Vortragsankündigung

Montag, 18. Dezember 2006 – 10:15
Seminarraum 24 (Architekturgebäude- Untergeschoss)
Institut für Informatik

Thomas Hotz
Universität Göttingen

„Global Models for the Orientation Field of Fingerprints: An Approach Based on Quadratic Differentials"

Abstract:

Quadratic differentials naturally define analytic orientation fields on planar surfaces. We propose to model orientation fields of fingerprints by specifying quadratic differentials.

Models for all fingerprint classes such as arches, loops and whorls are laid out. These models are parametrised by few, geometrically interpretable parameters which are invariant under Euclidean motions. Important applications of these models are the use of their parameters as indices of large fingerprint databases, as well as the definition of intrinsic coordinates for single fingerprint images. Within the framework of quadratic differentials we are able to verify analytically Penrose's formula for the singularities on a palm [LS Penrose, "Dermatoglyphics", Scientific American, Vol. 221, No 6, pp. 73-84, 1969]. This goes beyond the scope of earlier models for the orientation field as those are restricted to the observed planar fingerprint region.