Simulator Based Study of Robot Alignment and Localization

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Abstract: Localization techniques are of key interest for mobile robot groups. A certain node is usable by the system when its position is known and it can communicate (one-way or two-ways). Ideally, the localization should be quick, precise and with low resource consumption. For this, the possibilities to keep track of the node should be seen as parameters and modified to obtain the best results. To study such a localization case of a group of robots we developed a simulation environment based on the hardware configuration from our previous work (mobile robots with wireless communication and ultrasound based location system). This paper aims to show the impact certain parameters and situations have on the localization problem.