

VUCS Series VIMU

The VIMU features a modular design including an imaging sensor, an image processor, an embedded NVidia GPU, an IMU module, and industrial standard interfaces of high-speed USB 3.0 and CAN. The standalone VIMU provides onboard intelligent functions of image processing, depth estimation, motion estimation, and feature tracking. With the onboard image processor, the smart sensor provides core processing functions required in industrial and robotic applications, and is fully extendable to application-specific processing requirements.



Autonomous
Vehicles



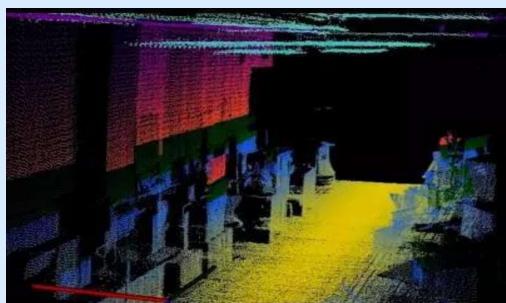
UAV



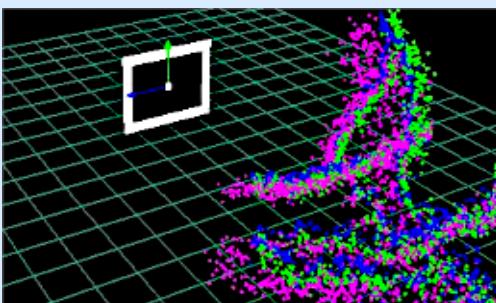
Industrial
Robotics



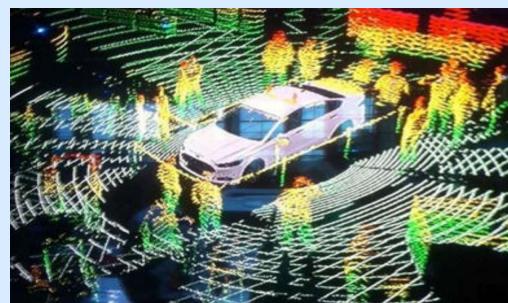
Applications



3-D Mapping



Motion Tracking



Obstacle Detection

Key Application Features

• Image Processing

Shape, line, and corner detection for optical flow.

• Motion Analysis & Tracking

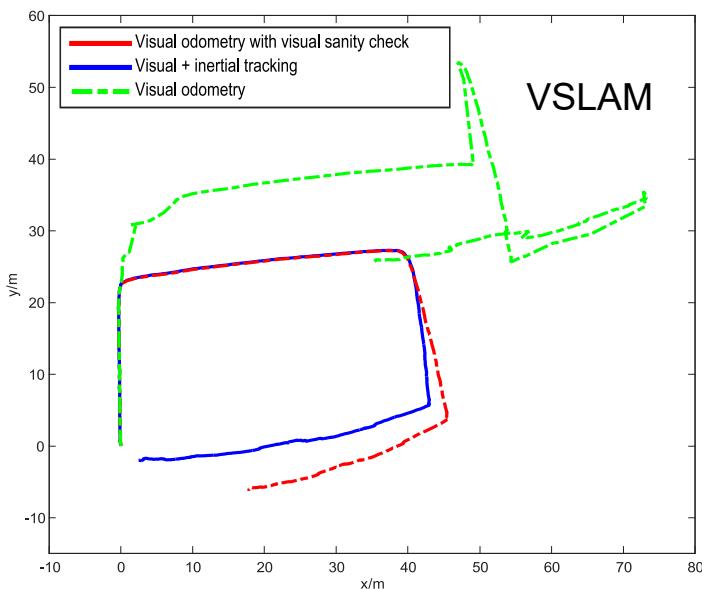
Velocity estimation & trajectory tracking for moving objects.

• Depth Estimation

Working range of 0.1 m to 10 m.

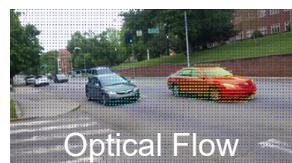
• Feature Tracking

Real-time salient feature detection (>15 fps).

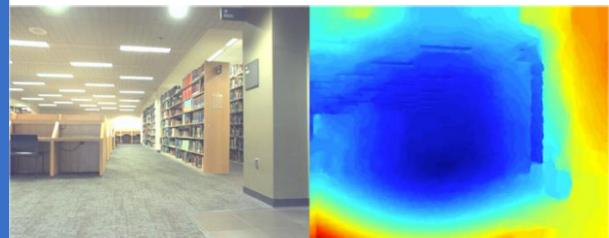


VSLAM

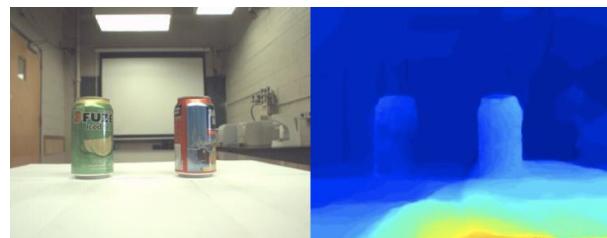
Motion tracking using the VUCS series VIMU (shown in blue), outperforming the visual odometry with visual check (shown in red).



Optical Flow

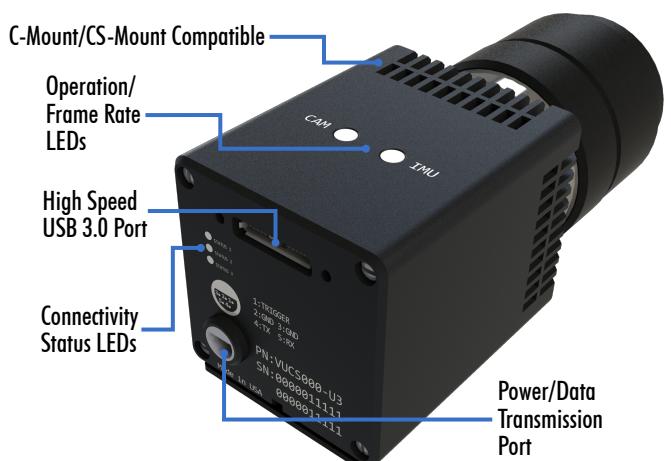
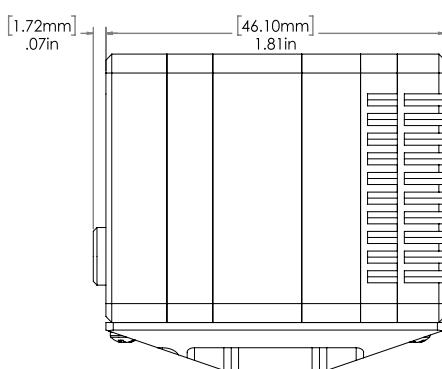
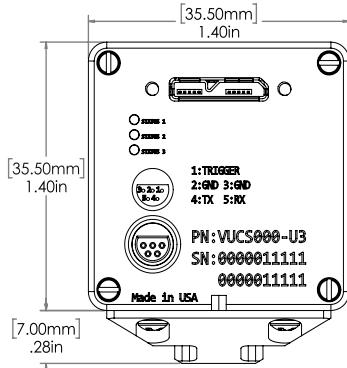


Long range (left) & short range (right) depth estimation using the VUCS series VIMU.



VUCS Series VIMU

Dimensions & Features



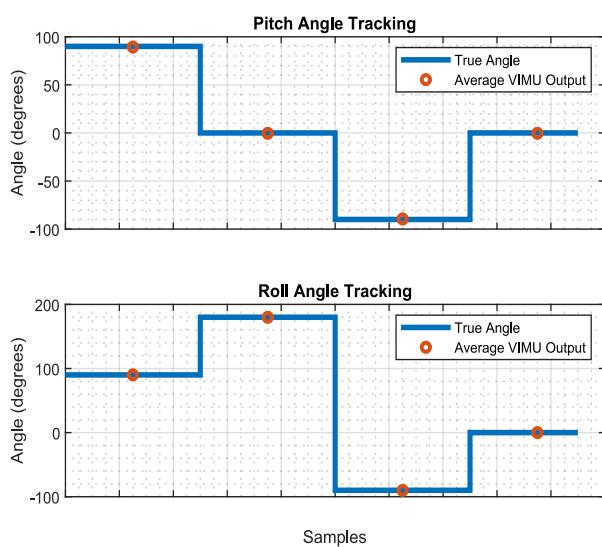
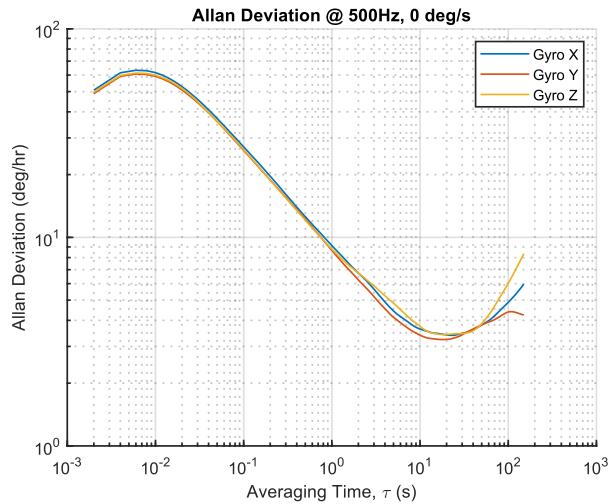
Specifications

Fusion Performance		
Range	Pitch	$\pm 90^\circ$
	Roll	$\pm 180^\circ$
Static Accuracy	Pitch	0.48° RMS
	Roll	0.13° RMS
Angular Resolution	< 0.02°	
Output Rate	1000 Hz	

Gyroscope	
Dynamic Range	$\pm 2000^\circ/\text{s}$
Bias Stability	< 6°/hr
Non-Linearity	$\pm 0.1\%$
Rate Noise Spectral Density	0.01°/s/VHz
Accelerometer	
Dynamic Range	$\pm 16\text{ g}$
Noise Density	< 0.3 mg/VHz
Sensitivity ($\pm 16\text{g}$)	0.488 mg
Non-Linearity	$\pm 0.5\%$

Imaging Sensor	
Sensor Type	1/3-inch CMOS
Shutter Type	Global shutter
Pixel	1.2 MP
Max Resolution	1280 (W) x 960 (H)
Max Frame Rate	60 fps
Magnetometer	
Full-Scale Range	$\pm 48\text{ Gauss}$
Sensitivity	6 mGauss

Performance



The VIMU gyroscope Allan deviation plot (left) & fusion tracking of the VIMU based on a rate table reference (right).

Product Number **VUCS0106-U3**
 Consumer Grade
 1 Megapixel

USB 3.0
 6°/hr Bias Instability

Contact Us!

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