Conferencia invitada

RECOGNITION-BY-PARTS METHODS
-STRANGENESS AND BOOSTING –
- ADAPTATIVE AND ROBUST CORRELATION FILTERS-

por

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Resumen

We address multi – class (open set) (categorical and object) recognition tasks using recognition – by – parts. The first approach proposed employs transduction and boosting. Transduction provides the inference means needed for local estimation and reasoning as it seeks for a consistent and stable labeling of training and test data. Transduction connects between Kolmogorov complexity and randomness deficiency to define strangeness and p – values confidence measures useful for feature selection, outlier detection, and data fusion. Boosting, combines in an iterative fashion part – based, model – free, and non – parametric simple weak classifiers, whose contents and relative ranking are driven by the strangeness. The benefits of the proposed approach include a priori setting of rejection thresholds, no need for image segmentation, and robustness to occlusion, clutter, and disguise.
The second recognition-by-parts approach proposed introduces Adaptive and Robust Correlation Filters (ARCF) whose filter banks are optimized match (correlation) filters for the component - based and holistic mix of (face) components. ARCF expands on MACE filters and adaptive beamforming from radar / sonar. The adaptive aspect of ARCF comes from its derivation using both training and test data, while the robust aspect comes from ARCF being optimized to decrease their sensitivity to distortion. ARCF design using correlation filters and the Tikhonov regularization are found to be similar.

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