

**Original**

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# Scene Description using Scale-Invariant Features for Mobile Robot Localization

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In a previous study, we investigated the construction of an environmental map for autonomous mobile robots. We programmed a mobile robot to construct an environmental map using the information obtained from a laser range finder and rotary encoders. However, robot localization using an environmental map failed in homogeneous environments. To solve this problem, additional features from the environment in which the robot is operating must be extracted for use in mapping. For this study, a robot was programmed to acquire omnidirectional images and generate a localization classifier. This paper proposes a method of using special image information as a new feature of environmental mapping. The effectiveness of the proposed method was verified from results of an evaluation experiment for an indoor environment.

**Key Words** : Localization, Self-organizing maps, Bag-of-visual words, Autonomous mobile robot