January 25, 2010

Interactive Learning of Task-driven Visual Attention Control

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ABSTRACT OF THE TALK

Similar to humans and primates, artificial creatures like robots are limited in terms of allocation of their resources to huge sensory and perceptual information. Serial processing mechanisms used in the design of such creatures demands engineering attentional control mechanisms. In this study, we present a new algorithm for learning top-down sequential visual attention control for agents acting in interactive environments. Our method is based on the key idea, that attention can be learned best in concert with visual representations through automatic construction and discretization of the visual state space. The tree representing the top-down attention is incrementally refined whenever aliasing occurs by selecting the most appropriate saccadic direction. The proposed approach is evaluated on action- based object recognition and urban navigation tasks, where obtained results support applicability and usefulness of developed saccade movement method for robotics.