

Title: Cascaded Regression for 3D Pose Estimation from Monocular Images

By: Ghadi Salem

Advisor: Dr. Monson Hayes

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Abstract: Pose estimation is one of the key tasks in computer vision. Very often, the input and output domains for pose estimation are 2D images. A variety of algorithms achieve state of the art performance for pose estimation in 2D images. One successful method is the Cascaded Pose Regression (CPR) algorithm. We present a novel extension of CPR to enable 3D pose estimation from 2D monocular images. Our algorithm addresses some limitations and introduces key enhancements to the base algorithm. We apply the algorithm to a newly introduced data set for laboratory mouse key-points estimation. The task of estimating mouse pose is of interest to vision researchers due to the challenging nature of the target, namely its non-rigidity and its lack of visible features. Estimating mouse pose is also of great interest to biomedical researchers as it could be used to obtain key phenotypical measures.