Project Abstract: Supervised Research Exposition

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1 Overview

The project is about automatic detection of symmetry in 2-d/3-d images/point-clouds. Various methods have been used in the literature for this purpose. Methods using scalar-fields and their contour trees have been used for detecting symmetry in point-cloud data (the underlying algorithm should be applicable for 2d data as well), whereas, certain graph-based feature matching algorithms have been tried in both 2d as well as 3d data.

I am currently looking into the graph-based algorithms for 2D images. One of the ideas is to find out the feature points and form a graph connecting those feature points. Implementing a sub-graph matching algorithm on these gives the sets of similar sub-graphs which can then mapped back to the image. Various algorithms like

- energy minimization to find closest match from the training data
- using distance function to find the least error match between the two edges iteratively

have been tried in the literature for sub-graph matching itself.

I aim to get a very detailed view of the work that has been done to find symmetry in objects so that we can explore its implementation in applications like object annotation, co-segmentation.

2 Bibliography

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