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TACO HOEKWATER, Redactioneel [From the editor]; p. 1

Overview.

HANS HAGEN, The font name mess; pp. 2–8

Font names as well as file names of fonts are highly inconsistent across vendors, within vendors and platforms. As we have to deal with this matter, in ConT_EXt MkIV we have several ways to address a font: by file name, by font name, and by specification. In this article I describe all three.

KEES VAN DER LAAN, Circle Inversions; pp. 9–65

Circle inversions are exercised and drawn with PostScript operators which are also included in this plain T_EX article. Interesting pictures will be shown, resulting from inversion of straight line pieces and other procedures.

I demonstrate a way to calculate the circle of anti-similitude, by which two circles are inverses of each other. Furthermore, I show how one can transform two distinct circles into two concentric circles, and how to draw a circle orthogonal to a circle which passes through one or two points within the circle is done via the circle inversion technique.

The above is generalized into finding the circle which cuts the boundary at an arbitrary angle, e.g. 80 degrees, and passes through a point within the circle. Orthogonal circular arcs can form an Escher-like grid, as he used in his *Circle Limit* drawings. Four variants of the grid of *Circle Limits III* have been included. The first cuts the boundary at 80 degrees, the second at 90 degrees, and the third with a mixture of both. The fourth is Coxeter's solution.

A smiley pattern is inverted in (orthogonal) circular arcs within a circle with the aid of PostScript's `pathforall` by (repeated use of) circle inversion. How to draw a circle orthogonal to 1, 2 or 3 other distinct circles is shown. Apollonius' problem is solved by the use of the circle inversion transformation and also by transforming the three quadratic equations into one non-linear equation and a 2x2 system of linear equations, and then solving these equations in PostScript and MetaPost. A closer look yields that we only have to solve one quadratic equation in r , the radius of the wanted circle, in order to obtain the solution of Apollonius' problem.

Coding problems in MetaPost will be mentioned and circumvented. I demonstrate the way one can

create and use a PostScript library. A plea is made for creating and maintaining a PostScript library of operators, graphics and utilities. A snapshot of this growing library is included. A few tiny but handy PostScript operators are given next to a (numerical) PostScript operator to solve a 3x3 linear system of equations, where partial pivoting is implemented and the calculations are done with the accuracy of the underlying computer arithmetic, which is much better than MetaPost's accuracy at present. How to overload a PostScript operator, e.g. `length`, is given. The question of whether the PostScript library can be used in MetaPost is answered.

The core of the paper is twofold: first the rediscovery that Apollonius' problem is solved by the solution of a quadratic equation, and second the Apollonius operator, which reflects this rediscovery and can be used to obtain all 8 solutions of Apollonius' problem. Another gem is `Apollonius2`, which is suited for the case that one circle contains the other two. The culmination of it all is the operator `radical` for drawing the radical circle of three given distinct circles.

EDITORIAL, EuroT_EX 2010 announcement; p. 66
(Cancelled.)

HANS HAGEN, Grouping in hybrid environments; pp. 67–71

[Enhancements to groups for, e.g., background colors and underlining, in ConT_EXt MkIV.]

EDITORIAL, Fourth ConT_EXt meeting announcement; pp. 72–72

September 13–18, Břejlov (Prague), Czech Republic.

LUIGI SCARSO, OpenType PostScript fonts with unusual units-per-em values; pp. 73–79

OpenType fonts with PostScript outlines are usually defined in a dimensionless workspace of 1000 x 1000 units per em (upm). Adobe Reader exhibits strange behaviour with PDF documents which embed an OpenType PostScript font with unusual upm. This paper describes a solution implemented by LuaT_EX that resolves this problem.

PIET VAN OOSTRUM, Een uittreksel uit de recente bijdragen in het CTAN archief [Selected recent contributions to CTAN]; pp. 80–83

This article describes some recent contributions to the CTAN archive (and other Internet sources). The selection reflects what interests me and what I think others may be interested in. It is, therefore, a personal choice, not a comprehensive review.

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