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Use of Bezier curves for modeling of Sinhala characters

Sinhala characters have many sections, which are nearly circular or elliptical. Because of this they are good candidates for modeling by Bezier curves. Bezier curves are drawn by taking weighted averages of coordinates of a set of control points. This set includes the start point and the end point of the curve. The weight factor for each control point depends on a parameter u, which varies from 0 to 1. When $u = 0$, 100 % weight of the start point is taken whereas when $u = 1$, 100% weight of the end point is taken. When $0 < u < 1$, the weight factor for each point is a polynomial function of u. However the variation of weight factor as u increases from 0 to 1 is smooth and we can expect a smooth curve to model parts of Sinhala characters.

In this work, we have modeled several Sinhala characters using a series of Bezier curves. In each case, the character was broken down to sections depending on the change in curvature. For each section, a Bezier curve was created. Since Bezier curves pass through the first and the last point, it is easy to combine all the Bezier curves and obtain the complete character.

Many Sinhala characters are formed by adding a modifier to the basic character. These modifiers are common to many characters. However, the place of insertion of the modifier, the x- and y- scaling, and the orientation may differ. In such cases too, we can have one Bezier representation for the common modifier. By transforming the control points as required, we can obtain the correct sized modifier for any base character.