

Android Based Plant Leave Recognition

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Introduction

- ▶ For those plant lovers, they always have the trouble to figure out what the plant it is. As they do not know the name, it will be very difficult for them to search that on internet. In my project, I develop an application in Android smartphone to help them to solve this problem.
- ▶ Also, as the image is for cellphone camera, the quality is not guaranteed. Some method to deal with noise are needed.

Basic Architecture of My App

► Android platform



Input the image of the leaf. It should show the general contour of the leaf clearly.

Eliminate the noise and extract the contour of leaf

Recognition the contour

Contour Extraction & Noise Elimination

► Strategy1:Mean Shift Filtering

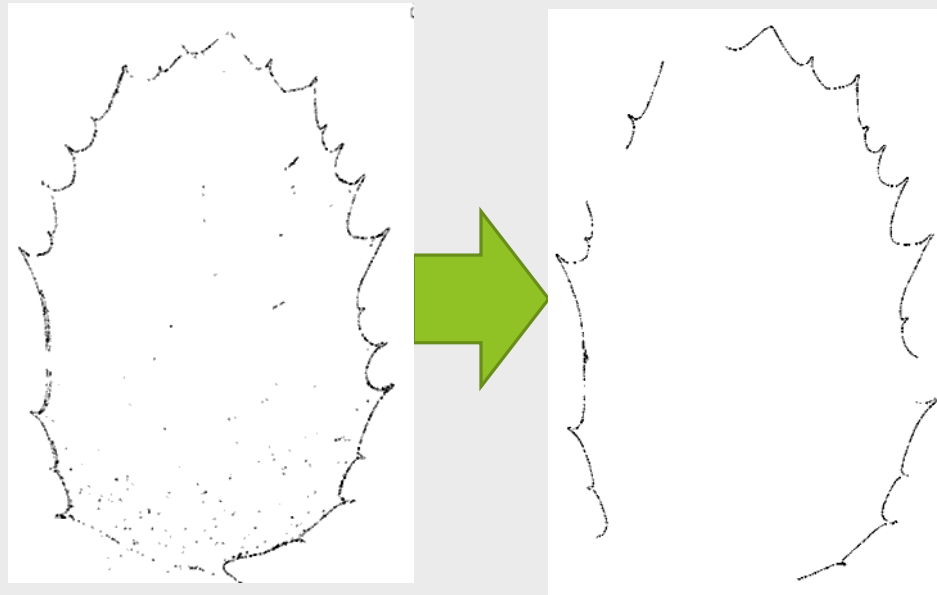
- Help to eliminate majority of noise
- Remove the contour we are not interested in
- interested in
- Make it easier for edge detection



Contour Extraction & Noise Elimination

- ▶ Strategy2: Pick the contour according to the order of size
- Find all contour, sort them in the order of area,
- ▶ then draw the bigger ones to new array

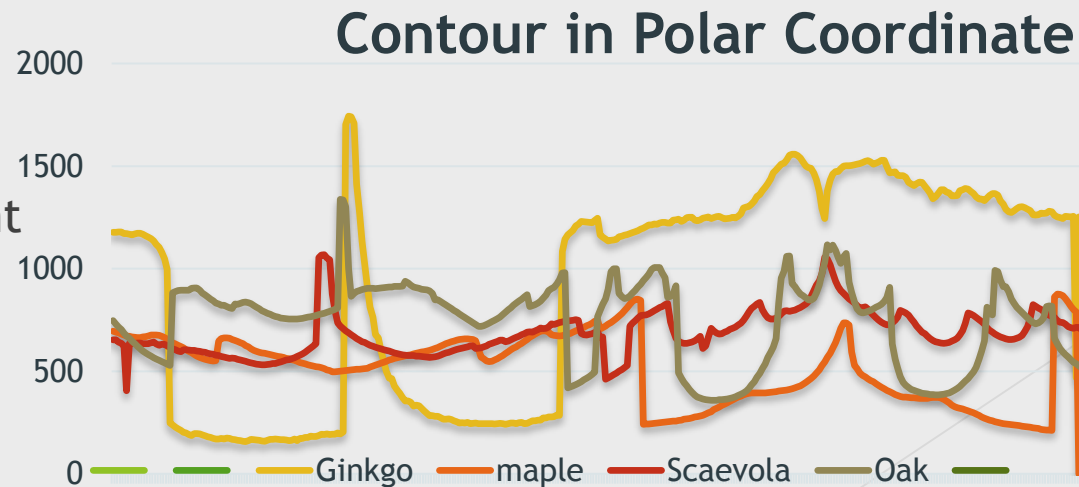
- Can eliminate small noise



Recognition

- **Method I: Image Moment, Hu invariable**
 - Pro: Related insensitive to image noise
 - Cos: Can only provide a general information on shape
- ▶ **Method II: Transfer Contour to Polar coordinate**
 - Pro: Can represent more details about contour
 - Cos: Very sensitive to noise

- The statistics of slope of the curve are used to present the curve in number.



Classification

- ▶ KNN is used as the classification part.
- ▶ Input factors include two Hu invariables(hu20 and hu02) and four factor about contour.
- ▶ Consider the Hu invariables is less vulnerable to the noise, I give more voting tickets to hu invariables in KNN input.

Result

