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Disciplina	006.3/7
Soggetti	Optical data processing Application software Computer graphics Artificial intelligence Pattern recognition Control engineering Robotics Mechatronics Image Processing and Computer Vision Computer Applications Computer Graphics Artificial Intelligence Pattern Recognition Control, Robotics, Mechatronics
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Nota di contenuto	Algebraic aspects of designing behavior based systems -- From multidimensional signals to the generation of responses -- Perception and action using multilinear forms -- Local image operators and iconic structure -- On automatic selection of temporal scales in time-causal scale-space -- Some applications of representations of lie algebras and lie groups -- A systematic approach to geometry-based grouping and non-accidentalness -- Multi-dimensional signal processing using an

algebraically extended signal representation -- On Hestenes' formalization for describing linear image transforms -- Fractal basis functions for pattern recognition -- Trilinear tensor: The fundamental construct of multiple-view geometry and its applications -- Algebraic and geometric tools to compute projective and permutation invariants -- A unified language for computer vision and robotics -- Structure from translational observer motion -- The geometry of visual space distortion -- The cascaded Hough transform as support for grouping and finding vanishing points and lines -- Visual perception strategies for 3D reconstruction -- Statistical optimization and geometric visual inference -- Path prediction and classification based on non-linear filtering -- Bottom-up derivation of the qualitatively different behaviors of a car across varying spatio-temporal scales: A study in abstraction of goal-directed motion -- Neural network approaches for perception and action -- Geometric neural networks.

Sommario/riassunto

The book constitutes the refereed proceedings of the International Workshop on Algebraic Frames for the Perception-Action Cycle, AFPAC '97, held in Kiel, Germany, in September 1997. The volume presents 12 revised full papers carefully reviewed and selected for inclusion in the book. Also included are 10 full invited papers by leading researchers in the area providing a representative state-of-the-art assessment of this rapidly growing field. The papers are organized in topical sections on PAC systems, low level and early vision, recognition of visual structure, processing of 3D visual space, representation and shape perception, inference and action, and visual and motor neurocomputation.