**Simultaneous Localization and Mapping**

**A General Approach to Different Methods**

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**TABLE OF CONTENTS**

|  |  |
| --- | --- |
| ABSTRACT…………………………………………………………………….. |  |
| 1 INTRODUCTION   …………………………………………………………… | 6 |
| 2 MOTIVATION …………………………………...……………….. | 6 |
| 3 METHODOLOGY……….………………………………………………........  3.1 The General Methods…..............................................................................  3.1.1 Kalman Filter...............................................................................  3.1.2 Extended Kalman Filter...............................................................  3.1.3 Particle Filter…................................................................................. 4 CONCLUSION AND CHALLENGES……………………………………….. | 6  8  10  10  10  11 |
| REFERENCES ………………………………………………………………….. | 27 |

**ABSTRACT**

**1 INTRODUCTION**

Robots in millennium era were always popular. They were popular among both users and researchers. In mobile robots, self driving or observing from outside and processing inside were important. Under heavy research years, Simultaneous Localization and Mapping (SLAM) became extremely popular among researchers. SLAM is a method that on an unknown location, the agent is creating a map concurrently keeping the data of agent’s location. This technique allows a robot to behave like an intelligent being.

SLAM is widely used in self-driving cars, and robots that built to make investigation on unknown places to people (Such as MARS). SLAM is preferred because with no prior knowledge robots are still making good progress. There are multiple SLAM algorithms on literature that are beneficial in particular case or not effective. Introduced algorithms for SLAM are as Kalman SLAM, EKF SLAM, FAST SLAM, L-SLAM, GraphSLAM, LSD-SLAM, S-PTAM, ORB-SLAM, MonoSLAM, CoSLAM. There are other algorithms used for SLAM but in this paper, we will try to focus on three of them. At the end of this paper, the implementations will show their comparisons in terms of their efficiency, run time complexity and properness.

**2 MOTIVATION**

SLAM is a hot topic in the literature and all of the content demonstrates diversity. As stated in introduction, there multiple methods…

**3 METHODOLOGY**

**3.1 The General Methods**

**4 CONCLUSIONS AND CHALLENGES**

**REFERENCES**

Russell, S. and Norvig, P. (2016). *Artificial intelligence: A Modern Approach*. 3rd ed. Boston: Pearson.