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On Invariance and Covariance in the Beltrami Framework for Vision

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Abstract

We analyze the role of different invariant principles in image processing and analysis. A distinction between the passive and active principles is emphasized, and the geometric Beltrami framework is shown to incorporate and explain some of the known invariant flows e.g. the affine invariant flow. It is also demonstrated that the new concepts put forward in this framework enable us to suggest new invariant principles namely conformal invariance of the image manifold and the case where the co-dimension is greater than one.

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