

OAK-D (Lite)

A small depth camera that combines **stereo vision** with an onboard **AI processor**.

The **OAK-D** can be used for 3D scanning because it produces **RGB + depth maps** that you can turn into a point cloud and mesh. You move the camera around an object or space, capture overlapping frames, and then stitch them together with software (e.g. Open3D, MeshLab, or ROS).

But: it's **not the preferred tool** for 3D scanning.

- Accuracy is lower than LiDAR or photogrammetry.
- Shiny/transparent surfaces don't scan well.
- Range is limited (~10 m).

It's great for **real-time depth perception and robotics**, but for **high-quality 3D models** you'd usually go with photogrammetry or LiDAR.

• How it works:

- Two synchronized monochrome cameras capture slightly different views of the same scene.
- Depth is computed by comparing the disparity (shift) between the two images.
- An onboard neural depth engine accelerates the calculations, so the host computer doesn't have to.
- Optionally, an RGB camera provides color overlays on the depth map.

• Key features:

- Depth range: ~0.3 m - 10 m.
- Field of view: ~70-80°.
- USB-C powered, plug-and-play.
- Runs AI models (object detection, face recognition, body pose estimation) **directly on the device**.

• Why it matters for stereo vision:

- Demonstrates that stereo vision can be compact, affordable, and real-time.
- Doesn't need external GPUs/CPU for heavy lifting.
- Provides a good bridge between basic stereo rigs (like DIY dual webcams) and advanced research hardware (like ZED cameras).

• Use cases:

- Robotics navigation.
- Human pose tracking.
- AR/VR prototyping.
- Object recognition combined with depth.

Here's info on how to use it in Touchdesigner: <https://derivative.ca/UserGuide/OAK-D>

The example file is `OAKExamples.toe`. Instructions and tips are inside the file. The file is located in `C:/Program Files/Derivative/TouchDesigner.2023.xxxx/Samples/OAK`.

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