SentiSystems

LiDAR-Dual Visual-Inertial Payload

Introduction

The LiDAR-Dual Visual-Inertial Payload is an extendable, fully synchronized, plug-and-play sensor payload with an industrial Camera and a Inertial Measurement Unit (IMU). Camera frames and IMU measurements are time synchronized to sub-microsecond precision and forwarded to your favourite real-time middleware or logged for post-processing.

Payload summary

The LiDAR-Dual Visual-Intertial Payload includes:

- Ouster OS-1 LiDAR
- 2xFLIR Blackfly S Industrial camera
- VectorNav VN100 IMU
- SentiBoard
- All cables

- SentiUtils software and libraries for ROS, C/C++, Python and Matlab

SentiSystems Payloads are *sensor agnostic*, refer to Supported Sensors for an overview the sensors and Linux Host computers we have integrated so far.

Example Application

The LiDAR-Dual Visual-Inertial Payload is delivered integrated with the open-source real-time LVIO-SAM algorithm running as a ROS1 node.

SentiUtils Software

The LiDAR-Dual Visual-Inertial Payload ships with the SentiUtils software. SentiUtils includes sensor parsers, frame-to-trigger synchronization, clock filtering, and sensor monitoring. SentiUtils is a real-time host application connecting the sensors to your favourite middleware. SentiUtils support the following middlewares:

- ROS1
- ROS2
- Dune

SentiUtils can also be integrated with custom frameworks through a socket-based interface carrying SentiSystems Protobuf messages.

Applications

- Mapping and surveillance
- GNSS-Denied navigation
- Robotics
- Agriculture
- Automotive
- Situational awareness
- Stereo vision

SentiSystems Payloads

The SentiSystems Payloads are fully integrated plug-and-play sensor payloads. Using the SentiBoard technology the sensor events are timestamped to a sub-microsecond accuracy. Sensors can be upgraded or replaced without any hardware or software updates and without sacrificing timestamp accuracy. Integrating new and custom sensors and signals is done on request.