

MINI-PROJECT LOGBOOK

GROUP MEMBERS

1. Saachi Kokate
2. Meghana Kovatte
3. Nidhi Mhatre
4. Swar Mhatre

Supervisor/Guide

Dr. G T Thampi



Department of Artificial Intelligence & Data Science

TSEC, Mumbai - 400 050



University of Mumbai

(Academic Year 2023-24)

Department of Artificial Intelligence and Data Science

Program Outcome

Engineering Graduates will be able to:

PO1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

PO6. The engineer and society: Apply reasoning informed by the contextual

knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes (PSO):

PSO1: The ability to Conceptualise, Formulate, Design, Analyse and Create solutions underpinning the knowledge of human cognition, Digital-Computational technologies, Artificial Intelligence and Data Science in terms of real-world problems to contribute to sustainable progress of mankind at large

PSO2: The ability to apply knowledge of basic science, probability & statistics, and computational algorithms to carry out research to contribute the body of knowledge in the realm of computer science/ engineering and Artificial Intelligence & Data Science

Program Educational Objectives (PEO):

PEO1: Graduate shall develop actionable competency in the realm of Artificial Intelligence & Machine Learning, Data Analytics, and Blockchain

PEO2: Graduates shall be inducted in the supply chain of human Capital to Transend current level of research in AI and Data Science

PEO3: Graduates shall be industry ready to man the ever increasing & accelerated demand of Information Technology behemoths in the national and global space to build intelligent solutions in the technology marketplace

PEO4: Graduate will exhibit professional ethics and moral value with capability of working as an individual and as a team to contribute to further the cause of industry and society at large

Vision:

Transcending the process of integrating intelligence to Technology Products and Processes by architectural and algorithmic solution building procedures resulting in autonomous entities which shall surpass collective human intelligence

Mission:

- i. Engage learners to develop competency in algorithmic approaches in resolving complexities of real time problems
- ii. Help pupils to develop competency in creative and architectural solution building processes for building efficiencies
- iii. Initiate the learners to intuitive / creative solution building processes as a complimentary skill set
- iv. Scaling up the process of creating digital learning content in the realm of AI & DS underpinning the theories of cognitive science and virtual /Augmented reality techniques
- v. Design and create a supply chain of human capital with high degree of intellectual/ emotional and spiritual quotient to man the evolving National economies
- vi. Equip students with multi-disciplinary skill sets to offer solutions to real time problems through initiating them to the process of research and innovation

- vii. To create an academic environment for higher learning, lifelong learning, academic excellence, and research endeavours
- viii. Design ways and means of initiating learners to acquire high level of mathematical integrity and analytical competency
- ix. Training the learners to develop emotional integrity, interpersonal Intelligence, and intrapersonal intelligence to make them evolve as a Human capital for the society at large
- x. Sensitising learners about sustainable development process, resilience of systems, and desirability of influencing the evolving world order to optimise wealth and value creation for the mankind

STUDENT INFORMATION

Project Title: General Solution of m x n Rectangular Games

	Student 1	Student 2	Student 3	Student 4
Student ID	50	51	57	58
Name	Saachi Kokate	Meghana Kovatte	Nidhi Mhatre	Swar Mhatre
Class with Division	SE S13	SE S13	SE S13	SE S13
Contact No.	9152530178	8108369245	9421876379	7350571518
E-mail	kokatesaachi@gmail.com	mkovatte@gmail.com	nidhimhatre26@gmail.com	292mhatre@gmail.com
Address	B-302, Khodiyar Krupa CHS	B-13, Pavitra CHS	Type-II-R-2	1803 Nakshatra CHS
	Indralok Phase II	Ovaripada	T.A.P.S Colony	Shailendra Nagar
	Bhayander(E)	Dahisar(E)	Tarapur	Dahisar(E)
	Mumbai-401105	Mumbai-400068	Boisar-401504	Mumbai-400068

INSTRUCTIONS TO STUDENTS:

1. The logbook must be submitted to the Guide or Co-Guide for verification and evaluation of project activities at least once in a week.
2. Log book duly signed by guide must be submitted with project report for evaluation at the end of semester to the department.

DECLARATION

I declare that this project represents my ideas in my own words without plagiarism and wherever others' ideas or words have been included, I have adequately cited and referenced the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my project work. I promise to maintain minimum 75% attendance, as per the University of Mumbai norms. I understand that any violation of the above will be cause for disciplinary action by the Institute.

Yours Faithfully

1. Saachi Kokate

2. Meghana Kovatte

3. Nidhi Mhatre

4. Swar Mhatre

(Date & Signature of Students)

Letter of Acceptance

I undersigned, Dr./Prof. Himani Deshpande working in Artificial Intelligence & Data Science Department, willing to guide the project titled General Solution of m x n Rectangular Games for the Mini-Project-2 (B) Semester IV respectively for the Academic Year 2023-

24.

The names of the students are:

1. Saachi Kokate
2. Meghana Kovatte
3. Nidhi Mhatre
4. Swar Mhatre

(Project Guide)

(Mini-Project Coordinator)

(HOD-AI & DS)

COURSE OUTCOMES

CO No.	COURSE OUTCOME	POs covered	PSOs covered
CO1	Identify problems based on societal /research needs.	PO1, PO3, PO5	PSO1
CO2	Apply Knowledge and skill to solve societal problems in a group.	PO1, PO3, PO7, PO8, PO11, PO12	PSO1, PSO2
CO3	Develop interpersonal skills to work as member of a group or leader.	PO8, PO9, PO10, PO11, PO5	PSO1, PSO2
CO4	Draw the proper inferences from available results through theoretical/ experimental/simulations.	PO1, PO3, PO5, PO7, PO8, PO11, PO12	PSO1, PSO2
CO5	Analyze the impact of solutions in societal and environmental context for sustainable development.	PO3, PO7, PO11, PO12, PO6	PSO1, PSO2
CO6	Use standard norms of engineering practices	PO1, PO2, PO3, PO5, PO7	PSO1, PSO2
CO7	Excel in written and oral communication.	PO11, PO12	PSO1, PSO2
CO8	Demonstrate capabilities of self-learning in a group, which leads to lifelong learning.	PO11, PO12	PSO1, PSO2
CO9	Demonstrate project management principles during project work.	PO2, PO4, PO6	PSO1, PSO2

CO-PO-PSO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3		3		3								3	3	
CO2	3		2				3	2	3	2	3	3	3	3	
CO3					2			2			3	3	3	2	
CO4	3	3	3		2		3	3			2	2	2	3	
CO5			3			3	3				2	2	3	3	
CO6	3	3	3		3		3						3	3	
CO7										3	2	3	1	1	
CO8									3				2	2	
CO9		3		3									3	3	

SCHEDEULE FOR MINI PROJECT

Date	Week	Contents	Remark	Guide Sign
08/01/2024	1	Learn about the nashpy Library		
12/01/2024	2	Learnt about Lemke Howson enumeration and supported enumeration.		
15/01/2024	3	Completed logical part i.e. calculation of equilibrium		
19/01/2024	4	Analyzing output and calculating utility		
22/01/2024	5	Started working on GUI with roots and frames.		
26/01/2024	6	Separated input and output frames and converted input from users into viable datatypes using numpy		
29/01/2024	7	Added options for 2D and 3D arrays as input		
02/02/2024	8	Tested Lemke Howson and support enumerations for outcomes over various payoff matrices		
05/02/2024	9	Calculated and displayed utilities and Nash equilibrium.		
23/02/2024	10			

		Review 1		
11/03/2024	11	Implemented changes based on feedback from review 1		
18/03/2024	12	Tested the code against various Inputs		
30/03/2024	13	Review 2		

PROGRESS/ATTENDANCE REPORT

Title of the Project: General Solution of m x n Rectangular Games

Group No.03	Name of Student 1: Saachi Kokate
	Name of Student 2: Meghana Kovatte
	Name of Student 3: Nidhi Mhatre
	Name of Student 4: Swar Mhatre

Name of the Supervisor/Guide: Dr. G. T. Thampi
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Sr. No	Date	Attendance				Progress/Suggestion	Mapping		
		1	2	3	4		CO	PO	PSO
1	08/01/24	✓	✓	✓	✓	Learn about the nashpy Library.			
2	12/01/24	✓	✓	✓	✓	Learnt about Lemke Howson enumeration and supported enumeration.			
3	15/01/24	✓	✓	✓	✓	Completed logical part i.e. calculation of equilibrium.			
4	19/01/24	✓	✓	✓	✓	Analyzing output and calculating utility.			
5	22/01/24	✓	✓	✓	✓	Started working on GUI with roots and frames.			

6	26/01/24	✓	✓	✓	✓	Separated input and output frames and converted input from users into viable datatypes using numpy.			
7	29/01/24	✓	✓	✓	✓	Added options for 2D and 3D arrays as input.			
8	02/02/24	✓	✓	✓	✓	Tested Lemke Howson and support enumerations for outcomes over various payoff matrices.			
9	05/02/24	✓	✓	✓	✓	Calculated and displayed utilities and Nash equilibrium.			
10	23/02/24	✓	✓	✓	✓	Review 1			
11	11/03/24	✓	✓	✓	✓	Implemented changes based on feedback from review 1			
12	18/03/24	✓	✓	✓	✓	Tested the code against various inputs			
13	30/03/24	✓	✓	✓	✓	Review 2			

Name, Date & Sign of Supervisor/Guide

REVIEW-I FORM

Group No: 03

Title of Mini-Project: General Solution of m x n Rectangular Games

Date of Review-I: 26/02/2024

No. of students in project team: 4

Student Mini-Project Performance Analysis (Put Tick as per your Observation)

Sr. No.	Excellent (3) Very Good (2) Observation	Good (1)		
		(3)	(2)	(1)
1	Quality of problem and Clarity	<input checked="" type="checkbox"/>		
2	Literature Survey		<input checked="" type="checkbox"/>	
3	Innovativeness in solutions	<input checked="" type="checkbox"/>		
4	Feasibility Of the Project	<input checked="" type="checkbox"/>		
5	Usage of technology	<input checked="" type="checkbox"/>		
6	Cost effectiveness and Societal impact	<input checked="" type="checkbox"/>		
7	Overall Presentation & Performance	<input checked="" type="checkbox"/>		
Comments:				

Project Guide & Panel Members Signature:

1) Dr. G. T. Thampi

2) Dr. Madhuri Rao

3) Prof. Sandeep Shaikh

Name, Date & Signature

Project Coordinator

Dr. Himani Deshpande

Name, Date & Signature

HOD-AI & DS

REVIEW-II FORM

Group No: 03

Title of Mini-Project: General Solution of m x n Rectangular Games

Date of Review-II: / 2024

No. of students in project team: 04

Student Mini-Project Performance Analysis (Put Tick as per your Observation)

Sr. No.	Excellent (3) Very Good (2) Good (1) Observation			
		(3)	(2)	(1)
1	Usage of effective skill sets	✓		
2	Design and Implementation	✓		
3	Testing and Analysis	✓		
4	Use of standard engineering norms	✓		
5	Cost effectiveness and Societal impact	✓		
6	Contribution of an individual member in team	✓		
7	Overall Presentation & Performance	✓		
Comments:				

Project Guide & Panel Members Signature:

1) Dr. G. T. Thampi

2) Dr. Madhuri Rao

3) Prof. Himani Joshi

Dr. Himani Deshpande

Name, Date & Signature

Project Coordinator

Dr. Himani Deshpande

Name, Date & Signature

HOD- AI& DS

EXAMINER'S FEEDBACK FORM

Name of External examiner: _____

College of External examiner: _____

Name of Internal examiner: _____

Date of Examination: ____ / ____ / ____ No. of students in project

team: Availability of separate lab for the project: Yes / No

Student Performance Analysis (Put Tick as per your Observation)

Excellent (3)		Very Good (2)	Good (1)		
Sr. No.	Observation		(3)	(2)	(1)
1	Quality of problem and Clarity				
2	Innovativeness in solutions				
3	Cost effectiveness and Societal impact				
4	Full functioning of working model as per stated requirements				
5	Effective use of skill sets				
6	Effective use of standard engineering norms				
7	Contribution of an individual's as member or leader				
8	Clarity in written and oral communication				
9	Overall performance				

- Can same mini project extend to next semester by adding new objectives/ideas? (Yes/ No)
- If yes, suggest new Innovative Technique/Idea/ objectives related to this project.

Name, Date & Signature
External Examiner

Name, Date & Signature
Internal Examiner

Name, Date & Signature
HOD-AI&DS