



Visual GNSS-Inertial Sensor Package



Introduction

The Visual GNSS-Inertial Sensor Package is an extendable, fully synchronized, plug-and-play sensor payload with a Camera, Dual GNSS receivers and an Inertial Measurement Unit (IMU). Camera triggers are time-synchronized to GNSS and IMU measurements to a sub-microsecond accuracy. The sensor data is forwarded to your favourite real-time middleware or logged for post-processing.

Payload Summary

The Visual GNSS-Inertial Payload includes:

- FLIR Blackfly S industrial Camera
- Xsens MTI600-series IMU
- Dual uBlox F9P GNSS board
- 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.

SentiUtils Software

The LiDAR-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
- Navigation
- Inspection
- Agriculture
- Automotive
- Situational awareness

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.