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**PROJECT REPORT
ON**

“AN APPROACH TO SLAM FOR INDOOR ROBOTS”

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**Under the Guidance
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ABSTRACT

The purpose of this project was to develop a system for exploring unknown indoor environments. To this end, the system comprises of two entities viz., a robotic agent (here onwards called the Agent) for perception of the environment and a remote base station (here onwards called the Base) for processing of perception data, map building and high level control of The Agent. The Agent continuously moves around and perceives the arena through some kind of exteroceptive sensing and sends perception data to the Base. The Base processes this data to generate a conceptual map and hence a user readable graphical map of the Agent's environment. Once such map is generated, the user can command the Agent to move to a particular location by pointing to that location on the Base. In order to accomplish this, several technologies were combined including an IR rangefinder, optical encoders, differential drive based drive system and wireless networking to build the Agent and various data visualization techniques and path planning techniques for the Base. This system was designed with future expansion in mind.