HemiStereo®

3dvisionlabs

HemiStereo® Developer-Kit 1

HS-DK1 Rev 3.0

Datasheet

EN

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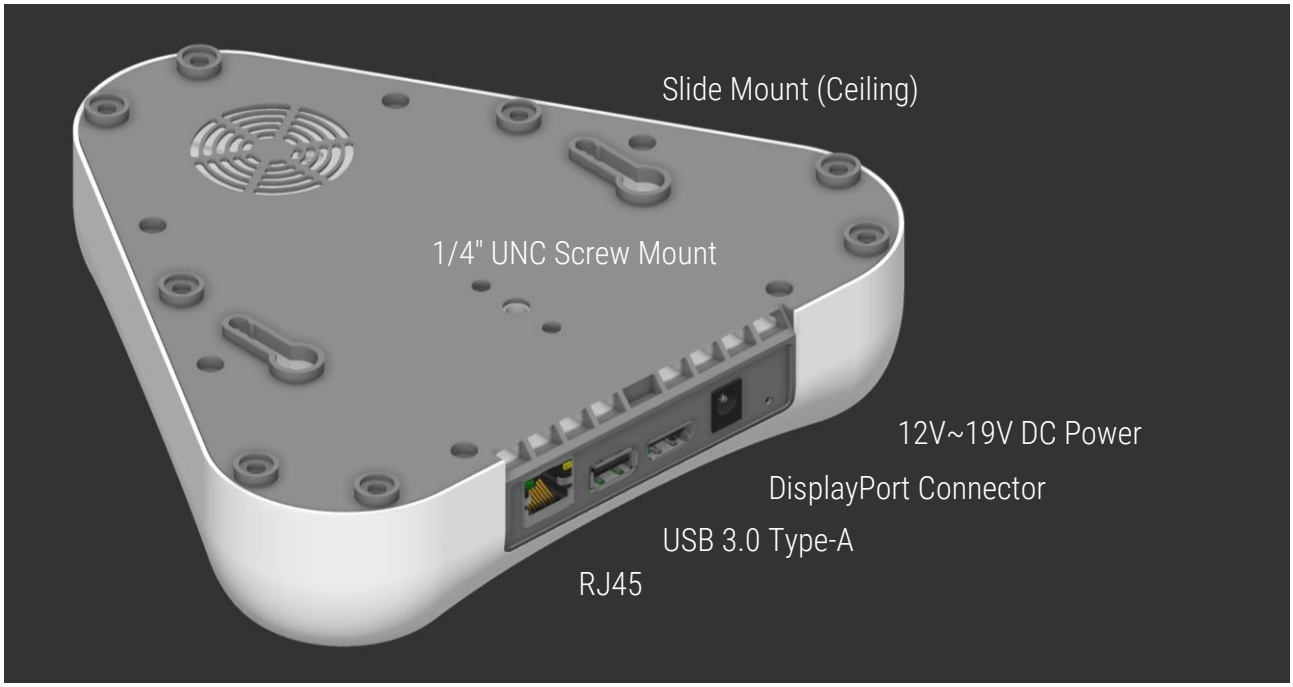
Overview

HemiStereo® is the world's first depth sensing camera for capturing hemispherical RGB-D data (color images and depth information). The special trinocular camera setup allows to measure depth for an extremely large volume with both large lateral resolution and high axial accuracy. The sensing device integrates AI supercomputer NVIDIA Jetson TX2 in order to allow real-time GPU-based inference using deep neural networks.



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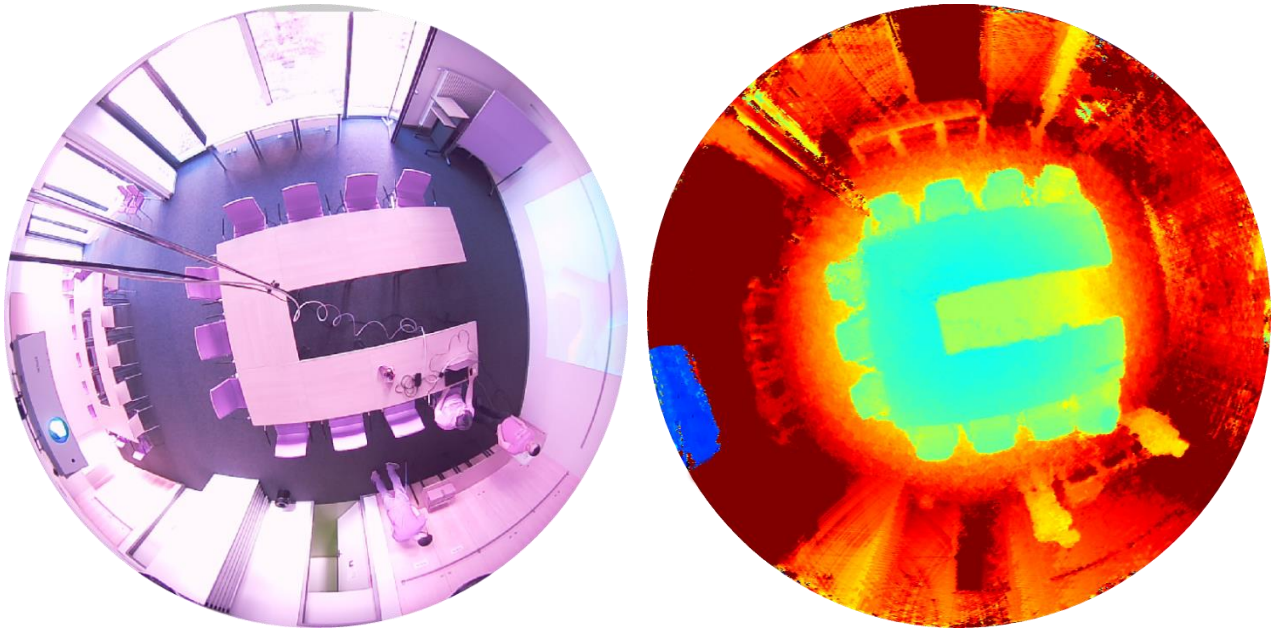
Sample Data



Omnidirectional Image- and Distance Data

Point Cloud Data

Specifications

Technology	
– HemiStereo® Passive Trinocular Stereo Vision Technology – Integrated AI Processing powered by NVIDIA Jetson TX2 (4+2-core CPU @ 2 GHz, 256-core Pascal GPU @ 1300 MHz, 8GB RAM)	
Vision Performance	
Image Sensors	– 3x Sony Exmor™ 2.38MP High-Sensitivity Image Sensors – 1/1.8 Type, 3.75µm x 3.75µm Pixel Size
Lenses	– 3x high-resolution fish-eye lenses (183° VFOV, f=1.41 mm, F/2.2) – Optional: without IR cut filter for enhanced night vision with additional external IR illumination
Depth Sensing Performance	
Lateral RGB-D Resolution	1200 x 1200 (H x V), ~10 µsr
Axial Depth Resolution	0.05 m @ 1 m, 0.25 m @ 5 m (Accuracy depends on calibration, scene, surface and lighting conditions)
Minimum Depth Distance	0.4 m
Depth Sensing FOV	180° x 180° (H x V)
Frame Rate	– 5 FPS (high-quality mode, on-device depth processing) – 10 FPS (fast mode, on-device depth processing) – up to 60 FPS (with external depth processing)
Latency	[t.b.d]
Connectivity	
Physical Interfaces	– Gigabit Ethernet, RJ-45 – DisplayPort Connector – USB 3.0 Type-A
WLAN	– IEEE 802.11a/b/g/n/ac dual-band 2x2 MIMO – Up to 866.7 Mbps
Bluetooth Version	4.1

Operating Requirements	
Operating Environment	HemiStereo® Developer Kit is intended for indoor use only. The standard housing is designed for developer purposes and allows easy disassembly of the front cover for maintenance and debugging. Hence the Developer Kit is not suitable for wet/dusty environments. Please contact HemiStereo sales (sales@hemistereo.com) for customizations of the device.
Illumination	Some form of external illumination is required, IR is possible (request variant without IR cut filter).
Temperature Range	-25 °C – 40 °C (non-condensing)
Power Requirements	
Operating Voltage	11.1 V – 19.6 V (power supply included)
Physical Connector	2,1mm DV jack (Please contact HemiStereo sales to check for availability of other connector types).
Wattage	~3 W idle ~10W depth sensing ~17 W und synthetic load (full CPU & GPU utilization)
Physical Information	
Dimensions	199 mm x 182 mm x 51 mm (W x L x H)
Weight	690 g
Mounting Options	– 1/4-20 UNC tripod screw – Ceiling, slide mount (screws included)
Included	
Package Contains	– HS-DK1 Sensor Unit – Power Supply 230V/EU – Ceiling Mounting Guide – Carrying Case
Software	– Pre-Installed OS (Ubuntu 18.04) – Stereo-Vision-Core/Daemon – C++ API (Local or Remote Network Access) wit Code-Samples – Simple Viewer Tool, Extrinsic Calibration Utility