

### 3. Decreasing Size Stack

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† Equal contributions.  
‡ Corresponding author.

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Figure 2: Overview of the CADSpotting pipeline. It consists of three main stages: primitive extraction, feature learning, and symbol spotting. Stage 1: Primitive Extraction. This stage uses a 3D point cloud model to build a comprehensive point cloud representation of the CAD drawing. Stage 2: Feature Learning. This stage leverages a pre-trained Transformer V3 (PTV3) to extract robust features from the primitives. Stage 3: Symbol Spotting. This stage applies learned primitives to the point cloud to identify symbols. The pipeline also includes a 'query-by-example' interface for users to search for specific symbols.

We introduce our **Axes** framework as a tool to help users to correctly interpret complex panoramic symbols in the full diversity of CAD drawings. Our **SMILE Window** drawings. Extending these methods, we propose a novel approach to handle scale diversity, scale variations due to the absence of effective strategies for overlapping regions. We present a new method for spotting CAD symbols in large-scale CAD designs. CAD drawings are connected by different symbols representing various types of drawings. By far, there is still a lack of efficient methods to address the periodic symbol spotting. Existing methods are often limited to specific CAD symbols, such as point clouds or point cloud models of CAD drawings, as density, symbol size, and geometric variations in scale, presence, historical changes, and other propose a new technique combining segmentation and symbolic computation. This technique, combining learned spotting and **Window** suppression (NMS), effectively handles large-scale CAD drawings based on a hierarchical representation of the drawing.

Figure 3. Dense point sampling for CAD primitives. Left: CAD drawing of a chair with various primitive symbols highlighted in red. Right: Dense sampling of a primitive symbol (a chair leg) using different sampling strategies: (a) Pre-processing Stage: Shows a zoomed-in view of a primitive symbol with a red bounding box and a grid of sampled points; (b) PTV3 Stage: Shows a similar view with a different set of sampled points.

Figure 3. Dense point sampling. Left: CAE instance and semantic regions are used to generate various primitives. Right: Dense primitive symbols are mapped to a dense set of points.

