Figure 2: The framework of DualPath PseudoLabeler. DualPath PseudoLabeler produces pseudo-labels via a dual pathway incorporating unsupervised clustering (leveraging standard k-means for embedding segmentation) and supervised classification (using dual-layer MLPs for predictive analysis). (1) Utilizing supervised classifiers, we are able to predict labels for unlabeled data, thereby generating a set of pseudo-labels from one perspective for all unlabeled instances. (2) On the other hand, we employ clustering algorithms to determine the centroids of each cluster within the unlabeled dataset. By computing the distance from each cluster centroid to the centroids of known categories, we assign the pseudo-label of the nearest category centroid to all members of a given cluster. This represents a novel method of pseudo-label generation that leverages an unsupervised learning approach.