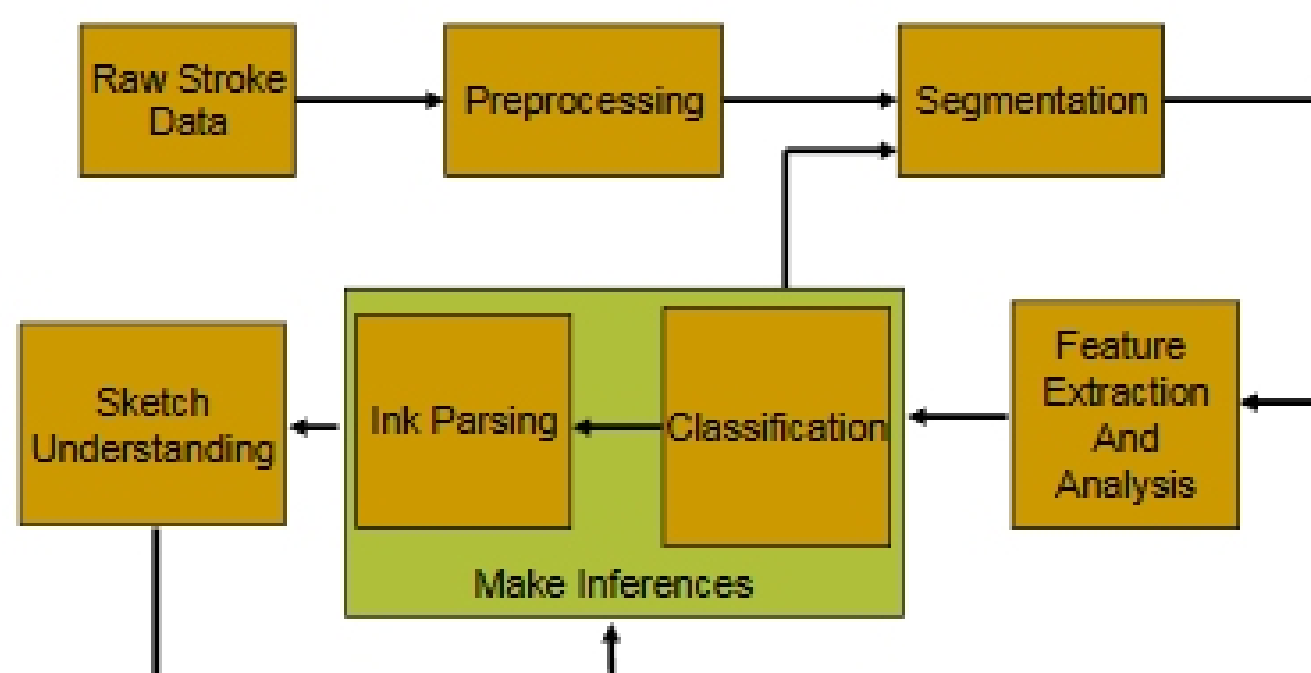


Ink Preprocessing and Preparation

Lecture #5: Preparing Ink
Joseph J. LaViola Jr.
Fall 2007

Recall Pen-Based Interface Dataflow



Representing Data

- Points and strokes

$$s = p_1 p_2 \dots p_n$$

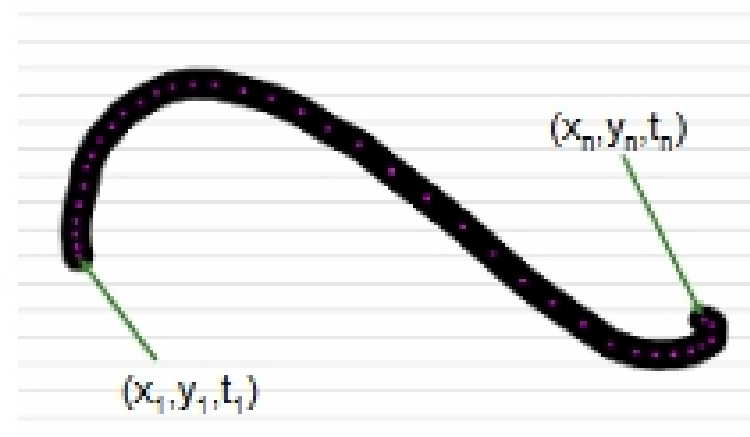
where

$$p_i = (x_i, y_i, t_i), 1 \leq i \leq n$$

$$S = s_1 s_2 \dots s_m$$

- Image

- pixel matrix
- not as popular



Fall 2007

CAP 5537 – Topics in Pen-based User Interfaces

©Joseph J. LaViola, Jr.

Preprocessing

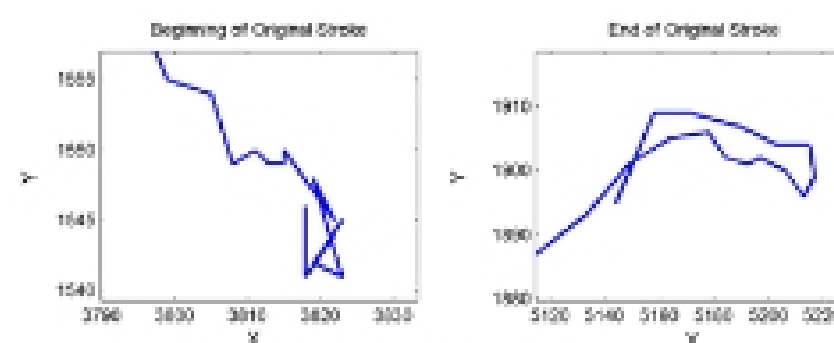
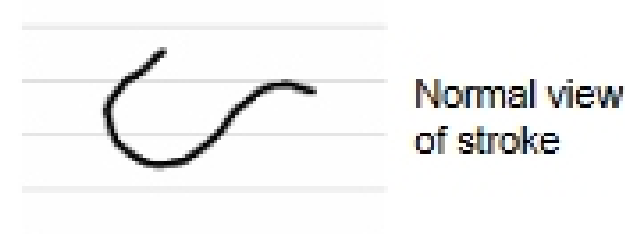
- Often required to clean raw data

- Stroke Invariance

- scale
- position
- orientation
- slant/skew
- order/direction

- Filtering and Smoothing

- Dehooking



Zoomed in view of stroke showing unwanted cusps and self-intersections

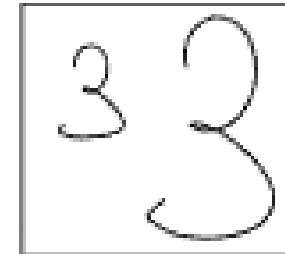
Fall 2007

CAP 5537 – Topics in Pen-based User Interfaces

©Joseph J. LaViola, Jr.

Scale Invariance

- Why? – want to ensure stroke has a canonical representation so its *size* makes no difference in recognition
- Approach
 - define constant width or height
 - scale stroke maintaining aspect ratio
 - choose constant width or height based on stroke



Translation Invariance

- Why? – want to ensure stroke has canonical representation so its *position* makes no difference in recognition
- Approach
 - translate stroke to origin
 - use stroke bounding box
 - possible translation points
 - top left point
 - center point