

# Robot Path Planning in Dynamic Environments Using Voronoi Diagrams

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Robots and especially mobile robots are being used in a lot of industries, to create a powerful impact on the efficiency and effectiveness of different processes. Mobile robots were in use for quite some time but the current autonomous vehicle trend and discussion has brought this area of research in spotlight again. Planning for the path for a robot in an environment with different objects and obstacles can be done using different methods and techniques [1]. These algorithms work very efficiently and are used with slight modifications and along each other for different tasks depending on the requirements. [2]

As mentioned earlier that we have had great progress in algorithms and methods for planning the path for a robot, but those methods are for static environments. Such environments are where the objects other than the robot are not moving. While real life uses of these methods are not applicable because of the complex and dynamic nature of the environment. So, this paper [3] provides a method using Voronoi Diagram along with computational geometry techniques to provide path and recalculate the path with low computation as the environment changes dynamically.

Voronoi Diagram methods are already good at planning the paths because it takes in account the obstacles very well and creates the path equidistant from each obstacle. In this project, we will implement the method described in here [3]. It uses Voronoi Diagram and other techniques to tackle the dynamic situations. It helps in avoiding redundant and cost heavy replans which makes the overall cost of the path very low. Plus, it also takes in account different factors including the orientation, speed, distance and position of objects to recalculate the path efficiently.

## References

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