Automated Data Acquisition System

Report Written by Mona Jalal
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Arabidopsis Thaliana

- The first plant genome to be sequenced
- Small size genome
- Popular tool for grasping Molecular Biology
  - Examples: Flower Development, Light Sensing
- Native to Europe, Asia and northwestern Africa
- An Annual (rarely biennial) plant
- Growing up to 20-25 cm tall
- A life cycle of 6 weeks
Different Stages of Arabidopsis Growth
Automated Imaging System

- Taking raw images automatically from Arabidopsis plant
- Capable of changing raw images to TIFF format
- Completely parameterized
- Can be extended to other application else than plant imaging
- Including
  - A canon camera
  - Two robot arm (Horizontal and Vertical)
  - Step motor
  - A server
  - A case for petri dishes
• Camera goes to home position every time pressing start
• Works completely in a parametrized timely manner
• Taking n overlapping pictures from each petri dish in a sampleTime
  • For better image processing in upcoming phases
• Can run either in Repeated or Normal format
• Wait for waitTime in Repeated format run in the home position
Raw Images and Processed Imaged

Raw Image

Processed Image
Trace Curve Algorithm

- Transforming .CR2 (RAW) images to .TIFF images
- Reducing noise by mean/median filters in MATLAB
- Changing the images from RGB to Grey color
- Using Sobel Algorithm in MATLAB for edge detection
- Running Trace Curve algorithm for finding the root
People Involved

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