MANUAL

StoManager1 v.0504.23

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Wang, Jiaxin, Renninger, Heidi, & Ma, Qin. (2023). StoManager1: Automated, High-throughput Tool to Measure Leaf Stomata Using Convolutional Neural Networks (v.0504.23). Zenodo. <u>https://doi.org/10.5281/zenodo.7686022</u>

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StoManager1: Automated, High-throughput Tool to Measure Leaf Stomata Using Convolutional Neural Networks



More training will be conducted to enhance the capability for more species.

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Definat

index of whole stomat

the area of whole stomata

the width of whole stomata

the original image shape, e.g., (1024, 768) class of whole_stomata, e.g., "1" total number of whole_stomata

bounding box width of whole_stomata bounding box height of whole_stomata

the length of whole_stomata the length of whole_stomata the variance of whole_stomata area the variance of whole_stomata width

the variance of whole_stomata length the centroid of whole_stomata

class of whole_stomata, e.g., "0"

bounding box width of stomata bounding box height of stomata

total number of stomata

index of stomata

the area of stomata

the width of stomata

the length of stomata

guard cell width

the area ratio of sto

the variance of stomata area

the variance of stomata width

the variance of stomata with the variance of stomata length the centroid of stomata guard cell length

guard cell area the orientation of guard cell

the variance of stomatal orientation

the variance of guard cell length whole_stomata density in a given image

the variance of guard cell width



Schematic diagrams of model training processes (a), detection workflow (b), and segmentation model pipeline for stomatal metrics measuring (c, d, e, f, g).



What's new in this version?

- 1. Substantially improved group analysis speed.
- Added Toy dataset for users to play around.
- Updated line-edit default text. Fine-tuned weights for Hardwoods.
- 4. Enhanced detection capacity for blurred images.
- 5. Implement segment mdoels for directly measuring stomatal metrics.
- 6. Enhanced version with more stomatal metrics measured with theoretical algorithms!!