



Hamilton-Jacobi Skeleton and Shock Graphs

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Papers:

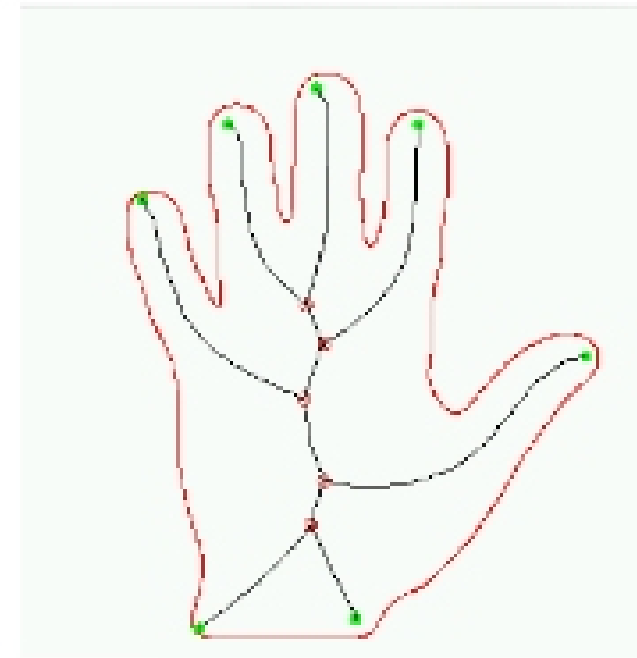
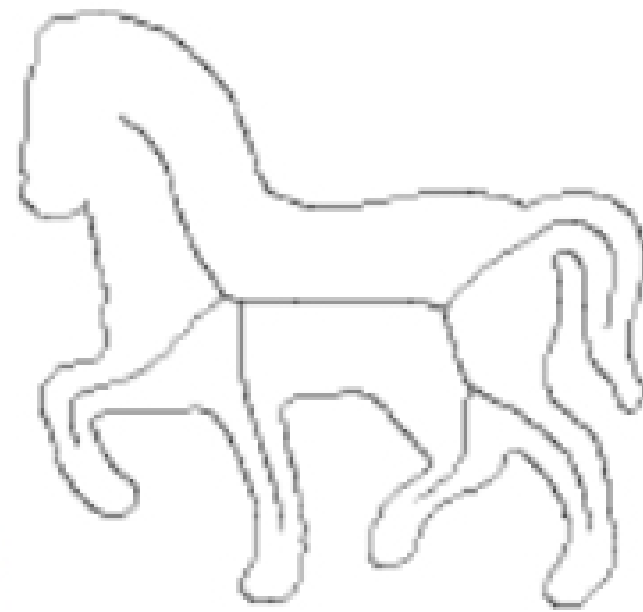
Hamilton-Jacobi Skeleton (Siddiqi et al.)
Shock Grammar (Kimia, Siddiqi)



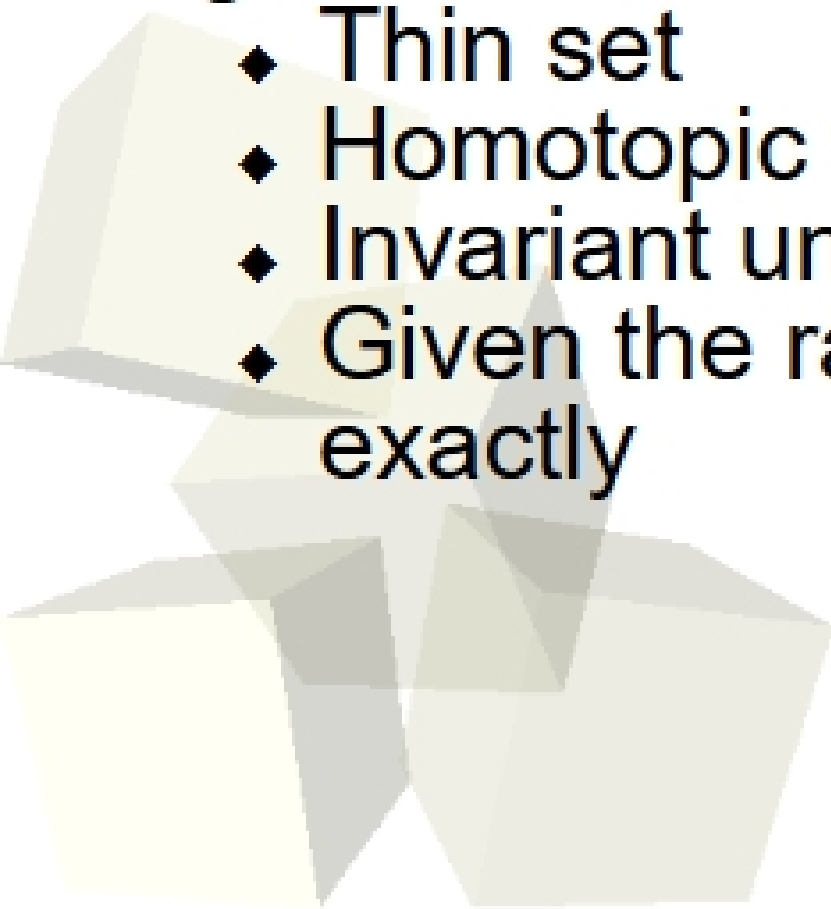


Introduction

- Skeleton (medial axis)
 - ◆ A thin representation of shape.



- good skeleton:
 - ◆ Thin set
 - ◆ Homotopic to the original shape
 - ◆ Invariant under Euclidean transformations
 - ◆ Given the radius, the object can be reconstructed exactly



Curve Evolution Equation

Eikonal Equation:

$$\frac{\partial C}{\partial t} = F\mathcal{N}$$

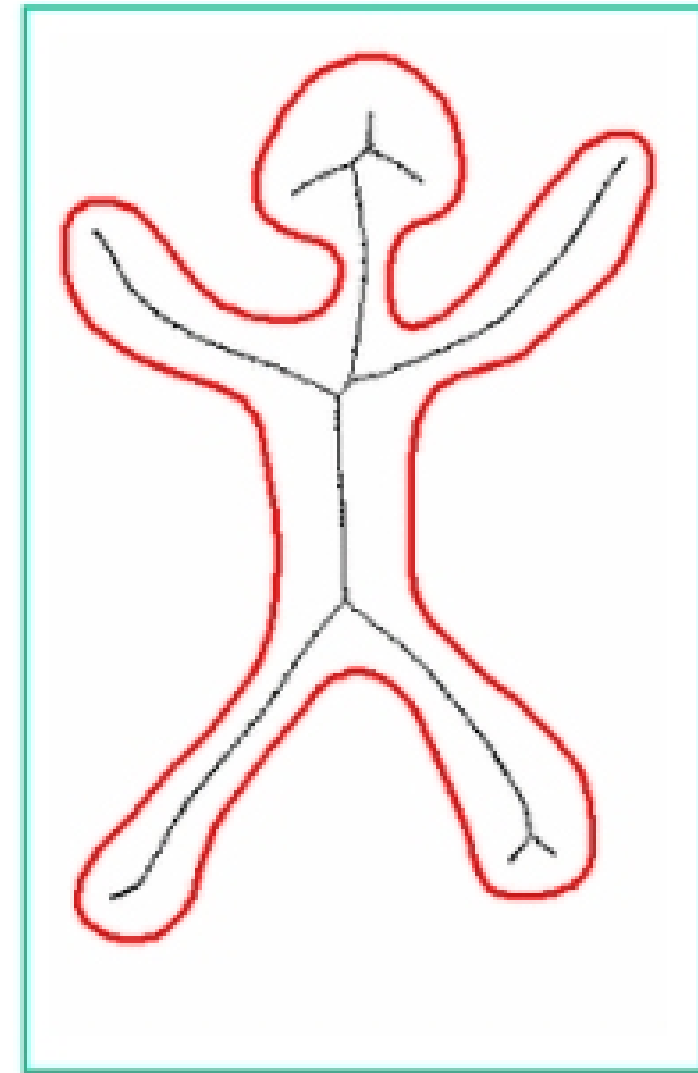
C -- vector of curve coordinates

\mathcal{N} -- inward normal

F -- speed of the front

Shocks (skeletal points):

Where the curves collapse



From: PhD thesis Hui Sun, U-Penn

