

# Deep Plant Growth Prediction

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We propose a deep learning based method for plant growth prediction. If future plant growth can be predicted at the early growth stage, it allows to find plants that will not grow well. Recently, a deep learning based method for predicting (synthesizing) a future image (e.g. at time  $t + 1$ ) from several past images (e.g. from time  $t$  to time  $t - 5$ ) in a video was proposed [1]. We propose to use the same framework for our plant growth prediction.

In the experiments, we used the label images in Komatsuna dataset [2] to train the prediction network [1] such that images from time  $t - 1$  to time  $t - 8$  were inputs and ones from time  $t$  to time  $t + 7$  were outputs. In Figure 1, the predicted images are visually similar to their ground truth. Our preliminary experiments represent the high potential of the plant growth prediction.

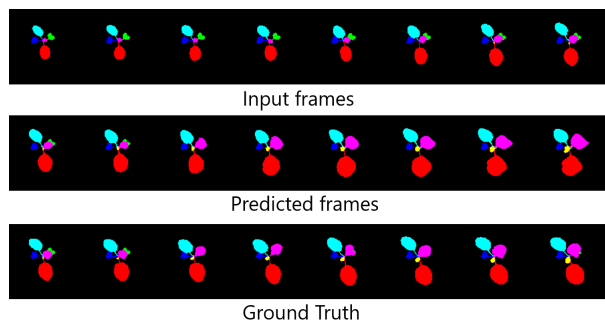


Figure 1: Predicted plant growth

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## References

- [1] Srivastava. Unsupervised learning of video representations using lstms. In *ICML*, pages 843–852, 2015.
- [2] Uchiyama. An easy-to-setup 3d phenotyping platform for komatsuna dataset. In *CVPPP*, pages 2038–2045, 2017.