

Title: Extraction of Superficial Vasculature in Thermal Imaging

Authors: Chinmay Manohar and Ioannis Pavlidis

Department of Computer Science, Infrared Imaging Group

Abstract: Monitoring human physiological variables from a distance is a new revolutionary concept. Available bio-heat transfer models have made the computation of physiological variables such as directional blood flow and cardiac pulse possible. For the computation of these variables we need to know the location and geometry of the major blood vessels near the skin surface. Our approach focuses mainly on the problem of automatic localization of major blood vessels in the skin. We propose a method based on mathematical morphology to localize superficial vasculature in thermal imaging. Then, we use a shape estimation algorithm based on local curvature information to compute the vessel's radius and thus, extract its geometric projection on the image plane. We conclude by presenting qualitative and quantitative experimental results that we achieved with our approach.