

Dickmanns ED (1987). **Object Recognition and Real-Time Relative State Estimation Under Egomotion**

Abstract: An integrated approach is given combining 3D-object representation, motion constraints represented by dynamical models as used in modern control theory, and forward perspective projection in order to arrive at a vision process exploiting the last image of the sequence only and yet yielding a complete relative state vector estimation including the spatial velocity components. This cybernetic vision concept instantiates in the processing system a spatio-temporal world model servoed by image feature-tracking and -aggregation. The method is demonstrated at the task of planar relative positioning of an air-cushion vehicle (satellite docking with model control plant).