School Of Computer Science
University Of Petroleum and Energy Studies
P.O. Bidholi, Via-Prem Nagar DEHRADUN-248007

Bachelors of Technology in Computer Science & Engineering

Issue Date: September 13, 21

Minor ☑ Major ☐

Project Title	Analysis of Rubik's Cube Solving Algorithms	Mentor Name	Project Number Bikram Pratim Bhuyan

S. No.	Roll Number	Branch	Name	Role	Signature
1	R177219080	B. Tech. CSE AI & ML B-3 Sem-V	Garvit Khurana	Developer & Version Control	Garvit
2	R177219191	B. Tech. CSE AI & ML B-6 Sem-V	Tanya Malhotra	Developer & Documentation	Tanya
3	R177219194	B. Tech. CSE AI & ML B-6 Sem-V	Utkarsh Gupta	Developer & Team Leader	Utkarsh
4	R177219196	B. Tech. CSE AI & ML B-6 Sem-V	Vanshaj Goel	Developer & Researcher	Vanshaj

Bikram Pratim Bhuyan

Project Mentor	Head Of Department

Date							Project Status
	Title Approval	Synopsis	Mid-Term	End-Term	Progress Report	Total Marks	Authenticity Yes/ No
R.No	Timly Submission	Marks	MARKS	MARKS	MARKS	MARKS	Satisfactory Yes/ No
							Activity Coordinator

Synopsis Evaluation

		30 Marks						30 Marks							40 Marks	
Rollnumber	VIVA	Reviewer1	Reviewer2	Reviewer3	Reviewer4	Reviewer5	FEEDBACK	Body Language	Dress Code	Communication Skill	Presentation Skill	Analytical Skill	Team Spirit	Documents	PPT	Report
								1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5			
								1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5			
								1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5			
								1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5			

Panel Remark

Reviewer 1	Reviewer 2	Reviewer 3	Reviewer 4	Reviewer 5

Mid- Term Evaluation

		30 Marks						30 Marks							40 Marks	
Rollnumber	VIVA	Reviewer1	Reviewer2	Reviewer3	Reviewer4	Reviewer5	FEEDBACK	Body Language	Dress Code	Communication Skill	Presentation Skill	Analytical Skill	Team Spirit	Documents	PPT	Report
								1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5			
								1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5			
								1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5			
								1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5			

Panel Remark

Reviewer 1	Reviewer 2	Reviewer 3	Reviewer 4	Reviewer 5

End-Term Evaluation

		30 Marks						30 Marks							40 Marks	
Rollnumber	VIVA	Reviewer1	Reviewer2	Reviewer3	Reviewer4	Reviewer5	FEEDBACK	Body Language	Dress Code	Communication Skill	Presentation Skill	Analytical Skill	Team Spirit	Documents	PPT	Report
								1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5			
								1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5			
								1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5			
								1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5	1 | 2 | 3 | 4 | 5			

Panel Remark

Reviewer 1	Reviewer 2	Reviewer 3	Reviewer 4	Reviewer 5

UPES
UNIVERSITY WITH A PURPOSE

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Bachelors of Technolgy in Computer Science Engineering

Minor ☑ Major ☐

Project Title	Analysis of Rubik's Cube Solving Algorithms	Mentor Name	Bikram Pratim Bhuyan

Abstract

The Rubik's Cube is a 3 – dimensional combination puzzle which was invented by a Hungarian sculptor and professor of architecture named Ernő Rubik in the year 1974. It is a very popular mechanical puzzle which has attracted attention around the world because of its unique characteristics. It is widely used for scientific research and development. There are a number of algorithms to solve a 3x3x3 Rubik's cube. This project mainly aims at implementing and analysing various algorithms, thereby comparing and computing their time and space complexities.

Objective

This project's main objective is to compare the complexities of different algorithms for solving a 3×3×3 Rubik's cube. The algorithms would be analysed on the basis of their time complexities, space complexities, the number of moves or steps taken by the algorithm to solve a scrambled cube and the lines of code.

Methodology

First we will be studying all the cube solving algorithms, then we will be programming those algorithm. Next an scrambling algorithm is needed to for which we will be programming Markov-chain algorithm and integrating them with solving algorithms. Further we will be running the algorithm for test cases to rank them.

Progress 1

Mentor Remark

	Marks	10	10	10	10	10	10	10	10	10	10
	Rollno/Marks(10)	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Synopsis	Mid-term	End-Term
	Date/Mentor Signature										

Progress 2

Mentor Remark

	Marks	10	10	10	10	10	10	10	10	10	10
	Rollno	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Synopsis	Mid-term	End-Term
	Date/Mentor Signature										

Guideline: 1) A project group can be of maximum 4 members and no alteration in the group member will be entertained later.
Guideline: 2) Methodology should have following steps Step1: Literature Review; Step2: Identification of Requirement (Type of Data source, Amount of Data, & Format of Data); Step3: Identification of Algorithm; Step 4: Comparative study; Step5: Design and Development of System/Architecture; Step 6: Implementation; Step7: Results **Guideline:3)** Student should upload softcopies of all the documents (reports and power point presentations) in "Project Directory", 24 hrs prior to evaluation. **Guideline:4)** Panel member will give feedback to individual on the scale of 1 to 5 and this scale will change for defaulter i.e., 1 to 3 scale.

1: Poor 2: Average 3: Good 4: Excellent 5: Outstanding