FREE−FORM PLANAR CURVE TRACKING USING RELATED POINTS (TueAmPO4)

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Abstract :

Tracking free form objects by fitting curve models to their boundaries in real−time is not feasible due to the computational burden of fitting algorithms. In this paper, we pro−pose to do fitting only for certain frames in an image se−quence and fill in the missing ones using Kalman filtering technique. An algorithm is presented to track a free−form shaped object, moving along an unknown trajectory, within the camera's field of view (FOV). A discrete steady−state Kalman filter is used to estimate the future positions and orientation of the target object. Kalman filter uses the "re−lated points" extracted from the decomposition of implicit polynomials of target's boundary curves and measured posi−tion of target's centroid. Related points undergo the same motion with the curve, hence could be used to estimate the orientation of the target. The resulting algorithm is verified with simulations.

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