

Mapillary-RTK Project



Project leader:
Nicolas Palix

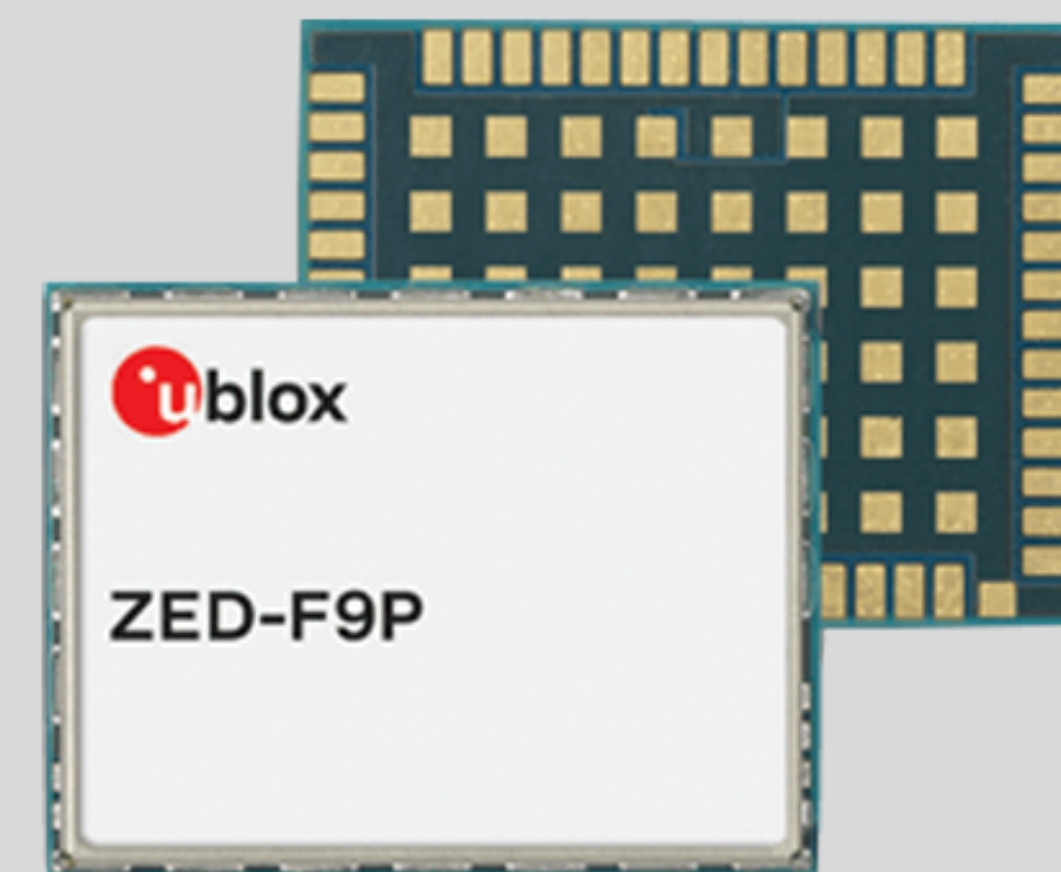
Gergely Fodor
Samuel Conjard
Baptiste Jardin
Tom Kacha

Our project aims to develop an embedded system that can capture 360° photos with centimeter-level precision and upload them to software to create a Street View. We have incorporated an F9P RTK module in our system to achieve this level of accuracy. Additionally, we have created an Android app that connects to the F9P module and a 360° camera, allowing us to capture and precisely geo-locate the images. The images are then sent to Mapillary, a service that enables online map and Street View contributions by users.



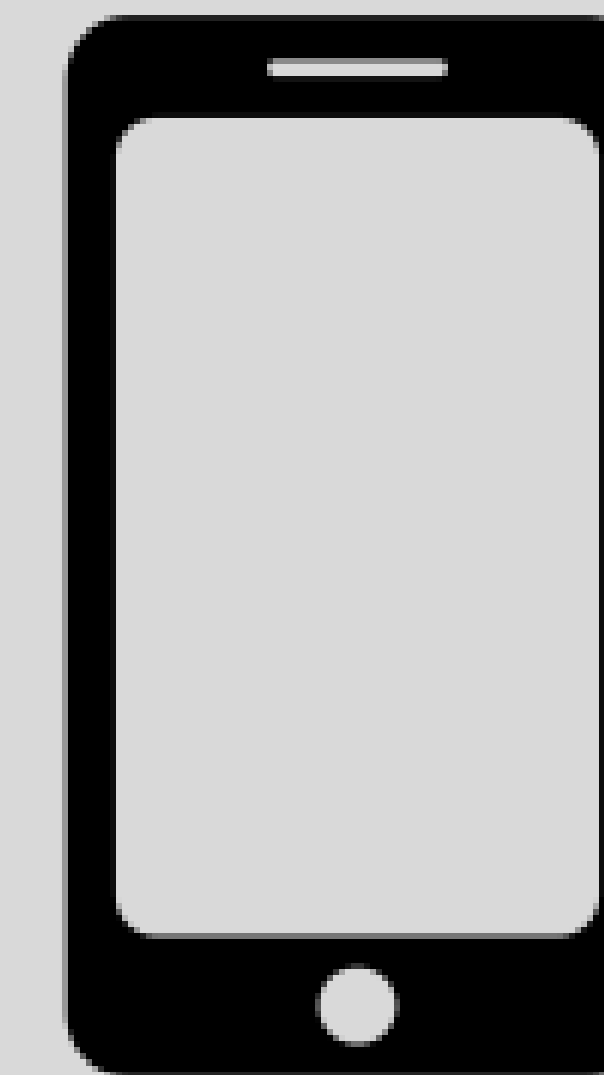
ZED-F9P Module

The ZED-F9P Module is a highly advanced Global Navigation Satellite System (GNSS) receiver designed for accurate positioning and navigation applications. It is equipped with a high-quality GNSS antenna that enables the module to receive signals from multiple satellite constellations, including GPS, GLONASS, Galileo, and BeiDou. The module features I2C connectors, which allow for easy integration with other electronic components.



Android app

The Android app is a multifunctional controller that connects to our hardware and APIs. It uses Bluetooth to connect to the F9P Module and transmit high-precision RTK coordinates that replace the smartphone's default GPS coordinates. The app also captures 360° photos and assigns them coordinates based on the RTK coordinates. Finally, it uploads the images to Mapillary, enabling seamless data processing and further analysis.



Mapillary API

The Mapillary API is a tool that extracts cartographic data from georeferenced 360-degree images. It uses computer vision and machine learning algorithms to identify features such as road markings, traffic signs, and building facades. It can also detect changes in the environment over time, making it useful for monitoring urban development and assessing natural disasters. The API provides tools for working with cartographic data, including geospatial analysis, visualization, and machine learning.



Centipede RTK

The Centipede RTK Network is a real-time kinematic (RTK) network that provides highly accurate positioning data for a range of applications. The network consists of strategically located permanent GNSS base stations that provide correction data to rovers. In the context of our project, a rover is a mobile device that determine its location to the centimeter by sending and receiving localiation data to base stations in real time.

360° Camera

The Ricoh Theta SC is a portable 360-degree camera that can be a useful tool for cartographic use. It can capture high-quality images of an environment, providing a detailed view of the surrounding area. The 360-degree images captured by the Theta SC can be geotagged, allowing them to be precisely located on a map. This can be particularly useful in cartographic applications, where accurate location data is essential for creating detailed maps

