Shape matching with cgal

# Introduction

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# Related work

The Earth Mover’s Distance has widely studied as a way to compute image similarity. For EMD computation, the representation of the image can vary significantly, and many examples of this can be found throughout the literature. Ruber et al. studied the application of the Earth Mover’s distance as a metric for color-based image retrieval, based on properties of the images’ color distributions (Rubner, Tomasi, & Guibas, The Earth Mover's Distance as a Metric for Image Retrieval, 1998) and (Rubner, Guibas, & Tomasi, The Earth Mover's Distance, Multi-Dimensional Scaling, and Color-Based Image Retrieval, 1997). In his thesis, Panos Giannopoulos used the EMD similarity measure for the applications of matching images of logos, using features extracted by a corner detection algorithm, and contours of polygons by sampling points (Giannopoulos, 2005). A method based on the EMD has also been proposed for region-based image retrieval in (Lv, Charikar, & Li, 2004). In our work we wish to extract contours from images, and use points from these contours as features to input to the EMD similarity measure.

# Earth Mover’s Distance

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# Project Description

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# Signature Generation

## Canny-Harris method

## CannyOnly (this needs coding)

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# Data sets

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# Results

# Evaluation? (this needs coding)

jon

# Parameter Tuning? (this maybe needs coding)

jon

# Performance? (this needs coding)

jon

# Visualizing with Multidimensional Scaling

A way to visualize the global properties of an image database using EMD as a distance metric and multidimensional scaling was proposed by (Rubner, Guibas, & Tomasi, The Earth Mover's Distance, Multi-Dimensional Scaling, and Color-Based Image Retrieval, 1997)

# Difficulties encountered

M&j

# Conclusions

Santa claus

# Further Work

m/j

# Bibliography

Giannopoulos, P. (2005). *Geometric matching of weighted point sets.* Utrecht: Universiteit Utrecht.

Rubner, Y., Guibas, L., & Tomasi, C. (1997). The Earth Mover's Distance, Multi-Dimensional Scaling, and Color-Based Image Retrieval. *Proceedings of the ARPA Image Understanding Workshop*, (pp. 661-668).

Rubner, Y., Tomasi, C., & Guibas, L. J. (1998). The Earth Mover's Distance as a Metric for Image Retrieval. *International Journal of Computer Vision*, 99-121.