No.13

Seminar I on Agricultural Process Engineering
農産加工学演習　I

Naoshi Kondo, Hiroshi Shimizu

Division of Environmental Science & Technology,
Graduate School of Agriculture, Kyoto University

農学研究科　地域環境科学専攻

近藤　直・清水　浩

Practice

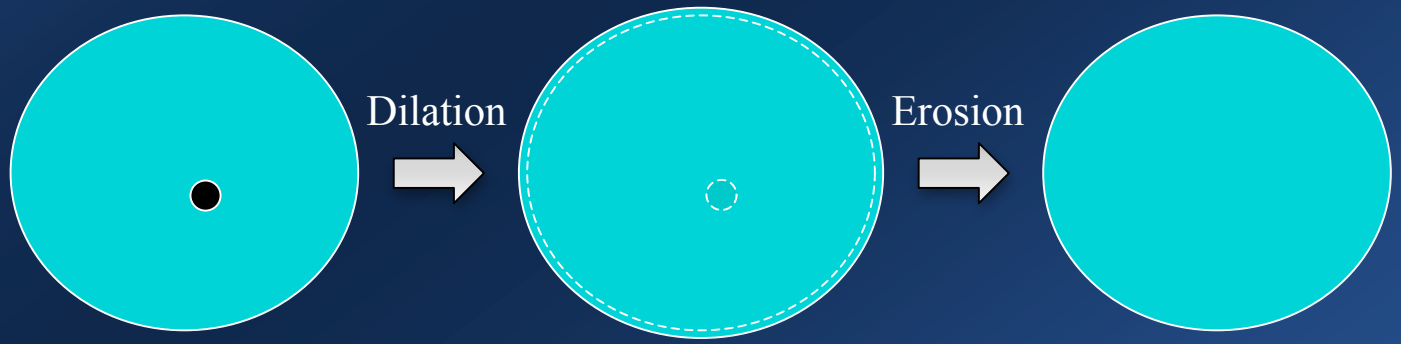
1. Color analysis
2. Size measurement
3. Shape analysis
4. Defect detection in tomato
5. Spot detection
6. Extraction of object
7. Defect detection in green pepper
8. Detection of color development

Objects for detection of color development

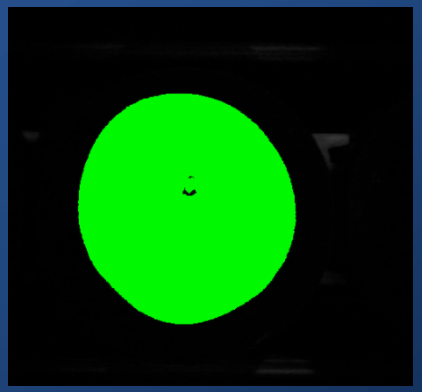
Leaves and stems may be overlapped a fruit of apple and it sometimes nouniform color development.

Noise reduction

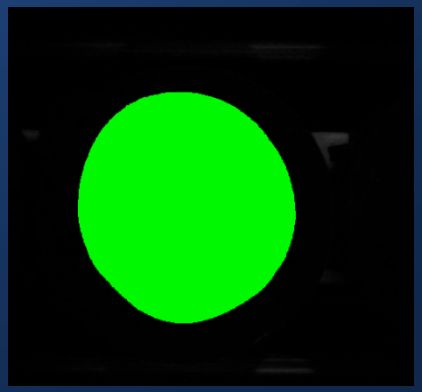
Small portion of vacant area exists in an object as noise.
"Dilation" and "Erosion" are effective to remove this kind of noise.
The basic effect of Dilation on a binary image is to gradually enlarge the boundaries of regions of foreground pixels, and Erosion works opposite.



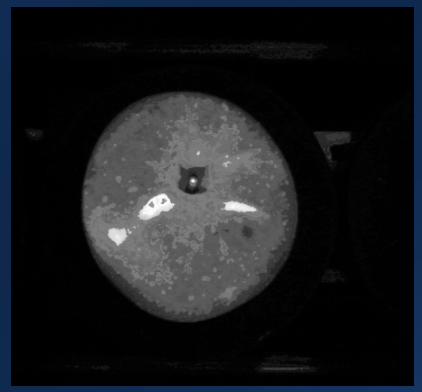
Separation of object from background



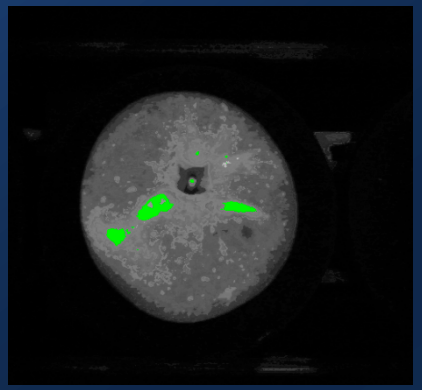
Binarization of Red plane



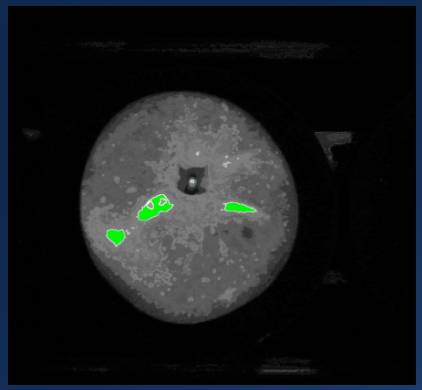
Dilation and Erosion



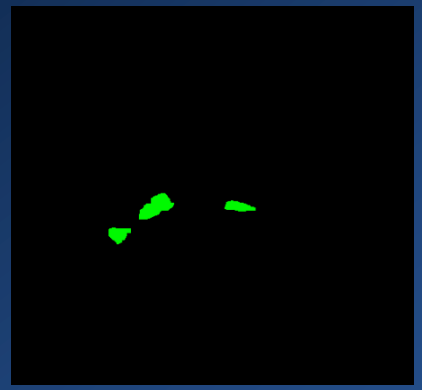
Logical adding of G and R



Binarization



Erosion



Dilation

Calculated result of area ratio of non color development 1559/60304=2.6%

Assignment: Calculation of a ratio of non color development