COSC470 Research Project Report

Contour Splitting for Branching Structures in CT Image Reconstructions

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1 Overview

overview text Example citation [1, 2, 3]. Example URL [1].

2 Introduction

introduction text

3 Background

background text

3.1 Generic Methods

generic methods text

3.2 Correspondence Methods

subsection preamble text

3.2.1 Contour Correspondence

contour correspondence text

Example list:

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[1] https://github.com/cstevenson3/cosc470writing/blob/main/survey.pdf

- item1

- item2

- item3

3.2.2   Point Correspondence and Triangulation

pc and t text

(a) DTW path
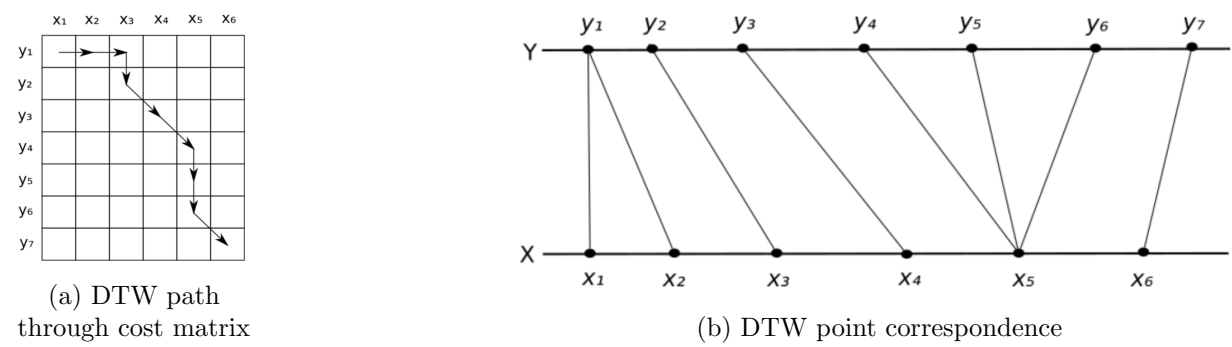through cost matrix

(b) DTW point correspondence

Figure 1: Two examples of DTW paths on contours X and Y [1]

text after figure declaration

3.2.3   Branching Problem

branching problem text

4   Method

method text

4.1   Proposal

proposal text

Example figure ref (See Figure 2).

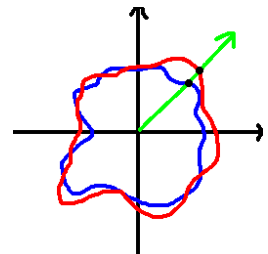## 4.2   Implementation

pa text

5   Analysis

analysis text

Figure 2:   Points
matched   by   angle
from shared centroid

(a) DTW   (b) Point angle, 0% angle weight   (c) Point angle, 50% angle weight   (d) Point angle, 100% angle weight
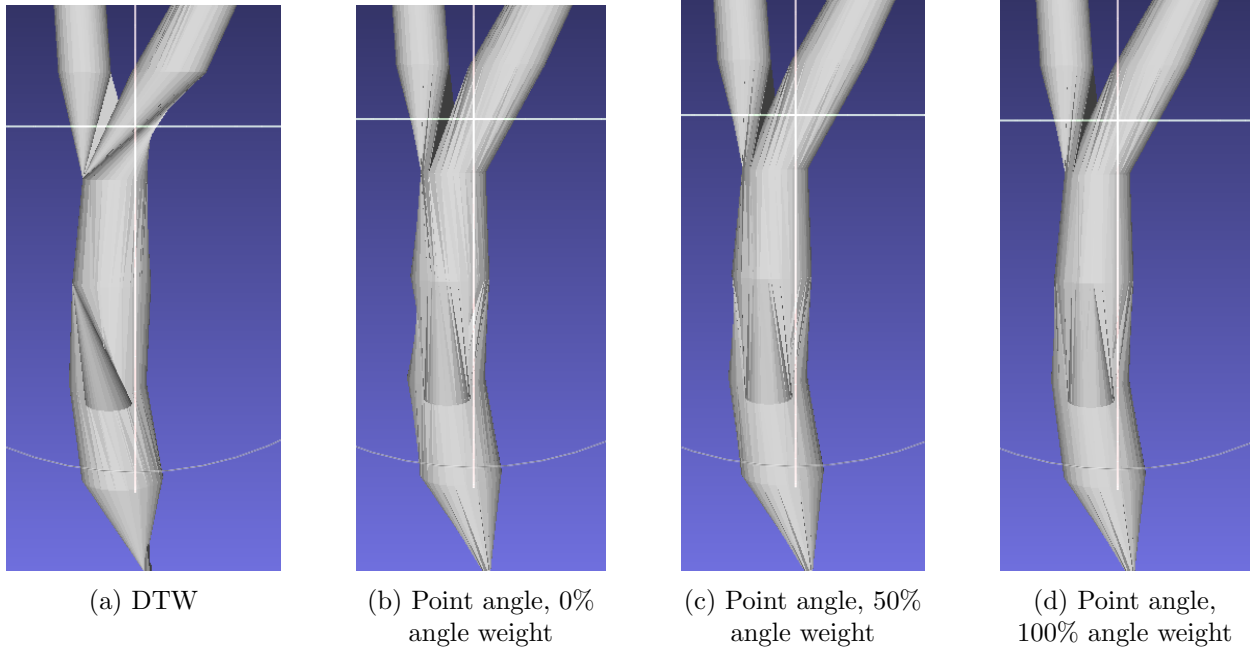
Figure 3: Reconstructions with 10 plane samples

5.1 Ground Truth

ground truth text

5.2 Visual Results

visual results text

5.3 Measurements

measurements text

5.4 Summary

summary text
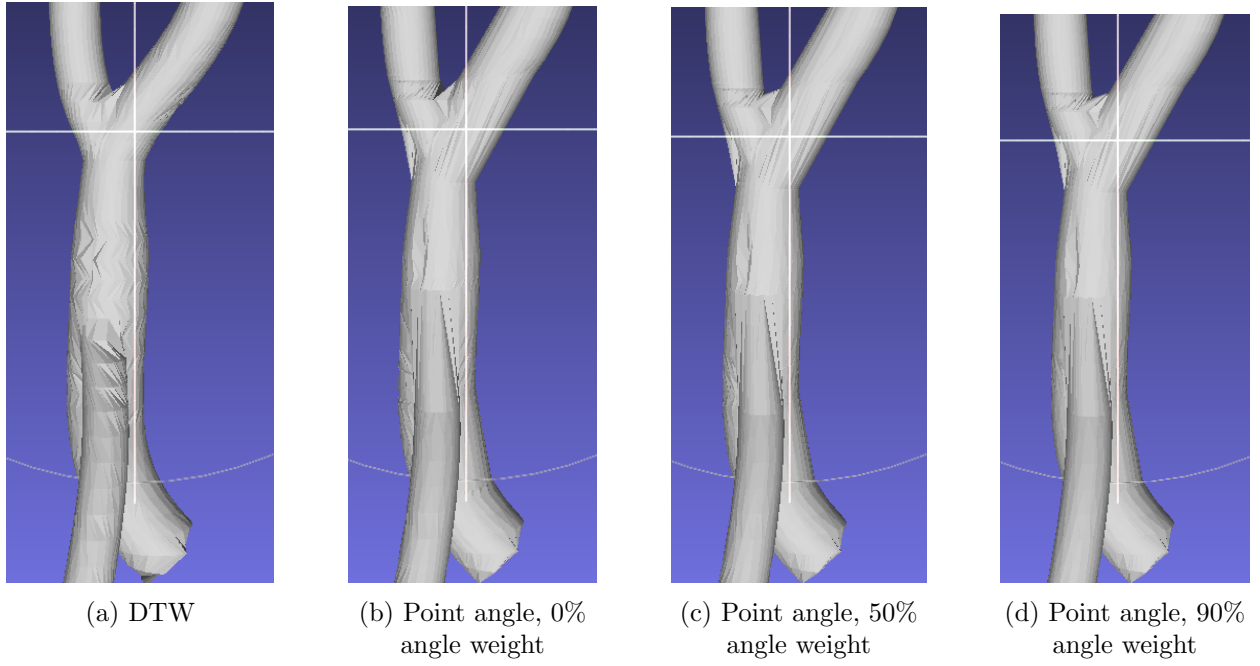
6 Conclusion

conclusion text

(a) DTW (b) Point angle, 0% angle weight (c) Point angle, 50% angle weight (d) Point angle, 90% angle weight

Figure 4: Reconstructions with 50 plane samples

References

[1] D. Mackay, "Robust contour based surface reconstruction algorithms for applications in medical imaging," 2019.

[2] R. Mukundan, "Reconstruction of high resolution 3d meshes of lung geometry from hrct contours," in *2016 IEEE International Symposium on Multimedia (ISM)*. IEEE, 2016, pp. 247–252.

[3] Z. Pan, S. Tian, M. Guo, J. Zhang, N. Yu, and Y. Xin, "Comparison of medical image 3d reconstruction rendering methods for robot-assisted surgery," in *2017 2nd International Conference on Advanced Robotics and Mechatronics (ICARM)*. IEEE, 2017, pp. 94–99.
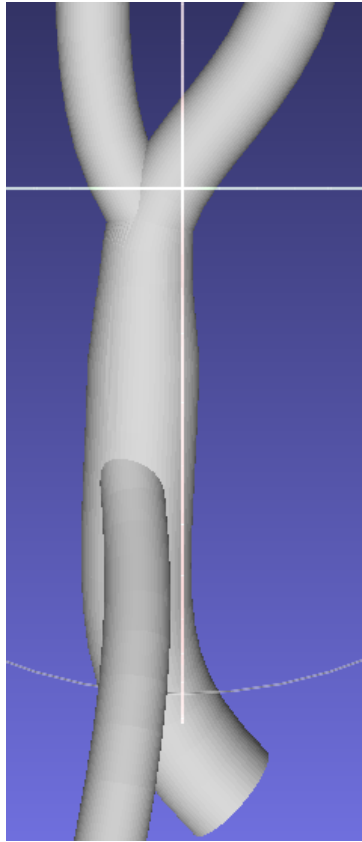
7   Appendix

Figure 5: Original multi branch model