Shape matching using CPS and Splines

Gerardo M. Ramos\textsuperscript{a1}, Rodrigo G. Santos\textsuperscript{a2}, Christian Schaerer\textsuperscript{3}
\textsuperscript{a}Facultad Politécnica, Universidad Nacional de Asunción, Central, Paraguay

Abstract

The human vision collects important information of the surrounding environment. Although, the human vision is a sense very well developed for its function, computer vision still needs a lot of improvements. To this end, several algorithms for matching points in outer contour images have been proposed. However, a limitation of the methods consists in the necessity to refine the number of sampling points in the outer contour if the image has high variation in its contour, and more specifically at edge corners. In this article, it is proposed a variant of the shape descriptor CPS - Contour - Point Signature that involves the usage of cubic Splines to smooth the edges of the original image. This strategy allows to eliminate high frequencies in the contour. Once the shape descriptor is built, an image dissimilarity measure is established, which can be used in shape recognition algorithms. The method is then tested against a shape database, and its results are compared to other existing methods to obtain a comparative performance of proposal algorithm. This is a going work and results encourages the deepen research of the technique.

Keywords: Shape descriptor, shape matching, CPS, splines, similarity measure, object representation, point signature, point correspondence.

\textsuperscript{1}E-mail Corresponding Author: ragen93@gmail.com
\textsuperscript{2}E-mail Corresponding Author: rodrigogs14@gmail.com
\textsuperscript{3}E-mail Corresponding Author: chris.schaerer@gmail.com