

Point Cloud Segmentation and BIM Conversion

A deep learning-powered solution that performs semantic and instance segmentation of point cloud data, converting it into accurate Building Information Models (BIM).

INDUSTRY	TYPE	COUNTRY
Architecture, Engineering, and Construction (AEC)	AI & Deep Learning, Data Engineering, BIM Integration	Netherlands

Highlights

- High-precision semantic & instance segmentation of point clouds
- Seamless conversion to BIM (Revit, AutoCAD)
- Optimized deep learning models (Pointcept) for structural element detection
- Automated workflows reducing manual effort and errors

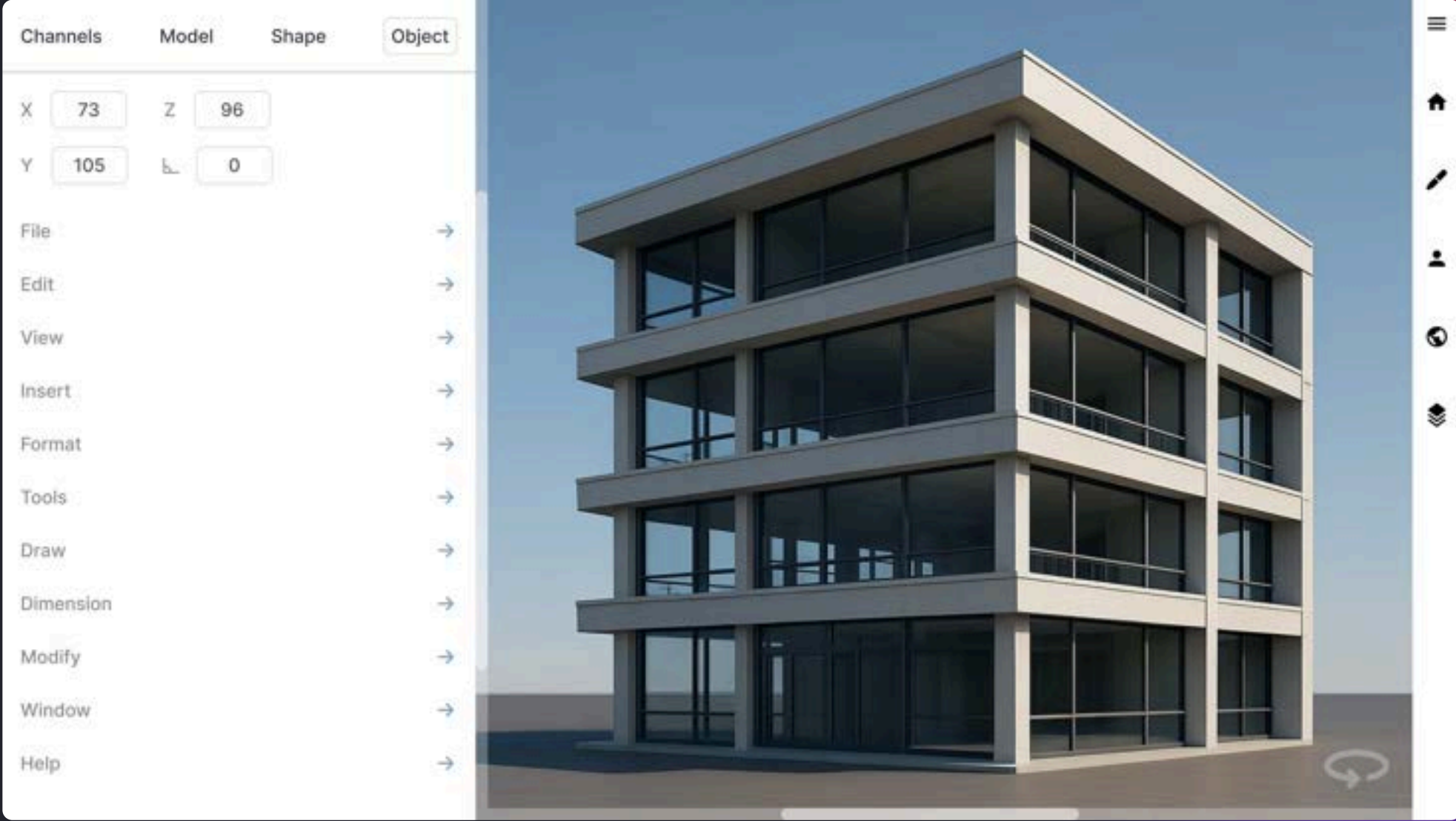
Challenge

Timsark engineers were tasked with addressing the challenge of efficiently segmenting point cloud data and converting it into precise BIM models. To meet the client's needs, our team implemented and tested deep learning models such as Pointcept to achieve high accuracy in identifying building elements like walls, windows, and doors. Additionally, the engineers optimized the model inference pipeline for smooth integration into software like Revit and AutoCAD, ensuring seamless and accurate BIM conversions.




Solution & Functionality

Our developers implemented a Point Cloud Segmentation and BIM Conversion Solution using the deep learning model Pointcept to achieve high-precision segmentation and classification of point cloud data.



This solution was specifically designed to precisely identify structural components like walls, windows, and doors, and convert them into detailed Building Information Models (BIM) for enhanced accuracy and efficiency.



The system seamlessly integrates with Revit and AutoCAD software, facilitating efficient BIM workflows for architecture and construction projects. It optimized data processing and enhanced the client's infrastructure management capabilities.

Tech stack

Backend	Python	TensorFlow	PyTorch
Database	AWS/Azure		
Tools	Point Cloud Processing: OpenCV, PCL (Point Cloud Library) BIM Integration: AutoCAD, Revit, BIM 360 3D Scanning: LiDAR technology		

Results and business value

The solution delivered significant improvements in accuracy and efficiency, enabling the client to automate point cloud segmentation and BIM conversion. This led to faster project turnaround times, reduced manual labor, and minimized errors in identifying and modeling building elements.

- 01

Faster project turnaround with automated segmentation & BIM conversion
- 02

Reduced manual labor and minimized errors in modeling
- 03

Seamless integration with industry-standard BIM tools (Revit, AutoCAD)
- 04

Cost savings & improved productivity for AEC workflows

Do you have a similar project idea?