

The effect of sensor and movement variances: I think the effect of sensor is more influential than the movement as the sensor. The reason is that the sensor returns binary values, so either you have the right data or you have nothing at all. On the other hand, for the movement variance, you can have a little errors and it is not affect your result that much. However, the movement variance can distort the synchronization between the local sensor and the odometry information. That would, in turn make all of our sensor information be incorrect.

For the Makov and the MC localization, the Makov needs less time to compute, but it tends to take a little longer to localize the bot than the MC. The MC takes longer because it has a lot of pose that needs to keep track and update. However, those information gives it a better prediction.

For the MC localization, the sensor and movement variances have less influence on the result of its than the result of the Makow. The reason is that it has more information from the pose to minimize the error.