Pose Estimation from Intensity and Range Data via Circular Cues

by

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The circle is one of the most ubiquitous geometric feature of objects encountered in our industrial daily lives. Three dimensional measurement of such is very often required in a variety of tasks in computer vision. Methods and portable implementations for parametric measurement of a circle in three dimensional space from the scalar field (image intensity) and the vector field (range data) of a stereo camera scene are presented. The geometric concept *hypercircle* of any finite-dimensional Eucledean space is introduced to generalize the *circle*, as yet limited to 2- and 3-dimensional spaces. Our implementations are thus robustly applicable to datasets of *hypercircles* in any finite dimension.