

Digitization of OpenStreetMap (OSM) Using Drone Imagery as Base Layer



Student participants posing for a group photo



Participants taking part in practical map digitization



An example of a digitized map as an output

OVERVIEW	
Flying Labs	Nepal Flying Labs
Location	Pyuthan, Province 5, Nepal
Date	December 2019
Length (number of days)	3 Days
Sector program (optional)	YouthRobotics
Format	In-Person

Co-organizer if applicable	Not applicable
Main SDG	GOAL 4: Quality Education

SCOPE & OUTCOMES	
Type of training	Youth/STEM training.
Goal of the training	<ol style="list-style-type: none"> 1. Create drone awareness. 2. Develop drone data analysis skills. 3. Develop data literacy and confidence. 4. Train and empower youth and the workforce of the future.
Expected outcome for participants	<ul style="list-style-type: none"> ● Obtaining basic drone knowledge. ● Learning knowledge and skills on drone flying. ● Mapping their community using open source mapping tools like OpenStreetMap (OSM).
Confirmed outcome after training	<ul style="list-style-type: none"> ● Participants were able to make the use of drone imagery as a base map in Java OpenStreetMap (JOSM) and digitize their locality. ● The participants were introduced to other applications of drones such as survey and medical cargo deliveries. ● The participants received training on various aspects of Information Communication Technology (ICT) and digitization. This included making new email accounts, installing softwares such as JAVA, GeoServer, and JOSM, digitizing and uploading data to OpenStreetMap (OSM).
Eventual next steps	<ul style="list-style-type: none"> ● Conducting similar kinds of training programs. The team is already planning to facilitate training sessions in other locations of Nepal. ● Based on the learning, we also realized that drones for Science, Technology, Engineering, and Mathematics (STEM) education could be very relevant because students were excited to see the drones flying. Drone technology could be one of the best topics to learn.

PARTICIPANTS	
Profiles and number of participants	<ul style="list-style-type: none"> ● 5 staff from the school ● 18 school children
Name of participants' organizations	Janata Higher Secondary School
Gender ratio	25% Female : 75% Male
Who paid for the training?	The training was offered free of charge.
Participant fee rate (if applicable)	The training was offered free of charge.
Scholarships offered?	No scholarship was offered because the training was free for all participants.

CONTENT	
Training components	<ul style="list-style-type: none"> ● Creating an account on OpenStreetMap. ● Login to a new location and digitize unmapped objects in the given area. ● Creating a map for the area where the users have digitized new data layers.
Training resources used	<ul style="list-style-type: none"> ● GeoServer ● JOSM Software ● DJI Phantom 3
Approaches and methods used	<ul style="list-style-type: none"> ● We hired an OpenStreetMap expert who brought an orthophoto map prepared from drone data which was used as a base layer. Since the participants wanted to learn basic mapping skills, we utilized the base map to train them how to digitize geographical objects over high resolution base maps. ● The training was totally hands-on because all participants created the OpenStreetMap accounts themselves and digitized the maps before finally uploading their final outputs to the OpenStreetMap server. ● With a glance at the drone image, the participants could easily locate and identify objects around their

	<p>communities, hence mapped all locations with ease.</p> <ul style="list-style-type: none">• This training actively involved both students and teachers as participants who all contributed to the data digitization.
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