

## 一种改进的基于随机森林的快速人眼定位方法

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**摘 要:** 为了得到更强的鲁棒性和更好的实时性, 针对精确的人眼定位提出了基于随机森林的自适应梯度提升算法(Adaptive Gradient Boosting Random Forest), 同时引入了更加多样的训练样本来降低诸如光线强弱, 旋转角度等外部环境对定位的影响. 在 BioID 数据库中, 此方法的准确率为 92%, 定位时间少于 1 ms. 实验结果表明, 它已经满足在大多数不可控环境对鲁棒性和实时性的要求.

**关键词:** 人眼定位; 随机森林; 自适应梯度提升

## A Revised Eye-Localization Algorithm Based on Random Forest

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**Abstract:** In this paper, we present an enhanced Random Forest(RF) model for precise eye localization. To extend Random Forest, we 1) propose the randomized trees with adaptive gradient boosting for a more accurate eye localization 2) introduce a series of standard samples with random perturbation for the robustness to changes in illumination and head pose and eye rotation. Performance results of our methods showed that it can obtain an accuracy of 92 percent on BioID database and gives a frame processing time of less than 1ms because of the low computation cost. Experimental results on the challenging BioID database show that our model can locate eyes accurately and efficiently under a broad range of uncontrolled variations involving lightings, camera qualities, occlusions, etc.

**Key words:** eye localization; random forest; adaptive gradient boosting

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