タイトル

ＴｏＦカメラを用いた確率的ポリゴンメッシュの生成

Time-of-flight camera based Probabilistic Polygonal Mesh mapping

概要

Time-of-flight cameras, a type of optical sensor that produces 2D range images, have recently become available; they offer high framerate 3D ranging at no processing cost but with high noise. We explore the use of this source of information to build and maintain a new type of 3D environment map called Probabilistic Polygonal Mesh. Every new scan is used to update a probabilistic displacement texture wrapped on the mesh; this texture is then used to simplify, refine, or adjust the base mesh. The result is a sensor noise resistant, dynamic 3D model of the environment destined to be used by mobile robots.

Test robot "Kappa"

URL	http://winnie.kuis.kyoto-u.ac.jp/~kenzo/ppm

産業界への展開例・適用分野

Applications exploit the main characteristics of our method: (1) works in unknown environment with no setup required, (2) dynamic 3D mesh generation, (3) probabilistic uncertainty, (4) overlay of other textures on the PPM (visual, sound emission, material, texture).
In particular, scene understanding (1,2,3,4), simultaneous localization and mapping (1,3), automatic medium-quality 3D model acquisition (1,2,4), augmented/mixed reality and telepresence (1,2,4).

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