A Two-level Description of Stroopwafels

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Introduction

Stroopwafels (SW) are becoming an integrated part of every-day life for an increasing number of people, as predicted already in 1972 by Syrup Vance [Vance 1972]. This raises greater demands for accurate description languages, and efficient processing tools, for stroopwafels. Previous attempts to these ends suffer from either excessive storage requirements, or poor performance, or both, and in general lack linguistic motivation. This paper offers a novel solution to these problems.

Previous Work

In [v.d. Deeg 1993], Jan van den Deeg suggests a description of stroopwafel exploiting their rotational symmetry w.r.t. the vertical axis through the center of gravity. The average over the angular coordinate is stored, rather than the value at each point in the stroopwafel. Even though this does decrease the number of parameters needed, it still requires quite a large number of them. Also, v.d. Deeg offers no computational model for this description, but suggests that a head-corner processing scheme might be employed. This is obviously too naive, since stroopwafels lack corners.

New Approach

We suggest that, in addition to the rotational symmetry, we exploit the mirror-image symmetry w.r.t. the horizontal plane through the center of gravity to allow a two-level description of stroopwafels (SWTwoL), vastly reducing the number of parameters needed. Each point on the radius is associated with three sets of parameters: Two instances of the usual set of parameters given at each point in the CNF[1] representation, and a pair of real numbers, one indicating the thickness of the wafel layer and the other half the thickness of the stroop layer. The two CNF parameter sets will constitute an average over the wafel and stroop layers respectively, at this point on the radius. From these, the CNF values for the entire stroopwafel can be estimated.

Thus, only two parameter levels are necessary, and instead of requiring an uncountable number of parameters at each point on the radius, we need only a finite number, and a comparatively small one. Experiments on a large collection of stroopwafels are currently in progress, and will be reported at later date.

Computational Aspects

Using the SWTwoL representation directly is relatively inefficient, since this involves horizontally bisecting the stroopwafels manually, a laborious and time-consuming task. Work currently in progress includes devising a top-down processing scheme employing the proposed description model. The key issue here seems to be using learning techniques to improve gap expansion.

Summary and Conclusions

We have proposed a two-level description of stroopwafel that constitutes a major improvement on v.d. Deeg's rotational symmetry model by greatly reducing the number of parameters needed. We conjecture that efficient processing models can be found for this representation.

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References

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[1] CNF stands for Crunchy Normal Form and describes the crunchyness, the sugar and fat content, etc., at this point of the stroopwafel, see e.g. [Wafer 1985].