



NAPPN Annual Conference Abstract:
Deep Interactive Annotation with Prototype Learning

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Interactive Annotation for object delineation can be considered as a semi-supervised few-shot learning problem where machine learning models learn from a small set of annotated pixels and generalize to the entire picture to extract the object of interest. One aim of interactive annotation is to reduce the effort of manually labeling data. Some existing works attempted to address this problem with deep metric learning so that the encoding layers in the network are able to extract features that boost discriminability among pixels belonging to different classes. To keep the data structure in the embedding space, metric loss with prototypes has been proposed. In our work, we improved the existing methods by developing a new objective function to update the network and prototypes simultaneously. The prototypes are optimized based on the loss that enhances their dissimilarity instead of clustering or sampling from the dataset. Moreover, we designed a GUI with the proposed method for interdisciplinary collaboration of image-support plant phenotyping studies.