  **School Of Computer Science Issue Date:** September 13, 21

**University Of Petroleum and Energy Studies**

 **P.O. Bidholi, Via-Prem Nagar DEHRADUN-248007**

**Major**

**Bachelors of Technology in Computer Science &**

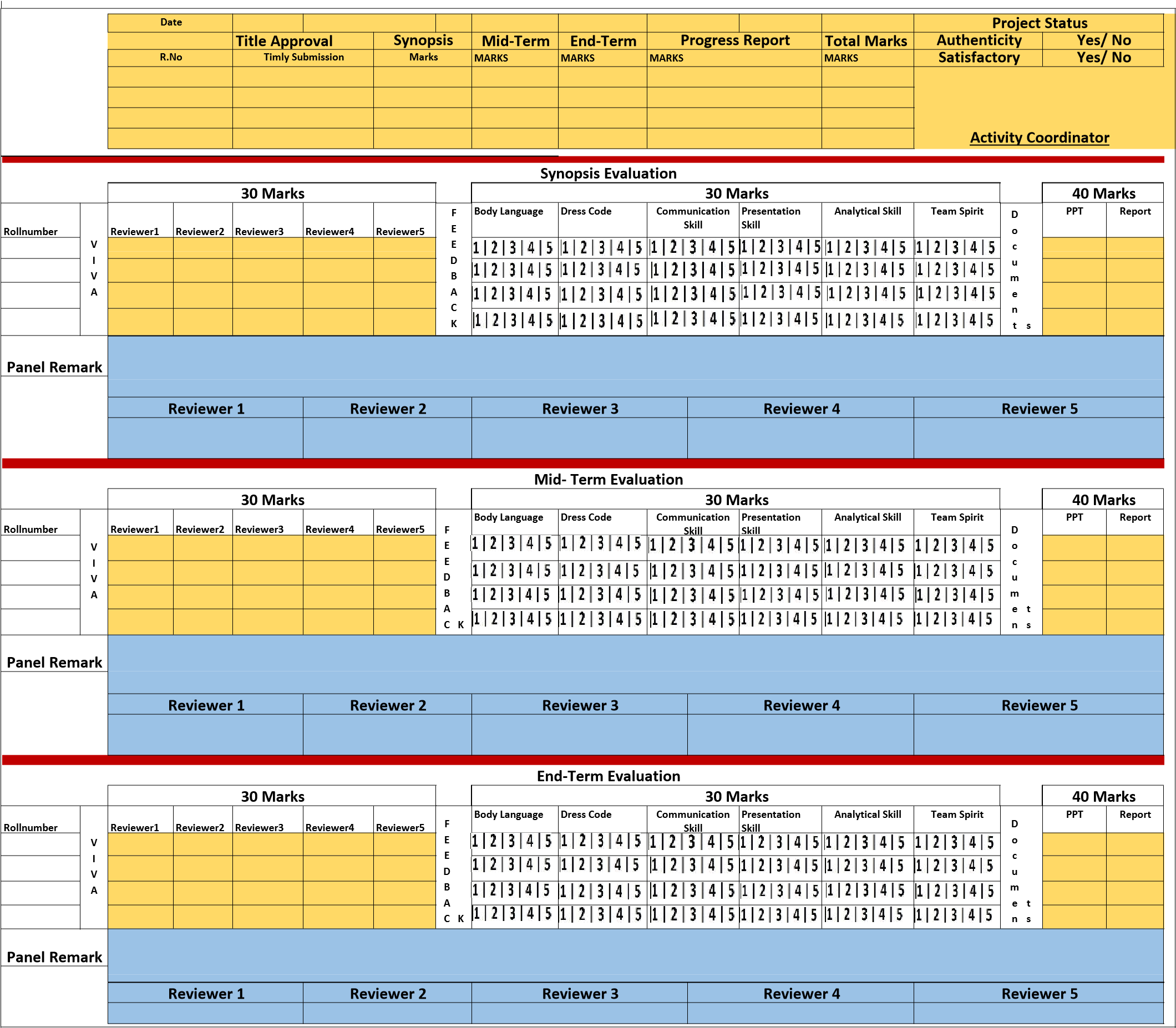
**Engineering Minor**

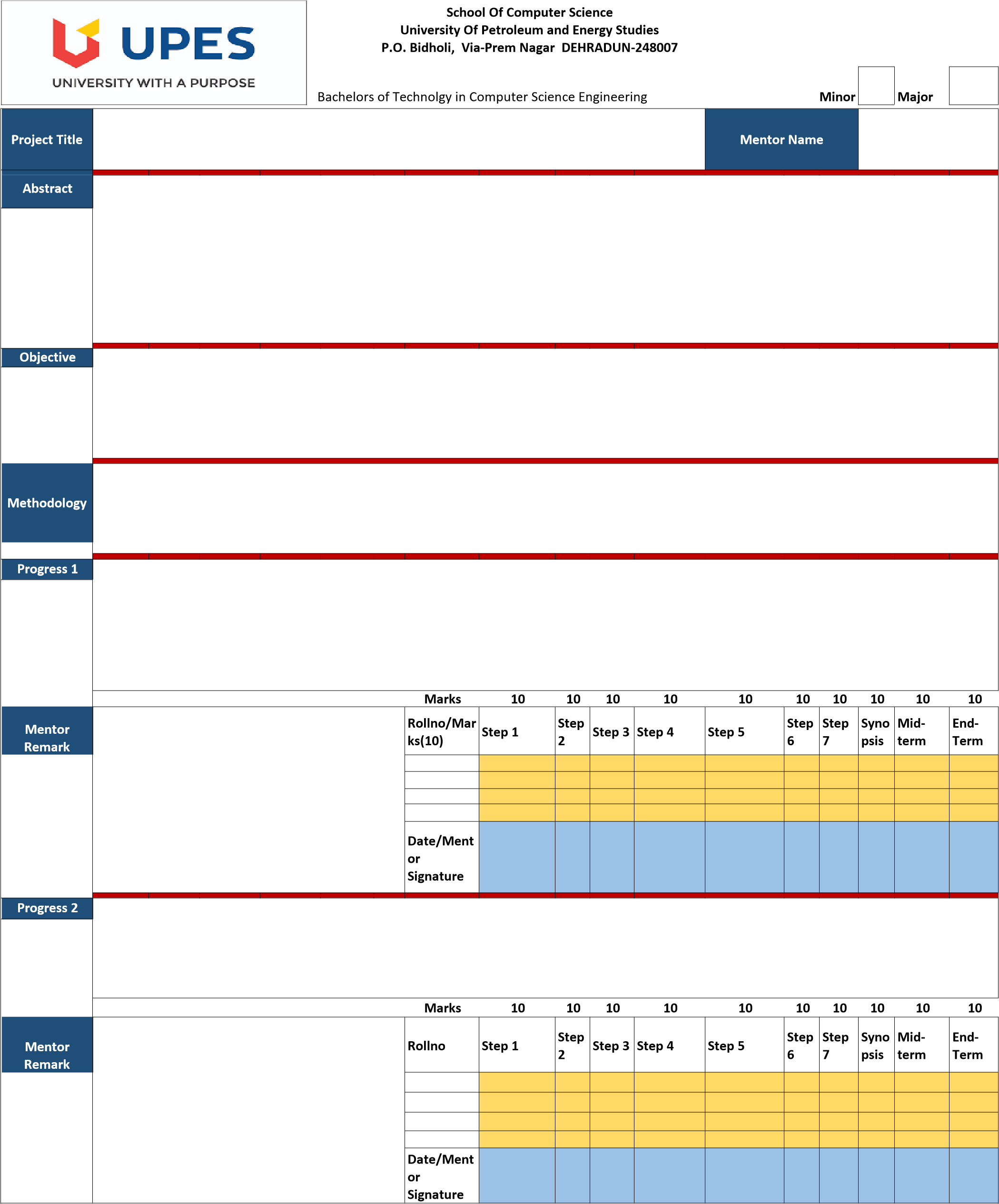
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| **Project Title** | | Analysis of Rubik’s Cube Solving Algorithms | | | | | **Mentor Name** | **Project Number** | |
| Bikram Pratim Bhuyan | |
| **S. No.** | | **Roll Number** | **Branch** | **Name** | **Role** | | | **Signature** |
| 1 | | R177219080 | B. Tech. CSE AI & ML B-3 Sem-V | Garvit Khurana | Developer & Version Control | | |  |
| 2 | | R177219191 | B. Tech. CSE AI & ML B-6 Sem-V | Tanya Malhotra | Developer & Documentation | | |  |
| 3 | | R177219194 | B. Tech. CSE AI & ML B-6 Sem-V | Utkarsh Gupta | Developer & Team Leader | | |  |
| 4 | | R177219196 | B. Tech. CSE AI & ML B-6 Sem-V | Vanshaj Goel | Developer & Researcher | | |  |



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| **Project Mentor** |  | **Head Of Department** |





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.

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.

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.

Analysis of Rubik’s Cube Solving Algorithms

Bikram Pratim Bhuyan

**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