Good morning everyone

Our project is \_\_\_\_\_

And we have the same old problem description where we know our environment and multiple agents should navigate ensuring safe and collision free movement without communicating with each other.

Now coming on to the Methodology

* First, We started by implementing the A star algorithm
* Then, We stepped into the ICBS algorithm implementation by referring the this algorithm.
* After implementing these two, we combined both these search algorithm and provided input as a text file for the environment , the no. of agents and the start and goal positions of the agents.
* And in the ICBS algorithm we attempt to implement standard and disjoint splitting.

Now having a quick brief about what’s cardinal, semi cardinal and non cardinal.

Cardinal - if both the constraints derived from conflict increases the cost of the path travelled by the agents.

Semi Cardinal - if one of the two constraints derived from conflict increases the cost but adding the other keeps the cost unchanged.

Non cardinal - if adding the two constraints doesn’t affect the cost after generating the new path.

Standard splitting randomly selects a conflict to split and resolve by dividing it into two negative constraints.

Disjoint splitting presents an alternative to rectify inefficiencies in the standard splitting CBS algorithm. Instead of dividing each conflict into two negative constraints, it divides it into one negative constraint and a positive constraint

where the negative mandates that the agent should not be there on a particular position at a particular time and positive mandates that particular agent must occupy particular location at that particular time.

So what happens in this approach is it eliminates redundant plans between the two child nodes generated, potentially improving search efficiency.

Now the Results and outcome of the project will be presented by abhijeet.