# ABSTRACT

With the passing of time more and more machines have replaced human labour. In our days robotic systems have been injected deep into the production industry decreasing costs but at the same time the exposure of humans to dangerous environments. As a result of this, the development of the robotics branch and the research done on development of all and any sub categories, one of which is robotic navigation.

Robotic navigation includes activities such as perception exploration, map modelling, position detection as well as planning and execution of movement. These characteristics of robotic navigation play an important role in the determination of the result which is improving and increasing efficiency of a robot, without necessarily taking into account its current environment.

The current thesis has to do with the development of the modelling code of a 2D environment for robotic navigation. With the execution of the code the robot is able to identify its current position, distinguish between obstacles in an environment and at the end calculate the distance from these obstacles. For this reason the thesis is broken down into two parts. In the first part the theoretical underweight required for the development of the code is analysed .Initially a presentation on robotic navigation and its functions as well as a bibliographic review regarding the research done for this. What follows is a description of the tools needed for the development of the system which are explained and analysed at the end of part one. In part two an explanation and description on the development of the code according to methodology which results shapes of obstacles by Minkowski addition with robots shape and the distances to them. Finally results from testing done on code's action with an example of 2D environment.