

Mapping research centres as part of the COVID-19 response



Noguchi Memorial Institute for Medical Research



Kumasi Centre For Collaborative Research

OVERVIEW	
Flying Labs	Ghana Flying Labs
Geographic area	West African Region and Ghana
Date	April 2020
Sector program	HealthRobotics
Main SDGs	GOAL 1: No Poverty GOAL 3: Good Health and Well-being GOAL 15: Life on Land GOAL 17: Partnerships to achieve the Goal

SCOPE	
Stakeholders (clients)	ZIPLINE GH, Ghana Ministry of Health
Beneficiaries	Ministry of Health, Government of Ghana
Challenge	With the increase in the number of COVID-19 outbreaks, there was a growing pressure on the Ministry of Health to release the results from the many COVID-19 tests. However, there were only a couple of major research centres with a great distance between them. Transporting the tests via road was taking too much time, hence the government of Ghana sought the help of Zipline to send the tests via drones.
Scope	SKT Aeroshutter (Ghana Flying Labs hosting organization) was asked to map out a given area around the two research centres and select a suitable delivery point for the Zipline drones. The end goal was to enable massive and rapid testing of alleged COVID-19 cases in Ghana.
Outcome	Thanks to this project Zipline has obtained photogrammetric data to map out and route their delivery drones to make deliveries at the above-mentioned research centres. The lab technicians at the research centres were consulted and guided in choosing an appropriate delivery point. The coordinates of the delivery point were set out with a GNSS receiver.
Impact	Short term: Zipline will be able to program their drones to deliver tests and aids the drop sites at the research centres. Long term: the delivery aids in quicker testing of blood samples for COVID-19 tests.
Next steps	We will provide Zipline with the data they need to have a general idea of the terrain surrounding the research centres. This will help them in programming their drones to deliver the tests to the research centres.

COMMUNITY ENGAGEMENT AND STAKEHOLDER SUPPORT	
Consent for data acquisition	We obtained letters giving us permission to perform the surveys.
Activities to engage with the community	In observance of the COVID-19 preventive measures community members were not present. There was a partial lockdown at the time.
Community groups engaged with	-

Community attendance	-
Community feedback	-
Stakeholder support	The whole project was realised during a national lockdown imposed by the President of Ghana. We were provided with a free pass by the Ministry of Health to move freely and to not be questioned by members of the Police who were around to ensure the lockdown was in full effect. Thanks to this, we were able to bypass a lot of bureaucracy and finish the works faster.

DATA ACQUISITION

Size of area	Two research facilities were surveyed: 1. NMIMR - 149.23ha (1.49 km ²) 2. KCCR - 383.32ha (3.83 km ²)
Drone	DJI Mavic 2 Pro
Sensor(s)	Hasselblad L1D-20c
Flight plan software	DJI GS Pro
Flight height	165 m above ground level
GSD (Accuracy)	3.5cm/pix
Number of images acquired	1. NMIMR - 476 photos 2. KCCR - 2123
Number of flights	1. 2NMIMR - 2 2. KCCR - 6
Time invested in data acquisition	1. NMIMR - 3HRS 2. KCCR - 7HRS
Georeferencing	A minimum of 6 ground control points was collected at each survey site

DATA PROCESSING & ANALYSIS

Processing software	Tersus David software for converting Log files to RINEX Photo processing was done by the client
Processing time	N/A
Data products	Raw Photos and GCPs in a Rinex format
Analysis tools	N/A
Analysis outputs	N/A
Final outputs shared with stakeholders	Raw Photos and GCPs in Rinex format
Data sharing	The files were backed up on a hard drive and delivered in person to The Zipline Nest