

Scaling and Sizing Examples

1. Scale: 0.1x



CADSpotting: Robust Panoptic Symbol Spotting on Large-Scale CAD Drawings

Jianyu Ma^{1,2*} Fuyi Yang^{1,2†} Yanshan Zhang² Junxiang Zhang^{1,2} Yongjian Luo¹
Lan Xu¹ Yujiao Shi^{1,2} Yingliang Zhang²
¹ShanghaiTech University ²DGene Digital Technology

arXiv:2412.07373v3 [cs.CV] 13 Mar 2025



CAD Drawing Input Dense Feature Learning Spacing & 3D Interior Modeling

Figure 1. Our CADSpotting method accurately identifies and segments symbols in CAD drawings, enhancing tasks like 3D interior modeling. It also provides a unified point cloud model within a unified point cloud model for robust feature learning. Finally, our method automatically aggregates drawing information for efficient panoptic symbol spotting in large-scale drawings. Finally, our method automatically aggregates drawing information for efficient panoptic symbol spotting in large-scale drawings. Finally, our method automatically aggregates drawing information for efficient panoptic symbol spotting in large-scale drawings.

We introduce CADSpotting, an effective method for panoptic symbol spotting in large-scale architectural CAD drawings. Existing approaches struggle with symbol detection, scale variations, and overlapping elements in CAD designs. CADSpotting overcomes these challenges by representing symbols as point clouds and learning their attributes like coordinates and colors, using a unified 3D point cloud model for robust feature learning. To enable accurate symbol spotting in large-scale drawings, we propose a novel Sliding Window Aggregation (SWA) technique, combining weighted voting and Non-Maximum Suppression (NMS). Moreover, we introduce LS-CAD, a new large-scale CAD dataset, to support our experiments. For instance, the Shanghai Mercedes-Benz Arena site has over 100,000 CAD drawings used in structural design.

* Equal contribution. † Corresponding author.

CADSpotting: Robust Panoptic Symbol Spotting on Large-Scale CAD Drawings

Jiazuo Mu^{1,2*} Fuyi Yang^{1,2†} Yanshan Zhang² Junxiang Zhang^{1,2} Yongjian Luo¹
Lan Xu¹ Yujiao Shi^{1,2} Yingliang Zhang²
¹ShanghaiTech University ²DGene Digital Technology



CAD Drawing Input Dense Feature Learning Spacing & 3D Interior Modeling

Figure 1. Our CADSpotting method accurately identifies and segments symbols in CAD drawings, enhancing tasks like 3D interior modeling. It also provides a unified point cloud model within a unified point cloud model for robust feature learning. Finally, our method automatically aggregates drawing information for efficient panoptic symbol spotting in large-scale drawings. Finally, our method automatically aggregates drawing information for efficient panoptic symbol spotting in large-scale drawings.

We introduce CADSpotting, an effective method for panoptic symbol spotting in large-scale architectural CAD drawings. Existing approaches struggle with symbol detection, scale variations, and overlapping elements in CAD designs. CADSpotting overcomes these challenges by representing symbols as point clouds and learning their attributes like coordinates and colors, using a unified 3D point cloud model for robust feature learning. To enable accurate symbol spotting in large-scale drawings, we propose a novel Sliding Window Aggregation (SWA) technique, combining weighted voting and Non-Maximum Suppression (NMS). Moreover, we introduce LS-CAD, a new large-scale CAD dataset, to support our experiments. For instance, the Shanghai Mercedes-Benz Arena site has over 100,000 CAD drawings used in structural design.

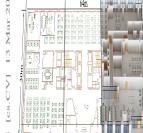
* Equal contribution. † Corresponding author.

3. Scale: 0.3x

CADSpotting: Robust Panoptic Symbol Spotting on Large-Scale CAD Drawing

Jianyu Ma^{1,2*} Fuyi Yang^{1,2†} Yanshan Zhang² Junxiang Zhang^{1,2} Yongjian Luo¹
Lan Xu¹ Yujiao Shi^{1,2} Yingliang Zhang²
¹ShanghaiTech University ²DGene Digital Technology

arXiv:2412.07373v3 [cs.CV] 13 Mar 2025



CAD Drawing Input Dense Feature Learning Spacing & 3D Interior Modeling

Figure 1. Our CADSpotting method accurately identifies and segments symbols in CAD drawings, enhancing tasks like 3D interior modeling. It also provides a unified point cloud model within a unified point cloud model for robust feature learning. Finally, our method automatically aggregates drawing information for efficient panoptic symbol spotting in large-scale drawings. Finally, our method automatically aggregates drawing information for efficient panoptic symbol spotting in large-scale drawings.

We introduce CADSpotting, an effective method for panoptic symbol spotting in large-scale architectural CAD drawings. Existing approaches struggle with symbol detection, scale variations, and overlapping elements in CAD designs. CADSpotting overcomes these challenges by representing symbols as point clouds and learning their attributes like coordinates and colors, using a unified 3D point cloud model for robust feature learning. To enable accurate symbol spotting in large-scale drawings, we propose a novel Sliding Window Aggregation (SWA) technique, combining weighted voting and Non-Maximum Suppression (NMS). Moreover, we introduce LS-CAD, a new large-scale CAD dataset, to support our experiments. For instance, the Shanghai Mercedes-Benz Arena site has over 100,000 CAD drawings used in structural design.

* Equal contribution. † Corresponding author.

5. Non-uniform: Tall (0.1x, 0.3x)

CADSpotting: Robust Panoptic Symbol Spotting on Large-Scale CAD Drawings

Jianyu Ma^{1,2*} Fuyi Yang^{1,2†} Yanshan Zhang² Junxiang Zhang^{1,2} Yongjian Luo¹
Lan Xu¹ Yujiao Shi^{1,2} Yingliang Zhang²
¹ShanghaiTech University ²DGene Digital Technology

arXiv:2412.07373v3 [cs.CV] 13 Mar 2025



CAD Drawing Input Dense Feature Learning Spacing & 3D Interior Modeling

Figure 1. Our CADSpotting method accurately identifies and segments symbols in CAD drawings, enhancing tasks like 3D interior modeling. It also provides a unified point cloud model within a unified point cloud model for robust feature learning. Finally, our method automatically aggregates drawing information for efficient panoptic symbol spotting in large-scale drawings. Finally, our method automatically aggregates drawing information for efficient panoptic symbol spotting in large-scale drawings.

We introduce CADSpotting, an effective method for panoptic symbol spotting in large-scale architectural CAD drawings. Existing approaches struggle with symbol detection, scale variations, and overlapping elements in CAD designs. CADSpotting overcomes these challenges by representing symbols as point clouds and learning their attributes like coordinates and colors, using a unified 3D point cloud model for robust feature learning. To enable accurate symbol spotting in large-scale drawings, we propose a novel Sliding Window Aggregation (SWA) technique, combining weighted voting and Non-Maximum Suppression (NMS). Moreover, we introduce LS-CAD, a new large-scale CAD dataset, to support our experiments. For instance, the Shanghai Mercedes-Benz Arena site has over 100,000 CAD drawings used in structural design.

* Equal contribution. † Corresponding author.

4. N



CADSpotting: Robust Panoptic Symbol Spotting on Large-Scale CAD Drawings

Jianyu Ma^{1,2*} Fuyi Yang^{1,2†} Yanshan Zhang² Junxiang Zhang^{1,2} Yongjian Luo¹
Lan Xu¹ Yujiao Shi^{1,2} Yingliang Zhang²
¹ShanghaiTech University ²DGene Digital Technology

arXiv:2412.07373v3 [cs.CV] 13 Mar 2025



CAD Drawing Input Dense Feature Learning Spacing & 3D Interior Modeling

Figure 1. Our CADSpotting method accurately identifies and segments symbols in CAD drawings, enhancing tasks like 3D interior modeling. It also provides a unified point cloud model within a unified point cloud model for robust feature learning. Finally, our method automatically aggregates drawing information for efficient panoptic symbol spotting in large-scale drawings. Finally, our method automatically aggregates drawing information for efficient panoptic symbol spotting in large-scale drawings.

We introduce CADSpotting, an effective method for panoptic symbol spotting in large-scale architectural CAD drawings. Existing approaches struggle with symbol detection, scale variations, and overlapping elements in CAD designs. CADSpotting overcomes these challenges by representing symbols as point clouds and learning their attributes like coordinates and colors, using a unified 3D point cloud model for robust feature learning. To enable accurate symbol spotting in large-scale drawings, we propose a novel Sliding Window Aggregation (SWA) technique, combining weighted voting and Non-Maximum Suppression (NMS). Moreover, we introduce LS-CAD, a new large-scale CAD dataset, to support our experiments. For instance, the Shanghai Mercedes-Benz Arena site has over 100,000 CAD drawings used in structural design.

* Equal contribution. † Corresponding author.

6. Max size: 150x100



7. Max size: 100x150



8. Max: 100x100 (square)

CADSpotting: Robust Panoptic Symbol Spotting on Large-Scale CAD Drawings

Jianyu Ma^{1,2*} Fuyi Yang^{1,2†} Yanshan Zhang² Junxiang Zhang^{1,2} Yongjian Luo¹
Lan Xu¹ Yujiao Shi^{1,2} Yingliang Zhang²
¹ShanghaiTech University ²DGene Digital Technology

arXiv:2412.07373v3 [cs.CV] 13 Mar 2025



CAD Drawing Input Dense Feature Learning Spacing & 3D Interior Modeling

Figure 1. Our CADSpotting method accurately identifies and segments symbols in CAD drawings, enhancing tasks like 3D interior modeling. It also provides a unified point cloud model within a unified point cloud model for robust feature learning. Finally, our method automatically aggregates drawing information for efficient panoptic symbol spotting in large-scale drawings. Finally, our method automatically aggregates drawing information for efficient panoptic symbol spotting in large-scale drawings.

We introduce CADSpotting, an effective method for panoptic symbol spotting in large-scale architectural CAD drawings. Existing approaches struggle with symbol detection, scale variations, and overlapping elements in CAD designs. CADSpotting overcomes these challenges by representing symbols as point clouds and learning their attributes like coordinates and colors, using a unified 3D point cloud model for robust feature learning. To enable accurate symbol spotting in large-scale drawings, we propose a novel Sliding Window Aggregation (SWA) technique, combining weighted voting and Non-Maximum Suppression (NMS). Moreover, we introduce LS-CAD, a new large-scale CAD dataset, to support our experiments. For instance, the Shanghai Mercedes-Benz Arena site has over 100,000 CAD drawings used in structural design.

* Equal contribution. † Corresponding author.