Student	Rubric1 (50 Marks)	Rubric2 (50 Marks)	Rubric3 (50 Marks)	Rubric4 (100 Marks)	Total (250 Marks)	Faculty Sign.
1							
2							
3							
4							



**Pimpri Chinchwad Education Trust's
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Department of Computer Science and Engineering (AI &
ML)**

Industry Institute Interaction Report

Name of the Company:

Name of the External Guide:

Designation:

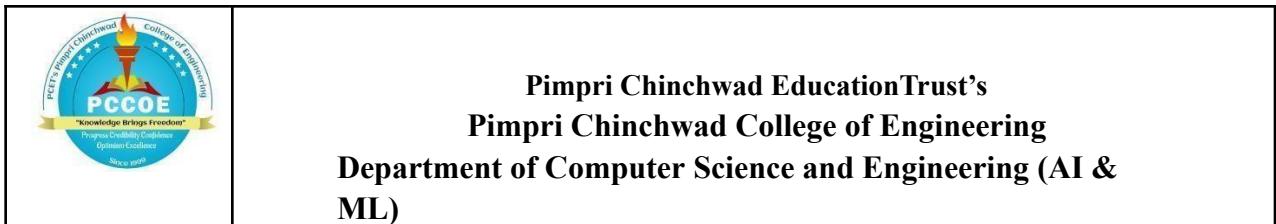
Contact No:

Email: Title of the Project:

Name of the Students:

Sr. No	Date	Work done	Remark	External Guide	Internal Guide

Sign of Internal & External Guide:



**Pimpri Chinchwad Education Trust's
Pimpri Chinchwad College of Engineering
Department of Computer Science and Engineering (AI &
ML)**

Participation in Technical Competition /Workshop /Events

Sr. No	Name of the student	Name of the Competition/workshop /events	Venue	Date	Remark	PO & PSO mapped

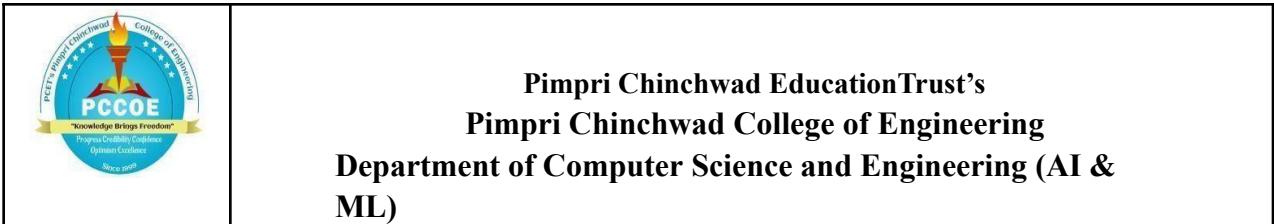
Sign of Internal Guide:

	Pimpri Chinchwad Education Trust's Pimpri Chinchwad College of Engineering Department of Computer Science and Engineering (AI & ML)
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Publication in International /National Conferences and Journals

Sr. No	Name of the student	Title of the paper	Conference /Journal, Volume, Issue	Date	Remark	PO & PSO mapped

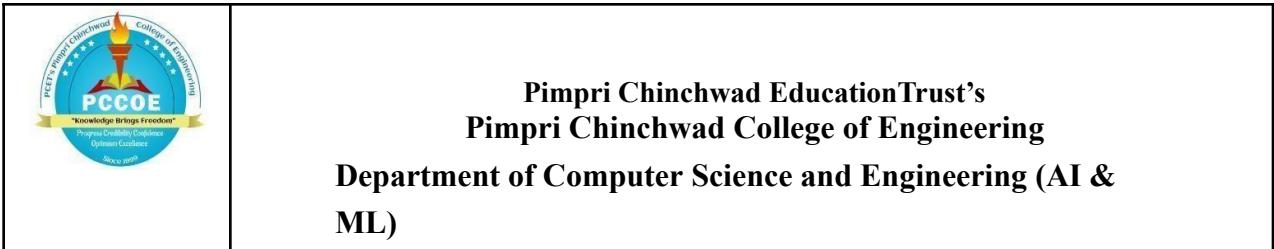
Sign of Internal Guide:



IPR (Patent/Copyright) Details

Sr. No	Name of the student	Title of the Patent	Patent/ Copyright No.	Date	Remark

Sign of Internal Guide:



**Pimpri Chinchwad Education Trust's
Pimpri Chinchwad College of Engineering
Department of Computer Science and Engineering (AI &
ML)**

CO Assessment Sheet for Project

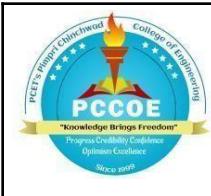
Direct Assessment Method

Sr. No.	Name of the Student	Total (250 Marks)
1		
2		
3		
4		

Indirect Assessment Method

Activities	1	2	3	4	5	6	7	8	9	10	11	12
Training attended												
Work shop attended												
Participation in Project Competition												
Participation in Design Contest												
Participation in paper presentation/publication												
Innovative idea filed in patent												

Sign of Internal Guide:



Pimpri Chinchwad Education Trust's
Pimpri Chinchwad College of Engineering
Department of Computer Science and Engineering (AI &
ML)

Thrust Area Classification & Special Interest Group of the Project

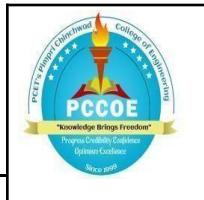
ProjectID:

ProjectTitle

:

Mention the Thrust Area :

Mention Special Interest Group:



**Pimpri Chinchwad Education Trust's
Pimpri Chinchwad College of Engineering
Department of Computer Science and Engineering (AI &
ML)**

Project Category

1. Industry Sponsored
 2. College Sponsored
 3. Solution to Industry Problem
 4. Societal Importance
 5. Inter-disciplinary
 6. Continuation from existing Project
 7. Publication (Conference & Journal)
 8. Patent/IPR
 9. Product Development /Startup
 10. Proposal Based Project

Annexure

1. Syllabus of Major Project

2. Guidelines

3. Thrust Areas

Program:	B. Tech. CSE(AI & ML)				Semester :	VII/ VIII	
Course :	Major Project				Code :	BCS 7705/ BCS8705	
Teaching Scheme				Evaluation Scheme			
Practical	Tutorial	Credit	Hours	TW	PR	OR	Total
28	-	14	28	250	-	100	350
Prior knowledge of Software Engineering, Domain related subjects, Engineering Mathematics is essential							
Course Objectives: <ul style="list-style-type: none"> To understand the project development process 1. To develop problem solving ability by following Software Development Life Cycle meticulously. 2. To review literature for project work from appropriate sources such as books, manuals, research journals and from other sources, and in turn increase analytical skills 3. To design and implement real world applications using available platforms 4. To validate and evaluate the work undertaken 5. To work in a team with individual contribution for the project development 6. To prepare good quality technical reports based on the selected project statement 							
Course Outcomes: <p>After learning the course, the students will be able to:</p> <ul style="list-style-type: none"> 1. Analyze the literature for various techniques and applications to find the gap and feasible solution 2. Design real world applications considering emerging areas in technology 3. Develop an application by considering actual requirements and social, environmental, ethical and legal issues 4. Test and evaluate the model results to develop a probable solution 5. Work in a team with individual contribution for the project development 6. Prepare good quality technical reports and present it effectively. 							

Guidelines:

The intention of Project work is to conceive an idea and to implement it systematically by using knowledge derived during the course of education mainly to innovate or facilitate. A group of Under Graduate students at Final Year will undertake project work. Work involves study of feasibility of the project, planning of project, studying existing systems, tools available to implement the project and state of art software testing procedures and technology with use of case tools, design is to be implemented into a working model (software or hardware or both) with necessary software interface as an executable package.

Projects may be in-house research, sponsored or multidisciplinary. Projects can be carried out inside or outside the institute, in any relevant industry/organization or research institution or labs/organization. The project sponsorship can be of following three categories:

1. Self-sponsored project: The expenses incurred towards the completion of the project work will be borne by the students.
2. Industry / Research institutes sponsored project: The expenses incurred towards the completion of the project work will be supported by the sponsoring industry or research institute. Students shall submit the sponsorship letter or relevant document mentioning all the necessary details like student's name, guide name, problem definition, work to be carried out, sponsorship details etc
3. Institute sponsored project: The expenses incurred towards the completion of the project work will be supported by any of the institutes or organizations. Students shall submit the sponsorship letter or relevant document mentioning the sponsorship in monetary support from the institutes or organizations. A special review will be carried out in the department for selecting the project group eligible for college sponsorship.

1. Project Team

1. 3- 4 students can form a team within the same or different discipline and their area of interest is to be registered with the project Coordinator.
2. It is necessary to explore the domain of interest / research/ thrust area/ society needs.
3. Students shall identify the area or topics in recent trends and developments in consultation with institute guide or industry or any research organization.
4. Each student of the team has to work collaboratively and contribute significantly for the project development.
5. Students shall meet their assigned project guide regularly (at least once in a week) and report the progress of the project work.
6. Students shall maintain the record of all the meetings, remarks given by guide / reviewers and progress of the work in the project diary. The project diary must be presented during each review presentation to the reviewers

2. Project Activities

Students are expected to perform the following activities –

- I. Review of Recent Literature and Gap Identification
- II. Requirement Analysis and Feasibility Study
- III. Defining the Problem Statement and Objectives
- IV. Identifying the Project Implementation Requirements
- V. Formulation of Methodology and Mathematical Modeling
- VI. Project Implementation
- VII. Testing and Deployment
- VIII. Observations & Results
- IX. Results Analysis and Validation
- X. Conclusions
- XI. Research Paper Publication/IPR Filing if any
- XII. Report Writing

3. Project Synopsis

- The project coordinator with the Head of the department shall constitute a review committee composed of domain experts and senior faculty members.
- The review committee will approve the project group and title. Discussion/ presentation may be arranged covering topics listed in the synopsis.
- The project guide and review committee will evaluate the timely progress of the projects.
- Students with group members are expected to appear for minimum two reviews as per the project calendar.
- It is mandatory for students to remain present for all the reviews and examinations well before scheduled time.
- Assessment criteria for each review in the form of rubrics should be notified to the students in advance by the project coordinator. Students have to read these carefully and accordingly to be prepared for reviews.
- During reviews, students are required to demonstrate the progress done after the last review.
- The suggestions or corrections given by the review panel committee should be recorded in the project dairy, incorporated and demonstrated in the consecutive reviews.
- Final term work will be calculated based on the performance in reviews.

4. Project Monitoring and Reviews

1. The project coordinator with the Head of the department shall constitute a review committee composed of domain experts and senior faculty members.
2. The review committee will approve the project group and title. Discussion/ presentation may be arranged covering topics listed in the synopsis.
3. The project guide and review committee will evaluate the timely progress of the projects.
4. Students with group members are expected to appear for minimum two reviews as per the project calendar.
5. It is mandatory for students to remain present for all the reviews and examinations well before scheduled time.
6. Assessment criteria for each review in the form of rubrics should be notified to the students in advance by the project coordinator. Students have to read these carefully and accordingly to be prepared for reviews.
7. During reviews, students are required to demonstrate the progress done after the last review.
8. The suggestions or corrections given by the review panel committee should be recorded in the project dairy, incorporated and demonstrated in the consecutive reviews.
9. Final term work will be calculated based on the performance in reviews.

5. Project Report

- Report should be prepared using report writing tools such as MS Word, Latex as per the template provided by the department.
- In case of a Sponsored project, students must submit a completion certificate with the signature of an external guide from the sponsored company.
- In case of an Interdisciplinary project, students must submit a completion certificate with signature of both the guides.
- Project Report should begin with cover pages (Front Page, Certificate, and Certificate from industry if industry sponsored project, Acknowledgement, Abstract, Table of Contents, List of Figures, and List of tables).
- Then the project report should be presented in a number of chapters, starting with Introduction and ending with Summary and Conclusions.
- Each of the other chapters will have a precise title reflecting the contents of the chapter.
- A chapter can be subdivided into sections, subsections and sub subsections so as to present the content discretely and with due emphasis.
- Following Chapter should be included in the report-

- a. **Introduction-** It should be Chapter 1 and it should highlight the problem posed, define the topic and explain the aim and scope of the work presented in the project report. It may also highlight the significant contributions from the investigation.
- b. **Literature Review-** It should be the Chapter 2 and this Chapter should present a critical appraisal of the previous work published in the literature pertaining to the topic of the investigation. This chapter highlights the identified research gaps. It is recommended to review the recent literature published in reputed journals/conferences.
- c. **Project Design:** It should include Data set design, Architecture diagram/ block diagrams and all UML diagrams etc.
- d. **Chapter on proposed work-** The proposed work should be presented in one or more chapters with appropriate chapter titles.
 - Due importance should be given to experimental setups, procedures adopted, techniques developed, methodologies, algorithms developed and adopted.
 - While important derivations/formulae should normally be presented in the text of these chapters.
 - Figures and tables should be presented immediately following their first mention in the text.
 - Equations should form separate lines with appropriate paragraph separation above and below the equation line, with equation numbers flushed to the right.
- e. **Results and Discussions-** This Chapter should include a thorough evaluation of the investigation carried out and bring out the contributions from the study. Quantitative results should be presented in tabular or graphical form. Interpretations of every table and graph should be given in the text. The discussion shall logically lead to inferences and conclusions as well as scope for possible further future work.
- f. **Summary and Conclusions-** This will be the final chapter of the project report. A brief report of the work carried out shall form the first part of the Chapter. Conclusions derived from the logical analysis presented in the Results and Discussions Chapter shall be presented in this chapter. Scope for future work should be stated lucidly in the last part of the chapter.

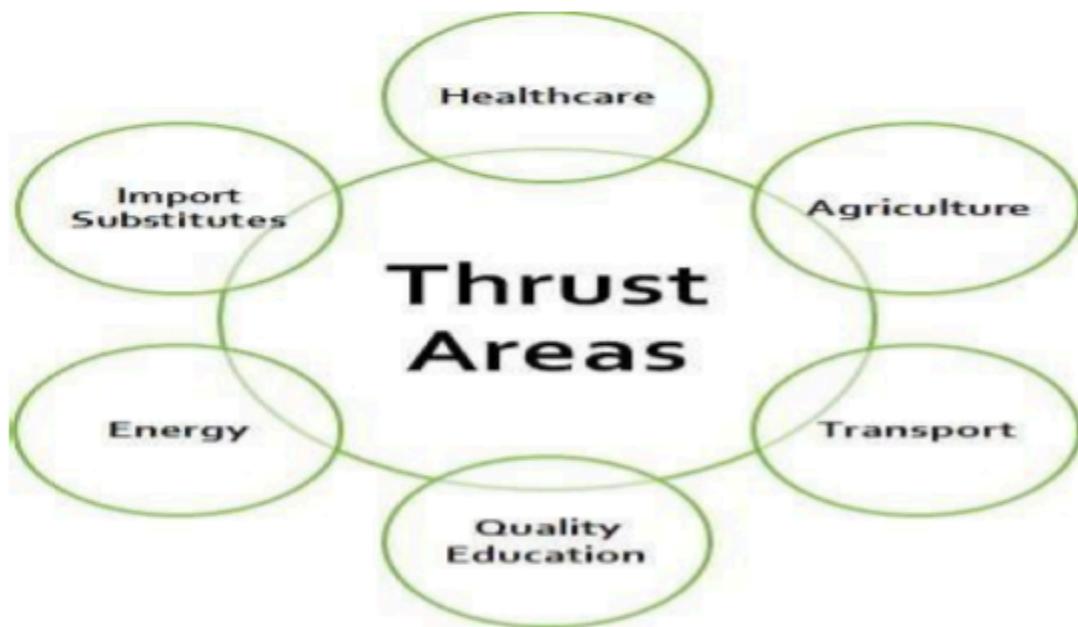
6. Plagiarism

A student has to ensure that the Synopsis, Project Report and Research Publications are checked for plagiarism by using plagiarism software such as Grammerly, iThenticate / Turnitin. The maximum similarity allowed is 10%. The plagiarism verification report must be attached in the project report.

7. Research Outcomes

Based on the project results and conclusions, students are recommended to generate the research outcomes in terms of Research Publication, Patents, and Copyrights. This has to be done in consultation with project guides. Guides will decide the appropriateness of the results and converting those into research outcomes.

8. Thrust Areas for Research



Agriculture and Rural Development

- Mobile App for plant/crop diseases identification and prediction using Machine Learning Techniques.
- Stored grain insect identification: Mobile App for grain sack analysis/scanning for identification of bugs.
- Women friendly improved farm tools for small operations.
- Colour Sorter: Image Processing based affordable grain colour sorting system.
- Micro-climate identification and prediction of local climate of a usually small site or habitat.
- Soil Moisture Monitoring: Wireless system for alerting farmers on the smart phone about how much, when, and where to water their plants or crops.
- Soil nutrients Analyzer Automated Soil micro/ macro-nutrient analyzer
- Food Grain Analysis: Automated system for classification and quality analysis of food grains.
- Cotton picking Automated system for intelligent cotton harvesting machine.
- Seed Sowing Robot Automatic seeding sowing and ploughing machine.
- Automatic weeders for row crops
- Post harvest trash management system (eg. Sugarcane, Maize) (Rural)
- Application for Agro Product & services • Application for management & Marketing of agro foods & artifacts (rural)

- Replacement to traditional fuel by biodegradable fuel (rural)
- Technique for early detection of pest in cotton

- Perishable crop wastage, storage management
- Application for farming as a service (rural)
- Affordable drone technology for spraying in Indian scenario • Affordable solution for food processing in Indian Scenario(rural)
- Supply chain management for agro product and services in Indian scenario(rural) • Telemedicine for rural health care management
- Build an online system for monitoring water quality, leaks, contamination, and managing pipeline networks.
- Smart Garbage systems
- Smart education system
- Development of Low Cost Solar Dryer for Hygienic drying.
- Design and Development of Integrated curing and storage structure for onions.
- Cold Storage Facility for Post-harvest Preservation of Fruits and Vegetables using Solar and Bio methane Heat Based Refrigeration.
- Enhancement of Shelf-life of Perishable Agro Produce using Evaporative Cooling Technology.
- Cost effective mechanism to treat waste water in small villages
- Artificial intelligence enabled robotic trash boat to drive& harvest floating trash from urban drain.
- Priority Road List for Maintenance
- Automatic Assessment of Pavement condition based onroad photographs

Healthcare Engineering

Medical Imaging	
<ul style="list-style-type: none"> ● Computed tomography (CT) ● Diagnostic radiology ● Fluoroscopy ● Magnetic resonance imaging (MRI) 	<ul style="list-style-type: none"> ● Mammography ● Medical imaging ● Positron emission tomography (PET) ● Ultrasound ● X-ray
Artificial Organs	
<ul style="list-style-type: none"> ● 3D printing of organs ● Artificial organs ● Bionics ● Bone tissue engineering 	<ul style="list-style-type: none"> ● Cartilage tissue engineering ● Prostheses ● Regenerative medicine ● Tissue engineering

Biomaterials	
<ul style="list-style-type: none"> ● Biomaterial surface characterization ● Biomaterial surface modification ● Biomaterials for spine ● Breast implants ● Cardiovascular materials ● Cell therapies ● Composite resin fillings ● Craniofacial materials ● Dental amalgam ● Dental materials ● Denture adhesives ● Dermal fillers ● Drug delivery materials ● Hydrogel for drug delivery 	<ul style="list-style-type: none"> ● Hydrogel for healthcare ● Hydrogel for bone ● Implant materials ● Medical ceramics ● Medical metals ● Nanotechnology ● Ophthalmic materials ● Organ therapy ● Orthopedic materials ● Medical polymers ● Protein and cells at interfaces ● Stem cells ● Tissue engineering
AI based Disease Diagnosis	
Alzheimer's disease/anesthesiology/ arthritis/ asthma/ attention deficit / hyperactivity disorder (ADHD)/ autism/ brain diseases/ cancer/ cardiovascular medicine/ Chronic Fatigue / chronic obstructive pulmonary disease (COPD)/ tuberculosis/ coronary artery disease/ dementia/ dentistry/ diabetes/ diagnosis Ebola/ epilepsy/ flu/ gastroenterology/ healthcare/ heart disease/hematology/ hepatitis/ kidney disease / obesity/ ophthalmology/ orthopaedic/ osteoporosis/ pathology/ precision medicine/ stroke/ women's health/ aging	
Healthcare Systems	
<u>Digital health/E-Health/Electronic health record/Healthcare cybersecurity/Lean healthcare/M</u> <u>Health/Rural health/Telehealth/Telemedicine</u>	
Internet of Things (IoT) for healthcare	
<u>IoT for patient monitoring/IoT for surgery/Medical IoT data security/Medical IoT device</u> <u>integration/Elderly care/Biomedical Device Manufacturing/Wearable Devices</u>	
Surgery & Robots	
<ul style="list-style-type: none"> ● <u>3D printing for surgery</u> ● <u>Computer-Assisted (Robotic) Surgery</u> ● <u>Engineering for neurosurgery</u> ● <u>Image-guided surgery</u> ● <u>Minimally invasive surgery</u> 	<ul style="list-style-type: none"> ● <u>Minimally invasive surgery devices</u> ● <u>Robot for heart surgery</u> ● <u>Surgical robot</u> ● <u>Surgical robot for cardiac surgery</u>

Transports and Safety	
<ul style="list-style-type: none"> ● Intelligent Transportation System ● Alternate Fuel Based Transportation ● Advanced Powertrain Technologies ● Affordable Energy Storage And Infrastructure For Fast Charging ● Active Aerodynamics ● Heat Recovery Systems ● Intelligent Roads ● Long Life, Low Maintenance Roads And Structures ● Self Healing Roads ● Fog Vision System For Road And Rail 	<ul style="list-style-type: none"> ● Active And Passive Safety Technology ● Magnetic Levitation Technology ● Tilting Train Technology ● Autonomous Vehicles ● Novel Modes Of Transport (E.G.Evacuated Tube Transport, Hyperloop) ● Amphibian And Flying Vehicles ● Biomimetics Design For Ship
Quality Education, Livelihood and Creative Opportunities	
<ul style="list-style-type: none"> ● Massively Online Open Courseware (Moocs) ● Gaming/ Gamification ● Interactive Remotely Controlled Laboratories ● Personalised Virtual Teachers ● 4g And 5g Communication ● Immersive Virtual Reality ● Brain Computer Interface And ● Machine Augmented Cognition 	<ul style="list-style-type: none"> ● Wearable Devices ● Digital Identity And Learning Analytics ● Automated Evaluation And Assessment Systems ● Digital Holography, 3d Imaging And Volumetric/3d Display ● 3d Printing ● Real Time Translation For Indian Languages
Energy	
<ul style="list-style-type: none"> ● Solar PV ● Algal Energy ● Nuclear Fusion ● Fusion Fission Hybrid Reactor 	<ul style="list-style-type: none"> ● Hybrid Storage ● Fuel Cell ● Microbial Fuel Cell ● Dc Grids

<ul style="list-style-type: none">● Fast Breeder Reactors For Thorium● Supercritical Coal● Advanced Coal Cycles● Advanced Fossil Fuels Extraction Technologies● Shale Gas● Tight Gas● Gas Hydrate● Hydrogen Energy● Biorefineries	<ul style="list-style-type: none">● Smart Grids● Ict Based Smart Monitoring Systems● Wireless Power Transmission● Green And Net Zero Energy Buildings● Smart Windows● Zero Energy Artificial Lighting (E.G. Bioluminescence)● Micro-GasifierCookstove● Brushless Dc (Bldc) Motors
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Import Substitutes

Following list 45 items is provided by the Director General of Commercial Intelligence and Statistics (DGCIS), Govt. Of India to encourage the MSME to manufacture indigenously under Atma Nirbhar Bharat Abhiyan

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. Hand presses 2. Inverter Domestic type up to 5 KVA 3. Film Polythene-Including Wide Width Film 4. Toggle Switches 5. Valves metallic 6. Anklets web Khaki 7. Plaster of paris 8. Stoneware jars 9. Centrifugal Pumps and suction and Delivery 10. Air/ Room cooler manufacturing 11. Domestic House wiring with PVC insulated Aluminium 12. Corrugated Paper Board and Boxes 13. Pressure Die Casting up to 0.75kg 14. Rubber cord 15. Distribution Board upto 15 amps 16. Artistic wooden furniture 17. Squirrel cage Induction Motor 18. Spiked Boots, Skiboots and shoes 19. Steel cross bars, cross arms, clamps, arching horn, brackets 20. Dust Shield leather 21. Domestic electric appliances – Food mixer, wet grinder and food processor 22. M S Tie bars 23. Naphthalene Balls | <ol style="list-style-type: none"> 24. Cotton Wool (Non-Absorbent) 25. Tent poles 26. Augur (carpenter) 27. Chrome tanned leather 28. Nuts & Bolts or Hand Tools of all Types or Dist of Board up to 15 amps 29. Office furniture (Wooden chairs/Tables) 30. Pulley wires 31. Paper tapes (Gummed) 32. Insecticides Dust and Sprayers (Manual Only) 33. Street light fittings 34. Windshield wipers (arms and blade only) 35. Transistorized Insulation tester 36. Battery Eliminator, Voltage stabilizer 37. Transformer type welding set confirming to IS 1 38. Hinges, Hasps and staples 39. Garments (excluding supply from Indian Ordnance Factory) 40. Hand tools-Mechanical 41. Cane furniture handloom 42. Sluice valves 43. Wooden boards 44. Teak fabricated round blocks 45. Lubricators |
|--|--|

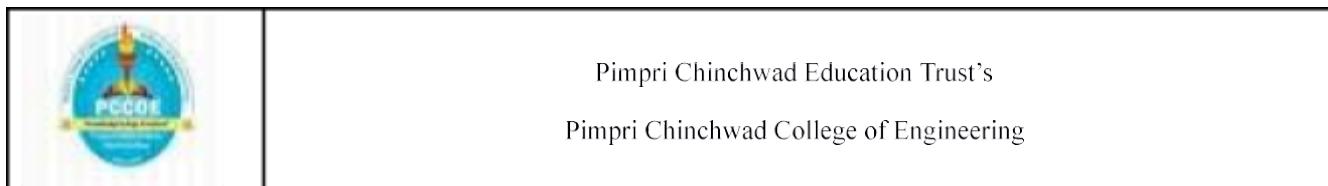
Additional Import Substitutes

- **Blood Bags - Manufacturing Plant, Detailed Project Report, Profile, Business Plan, Industry Trends, Market Research, Survey, Manufacturing Process, Machinery, Raw Materials, Feasibility Study, Investment Opportunities, Cost and Revenue, Plant Economics.**
- **Liquid Organic Fertilizer (Biofertiliser)**
- **Selenium Coated Aluminium Drum Used In Plain Paper Copier - Manufacturing Plant, Detailed Project Report, Profile, Business Plan, Industry Trends, Market Research, Survey, Manufacturing Process, Machinery, Raw Materials, Feasibility Study**
- **Soyabean Cultivation and Processing For Soy Nuggets (Nutrela), Paneer and Milk - Manufacturing Plant, Detailed Project Report, Profile, Business Plan, Industry Trends, Market Research, Survey, Manufacturing Process, Machinery, Raw Materials, Plant Layout**
- **Natural Food Colours - Manufacturing Plant, Detailed Project Report, Profile, Business Plan, Industry Trends, Market Research, Survey, Manufacturing Process, Machinery, Raw Materials, Feasibility Study, Investment Opportunities, Cost and Revenue**
- **IMFL, INDIAN MADE FOREIGN LIQUOR (WHISKEY, RUM, GIN, VODKA AND BRANDY) - Manufacturing Plant, Detailed Project Report, Profile, Business Plan, Industry Trends, Market Research, Survey, Manufacturing Process, Machinery, Raw Materials, Feasibility Study**
- **SANITARY NAPKINS - Manufacturing Plant, Detailed Project Report, Profile, Business Plan, Industry Trends, Market Research, Survey, Manufacturing Process, Machinery, Raw Materials, Feasibility Study, Investment Opportunities, Cost and Revenue, Plant Layout**
- **PHOTOCOPIER CLEANING WEB (Non Woven) - Manufacturing Plant, Detailed Project Report, Profile, Business Plan, Industry Trends, Market Research, Survey, Manufacturing Process, Machinery, Raw Materials, Feasibility Study, Investment Opportunities**
- **MEDICAL DISPOSABLES: Disposable Syringes (Self Destructive) with Needles, Catheters and Mask - Manufacturing Plant, Detailed Project Report, Profile, Business Plan, Industry Trends, Market Research, Survey, Manufacturing Process, Machinery, Raw Materials**

Technology Domains	
CSE (AI & ML)	
1.	Data Science and Artificial Intelligence
2.	Block chain Technology
3.	Image Processing, Pattern Recognition and Computer Vision
4.	Natural Language Processing
5.	Cloud Computing/Edge Computing/Fog Computing
6.	Virtual Reality/Augmented Reality
7.	Gaming/Multimedia/Animation/ Computer Graphics
8.	Computational Biology
9.	Wireless Sensor Networks
10.	Machine Learning & Deep Learning
11.	Multi core Computing
12.	Quantum Computing
13.	Green Computing
14.	Human Computer Interaction
15.	ICT and E-learning
16.	Cybernetics, Virtualization and Parallel Computing
17.	Cryptography, Network Security and Cognitive networks
18.	Cognitive Learning
19.	Big Data Analytics
20.	Bioinformatics
21.	Soft Computing
22.	IOT & Sensor data mining
23.	High Performance Computing & Parallelization
24.	Robotic and Automation

List of Annexure:

1. Tentative Activity Calendar of Major Project
2. Rubric Table Review I Assessment of Major Project
3. Rubric Table for Review II Assessment of Major Project
4. Rubric Table for Oral Exam of Major Project

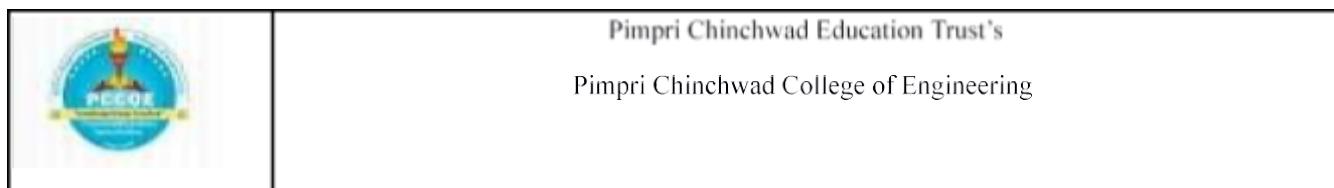


Annexure 1: Tentative Activity Calendar of Major Project

Sr. No.	Project Activity	Time Line (Tentative)
1	Registration of Project teams and allotment of guide, Session on Project Guidelines	First & second Week of First month
2	Project Review (guide level) on Project Synopsis Evaluation: Presentation of Project topic, Motivation, Literature Survey, Objectives & Methodology and Objective implementation on Literature Survey	Third week of First month
3	Synopsis Submission, Requirement Analysis and Project Design (Implementation of Objective on dataset preparation)	Fourth week of First month
4	Developed algorithms, Implementation of modules (25%) (Implementation of Objective on developing Modules)	First week of second month
5	Developed algorithms, Implementation of modules (50%) (Objective implementation on developing Modules)	Second week of second month
6	Project Review 1: Project topic, Literature Survey, Objectives, Project Design and Demonstration of Developed algorithms, Implementation of modules (50%) (Objective implementation on developing modules)	Third week of second month
7	Work on suggestions given in the previous review, coding and implementation of the project modules (75%)	Fourth week of second Month
8	Coding and implementation of complete project (100%), testing and validation (Objective implementation on developing and evaluation of Modules)	First & second weeks of Third Month
9	Paper writing and submission for publication in quality journal/conference or Patent filing process and Project Report writing	Third weeks of third Month
10	Project Review 2: Demonstration on implementation of complete project (100%) testing and validation, paper and report documents	Fourth weeks of third Month

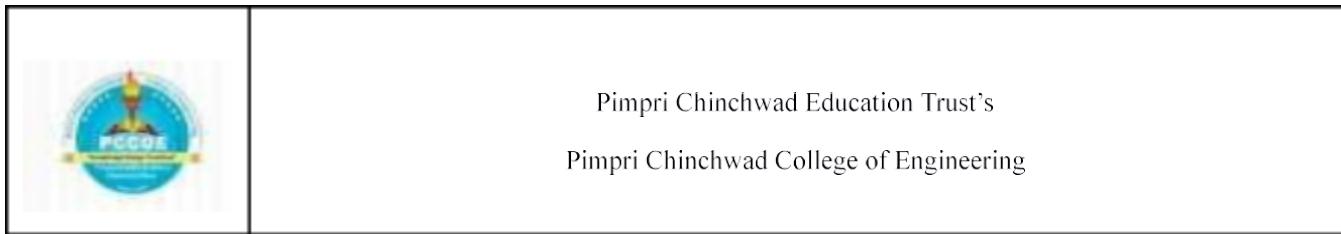
Department of Computer Science & Engineering (AI & ML)

11	Work on suggestions given in the previous review	Fourth weeks of third Month
12	Submission of Project Report and all related documents (research paper documents, IPR/Copyrights if any, Completion certificate in case of sponsored project, plagiarism report, proofs of Project related competitions etc.)	Fourth Month



Annexure 2: Rubric Table for Review I Assessment of Major Project

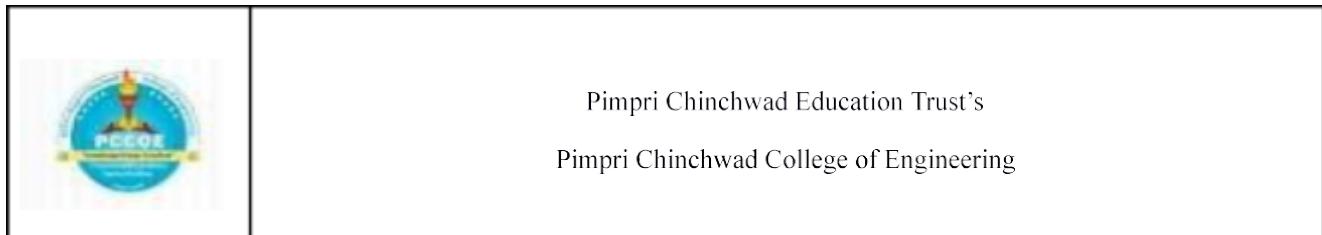
Performance Indicators (PI) (Five Performance levels will be considered in this assessment. 1. Excellent, 2. Very Good, 3. Good, 4. Fair, 5. Poor)	Maximum Marks
1. Problem Identification, Novelty, Innovation and Relevance of the topic- Societal relevance, industry or research relevance, possible topic leading to patenting and multidisciplinary	10
2. Literature Survey: Quality of references searched in order of increasing merit – Internet websites, Text Books, Reference Books, Hand Books, Conference papers (National), Conference papers (International), National Journal papers, International Journal Papers, Surveys. The total number should not more than 50 / product sources, web repositories, tools and techniques etc. through literature review	10
3. Objectives: All the objectives of the proposed work are well defined. Objectives are measurable and attainable .	5
4. Project planning: Timely presentation of work plan, Clarity, provision of margin for activities etc	5
5. Requirement Analysis: Requirements are identified and clear understanding of requirements	10
6. Modeling and Design: Quality and correctness in modeling and design	20
7. Selection of Modern Tools & Techniques for project development	5
8. Coding and Implementation (50% expected): Workability of the project, obtaining the results, success in the outcome .	20
9. Content of Presentation, Demonstration and Question-Answer: Appropriate slides, content on slides is well organized, results are shown in tabular and graphical formats, interpretation of results is well explained, Communication manners	10
10. Punctuality and Team Work: Punctual, Clear evidence of Team Work, work done with proper coordination and synchronization among team members. Individual Contribution in the project	5
Total Marks	100



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Annexure 3: Rubric Table for Review II Assessment of Major Project

Performance Indicators (PI) (Five Performance levels will be considered in this assessment. 1. Excellent, 2. Very Good, 3. Good, 4. Fair, 5. Poor)	Maximum Marks
1. Incorporation of Suggestions of earlier review: Changes are made as per the suggestion received in the earlier review	5
2. Coding and Implementation (100% expected): Workability of the project, obtaining the results, success in the outcome	20
3 . Testing and Validations: Appropriate quality of testing and validations with all test cases	20
4. Documentation and Quality of the report: Systematic Organization, Technical Content, Depth, apparent efforts put in the preparation of the report i.e. data collection, expression in own language, presentation of results, effectiveness of conclusion etc	20
5. Content of Presentation, Demonstration and Question- Answer: Appropriate slides, content on slides is well organize, results are shown in tabular and graphical formats, interpretation of results is well explained, Communication manners	10
6. Punctuality and Team Work: Punctual, Clear evidence of Team Work, work done with proper coordination and synchronization among team members. Individual Contribution in the project	5
7. Paper publication/ IPR/Participation in various contests/Awards / Consultancy/ sponsored project	20
Total Marks	100



Pimpri Chinchwad Education Trust's
Pimpri Chinchwad College of Engineering

Annexure 4: Rubric Table for Oral Exam of Major Project

Performance Indicators (PI) (Five Performance levels will be considered in this assessment. 1. Excellent, 2. Very Good, 3. Good, 4. Fair, 5. Poor)	Maximum Marks
1. Problem Identification, Novelty, Innovation and Relevance of the topic- Societal relevance, industry or research relevance, possible topic leading to patenting and multidisciplinary	10
2. Literature Survey: Quality of references searched in order of increasing merit - Internet websites, Text Books, Reference Books, Hand Books, Conference papers (National), Conference papers (International), National Journal papers, International Journal Papers, Surveys. The total number should not more than 50 / product sources, web repositories, tools and techniques etc. through literature review	20
3. Requirement Analysis: Requirements are identified and clear understanding of requirements	20
4. Modeling and Design: Quality and correctness in modeling and design	20
5. Coding and Implementation: Workability of the project, obtaining the results, success in the outcome.	20
6. Testing and Validations: Appropriate quality of testing and validations with all test cases	20
7. Documentation and Quality of the report: Systematic Organization, Technical Content, Depth, apparent efforts put in the preparation of the report i.e. data collection, expression in own language, presentation of results, effectiveness of conclusion etc. outcome of documentation	20
8. Presentation and Question Answer - Communication and manners, wishing, greeting, permission to begin, permission to proceed, Body Language, effectiveness in technical communication of the project topic, clarity of concepts, clarity in thought process, Technical Content, Depth, Communication Manners	20
Total Marks	150