

The EagleX Robotics

Unmanned Aerial Services



exrobotics.ca

A spatial data intelligence company

1. Short Description about of the Company

The EagleX is a startup company for rendering UAV based various geo-spatial services for the growing need of Global market particularly Bangladeshi market. The company has a group of young and brilliant professionals to ensure quality services at best price. The EagleX believes in building long lasting business relationship through consistent quality services.

The EagleX provides professional IT enabled GIS and Remote Sensing consultancy & services ensuring to the highest level of ethical and technical standards. We value our client's needs and provide technically viable and cost-effective solutions. We follow an approach to work with each client with a view to defining the project scopes and requirements and accordingly devise the optimum solutions on target. We assist our clients through consulting, planning, designing and implementation of viable as well as pragmatic solutions that are delivered both in time and budget.

2. Vision of the Company

The vision of the EagleX is to be the leader in the geo-spatial service generation with special focus on the cost and time saving along with utmost quality in Bangladesh.

3. Method of UAV based Survey

Working Principles

The Principle consists of two main steps such as **data Acquisition** and **data Processing**. The procedure is better illustrated through the info graphic bellow.

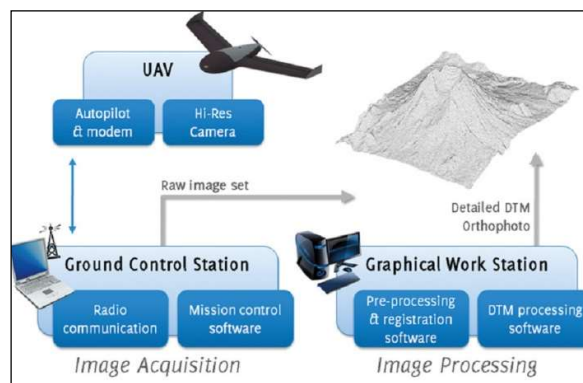


Figure 1: Working Principle of an UAV System

4. Sample Products from the UAV System



Figure 4: Orthophoto of BUET Campus, Dr M A Rashid Hall

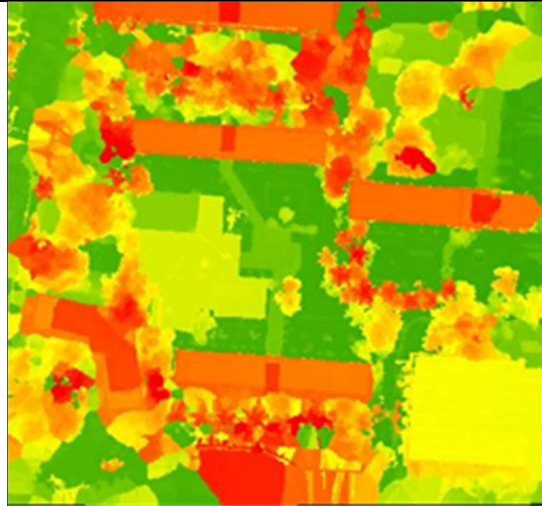


Figure 5: DSM of BUET Campus, Dr M A Rashid Hall



Figure 6: 3D Model of BUET Campus, Dr M A Rashid Hall

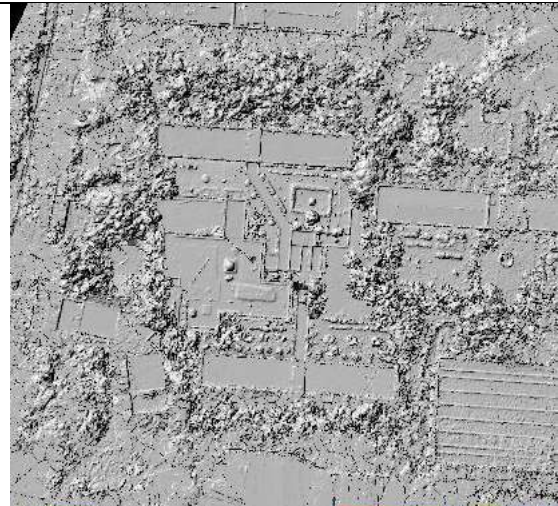


Figure 7: Point Clouds of BUET Campus, Dr M A Rashid Hall



Figure 8: Orthophoto of Dohar Pourashava(Bazar Area)



Figure 9: DSM of Dohar Pourashava (Bazar Area)

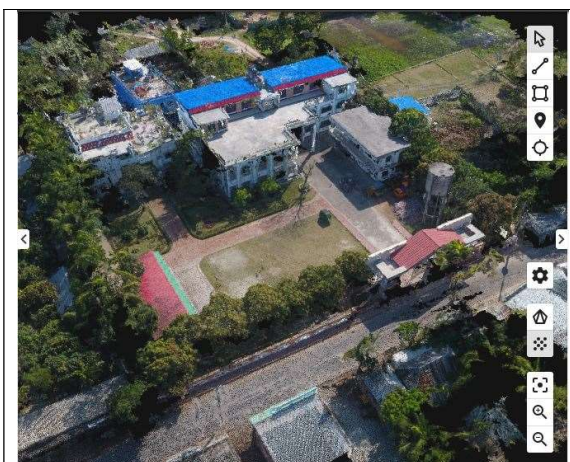


Figure 10:3D Model of Dohar Pourashava

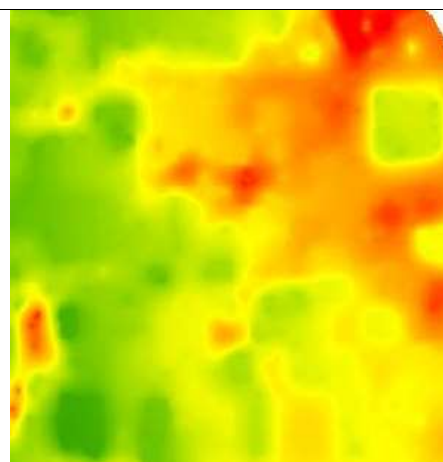


Figure 11: DTM of Dohar Pourashava

5. List of Work Experiences

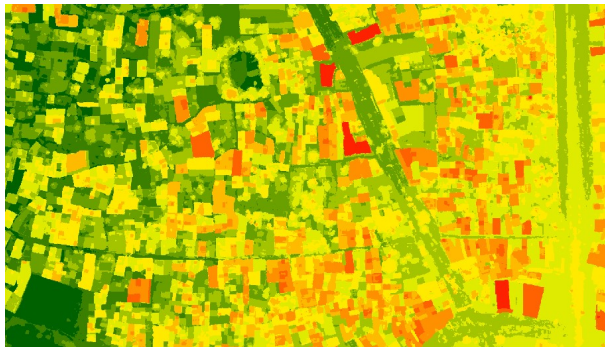
SL No	Project Name	Client	Start Date	End Date
01	Topographic Mapping of BUET Residential Hall (Dr M A Rashid)	Demonstration Project	02/03/2019	05/03/2019
02	Topographic Mapping of Dohar Pourshava (Bazar Area)	Dohar Pourashava	09/03/2019	16/03/2019
03	Topographic Survey for a Corridor of 130 km along the four major rivers around Dhaka City	BIWTA	10/04/2019	30/06/2019
04	Ponds Survey by UAV methods in Satkhira District	OSMBDF & WaterAid	01/04/2019	12/05/2019
05	Boundary Demarcation and Land Level Survey in Keraniganj	Sarkar Engineering and Constructions	22/04/2019	27/04/2019
06	Physical Feature and Land Level Survey of 120 acres in Chondraghona in Chottogram using UAV	Global Survey Consultants	12/04/2019	20/04/2019
07	Survey Mapping and Preparing 3D models of Kollyanour Khal Area using UAV	Porishar Upodesta	01/05/2019	07/05/2019
08	Digital Survey and 3D modelling for Jail Khal in Barisal City Corporation	Geo-spatial Services and Researches	28/05/2019	04/06/2019
09	Digital Survey & 3D modelling of AM Auto Bricks and Ready Mix Site	Abdul Monem Group Limited	19/10/2019	04/11/2019
10	UAV Based Topographic Survey for Adbul Monem Economic Zone Limited, Gozaria Munshiganj	Adbul Monem Economic Zone Limited (AMEZL)	01/11/2019	10/11/2019
11	Dealing Dengue with Drones for Integrated Mosquito Control in Dhaka City (DNCC)	R & D Project with CDC & Group Mappers	15/07/2019	15/08/2019
12	UAV Based Topographic Survey for WDN in Tarabo Pourashav	OCREEDS Ltd and DSK Ltd	14/12/2019	21/12/2019
13	UAV Based Topographic Survey for WDN in Sikakunda Upazila	OCREEDS Ltd and DSK Ltd	05/01/2020	10/01/2020
14	Volumetric Calculation and Topographic Survey for Solid Waste Management in NCC	Acumen Engineers, Architects & Planners Ltd & NCC	07/01/2020	15/01/2020
15	Physical Feature Survey for Integrated Asset Management for LR Groups in Tarbao Round About	Ocreeds Ltd & Inspace Studio Ltd	14/03/2020	20/03/2020
16	Integrated Asset Management for Mobile Phone Towers in Bangladesh	R & D Project	14/03/2020	25/03/2020
17	3D Documentation of Sonargaon Panam City for Restoration of Cultural Heritage	R & D Project	30/08/2019	10/09/2019
18	High Voltage Power Line Inspection in Gozaria	R & D Project	05/02/2020	10/02/2020
19	UAV Based Topographic Survey in Gazipur City Corporation	Ocreeds Ltd & GCC	11/05/2020	On Going Project

20	Corridor Survey of 8.5 km Highways from Mukhtarpur to Mirkadim	GSC & BBA	19/12/2019	25/12/2019
21	Integrated Asset Management of DWASA at Pagla	R & D	14/03/2020	20/03/2020
22	Topographic survey of Kamrangirchar approximately 5.6 square kilometer area of Dhaka north city corporation	Dhaka South City Corporation	17/09/2021	23/11/2021
23	4 Khal waste area calculation survey of Dhaka North city corporation	Dhaka North City Corporation	05/01/2022	15/01/2022

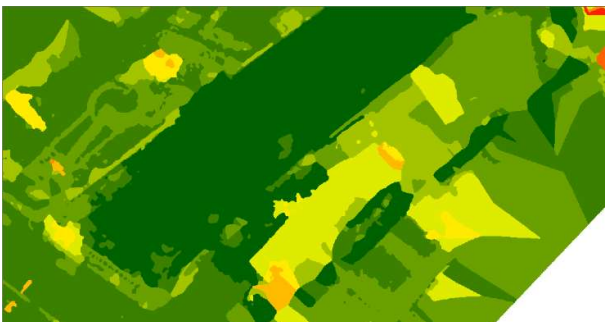
Project Description Sheet		PDS_01
Assignment name: Boundary Demarcation and Land Level Survey in Keraniganj		Country: Bangladesh
Assignment Location within Country: 9.87 acres area in Keraniganj near Riverview project of Bashundhara Group		Duration of assignment: 5Days
Name of Client: Nasrul Hadim Foundation & Sarkar Engineering and Constructions		Professional Staff provided by your Organization: No of Staff: 6
Start Date (Month/Year) 22 nd April 2019	Completion Date (Month/Year) 27 th April 2019	No of Person-Days: 30 MD
Name of Resources Involved:		
Azizul Islam, UAV Pilot Salman Reza, UAV Co-Pilot Forhad Ahmed, GIS Specialist Sazid Ibn Zaman, RS Specialist		Md. Golam Mortuza, GIS & RS Specialist Md. Ashraful Islam, GIS Analyst
Detailed Narrative Description of Project: The project was about land surveying and volume calculation in Keraniganj. The average flying height of the drone was 200 feet from ground level which produced a very high resolution Data with less than 5 cm GSD (Ground Sample Distance). The flight planning of the project has been carried out using Drone deploy application. This map illustrates the features on the ground for demarcation with high positional accuracies such as plot area, existing structures and other Important features in the study area. The spot levels are also included in the feature map for a better understanding of the undulation of the ground surface. RTK GPS was used for collecting Ground Control Point (GCP) to ensure the positional accuracy of the UAV products. The total area of the site is 9.87 acres. The total length and width of the projected area are 200m and 200 m respectively. During the survey, 950 data sets collected over the study area. The project needed 3 individual flights having an average length of 200 m. The side overlap and front overlap were respectively 75% and 85% on each flight. After, it has completed processing the Data for making the final deliveries with photogrammetry-based software.		 Fig 01: Orthophoto of the Project Area  Fig 02: 3D Model of the Project Area

The major deliverables are listed below:

- Orthophotos as GeoTIFF of the Study Area with at least 5 cm GSD (Ground Sample Distance)
- Topographic Features as GIS/AutoCAD Layers
- Digital Surface Model (DSM) with 3m by 3m grid size
- Digital Terrain Model (DTM) with 3m by 3m grid size
- 3D Model of the Study Area
- 3D Points Clouds for better visualization
- Contour Map
- 4k video of 3D modeling

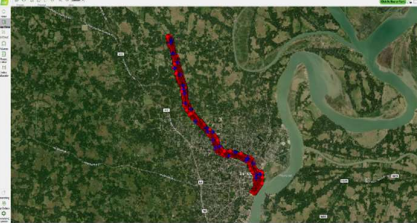
Project Description Sheet		PDS_02
Assignment name: Dengue Risk Mapping with Drones: An Integrated Approach for Aedes Control		Country: Bangladesh
Assignment Location within Country: 0.587sqkm along the Mirpur, Gulshan and Narinda in Dhaka City Corporation		Duration of assignment: 5Days
Name of Client: CDC, DNCC		Professional Staff provided by your Organization:
Start Date (Month/Year) 30 th July 2019	Completion Date (Month/Year) 4 th August 2019	No of Staff: 6 No of Person-Months: 30 MD
Name of Resources Involved:		
Md Azizul Islam, UAV Pilot Md Salman Reza, UAV Co-Pilot Md Forhad Ahmed, GIS Specialist Md. Sazid Ibn Zaman, RS Specialist		Md Golam Rabbani, Cloud Computing Expert Nasif Bin Shafi, Data Scientist Md. Golam Mortuza, GIS & RS Specialist Md. Ashrafur Islam, Junior GIS Analyst
Detailed Narrative Description of Project: Dhaka is the center of the outbreak and risk of the Dengue in recent years. In case of reducing the epidemic of dengue, it is urgently needed to identify the vulnerable breeding place of dengue. UAV technology was used for dealing dengue to identify their birthplace in three sites of Dhaka(Mirpur, Gulshan, Narinda). The average flying height of the drone was 250 feet from ground level which was produced a very high resolution Data with less than 5 cm GSD (Ground Sample Distance).The flight planning of the project has been carried out using Drone deploy application. This map illustrates all features on the groundwith high positional accuracies such as Discarded Tyres, flower Tob/rooftop Agriculture, Open Water Tanks, polythenes, open Reservoirs on the Roof, air Conditions, others Important Habitats in the study area. The spot levels are also included in the feature map for a better understanding of the undulation of the ground surface. The total area of the three sitesis 0.34sqkm (Narinda), 0.142 sqkm(Mirpur) and 0.10 sq km(Kamlapur) respectively. During the survey, 911 Data sets collected over the study area. The project needed 6 individual flights having an average length of 1km. The side overlap and front overlap were respectively 65% and 80% on each flight. After, it has completed processing the Data for making the final deliveries		 Fig 01: Orthophoto of the Project Area  Fig 02: Digital Elevation Model (DEM) of the Project

with photogrammetry-based software. The output result was producing very high-resolution Data analysis, combining the case data with the result, intelligent mapping for planning & surveillance, crowdsourcing through mobile and web application, modelling for disease forecasting, policy integration.	
The major deliverables are listed below: • Orthophotos as GeoTIFF of the Study Area with at least 5 cm GSD (Ground Sample Distance) • Topographic Features as GIS/AutoCAD Layers • Digital Surface Model (DSM) with 3m by 3m grid size • Digital Terrain Model (DTM) with 3m by 3m grid size • 3D Model of the Study Area • 3D Points Clouds for better visualization • Contour Map • 4k video of 3D modelling	

Project Description Sheet		PDS-03
Assignment name: Survey Mapping and Preparing 3D models of Kallyanpour Khal Area using UAV		Country: Bangladesh
Assignment Location around Dhaka City: 2.5km along the Kollyanpur Khal in Kollyanpur Area		Duration of assignment (Days): 6Days
Name of Client: Porishar Upodesta, Sheltech Ltd, RAJUK		Professional Staff provided by your Organization: No of Staff: 6
Start Date (Month/Year) 1 st May 2019	Completion Date (Month/Year) 7 th May 2019	No of Person-Days: 36 MD
Name of Resources Involved:		
Md Azizul Islam, UAV Pilot Md Salman Reza, UAV Co-Pilot Md Forhad Ahmed, GIS Specialist Md. Sazid Ibn Zaman, RS Specialist		Md Golam Rabbani, Cloud Computing Expert Nasif Bin Shafi, Data Scientist Md. Golam Mortuza, GIS & RS Specialist Md. Ashraful Islam, Junior GIS Analyst
Detailed Narrative Description of Project: The produced topographic map Khal from the very high resolution (5cm GSD) UAV Data sets for land level and physical feature survey. This map illustrates all features on the ground with high positional accuracy such as illegal encroachments, illegal constructions, solid waste dumping site, etc. on both sides of the Khal in the study area. The spot levels around the Khal is extracted for a better understanding of the undulation of the ground surface. RTK GPS is used for collecting Ground Control Point (GCP) to ensure the positional accuracy of the UAV products. The total length of the project area is 2.5 km. covering 500meters buffer distance on both side of the Kollayanpur Khal. The average flying height of the drone was 250 feet from ground level which can produce a very high resolution of Data sets with less than 5 cm GSD (Ground Sample Distance). We collected 1250 Data sets along both sides of the Khal. The project needed 12 individual flights having an average length of 500 m. The side overlap and front overlap were respectively 75% and 85% on each flight. Afterward, it has completed processing the Datas for making the final deliveries.		 Fig 01: Orthophoto of the Project Area  Fig 02: Digital Elevation Model (DEM) of the Project

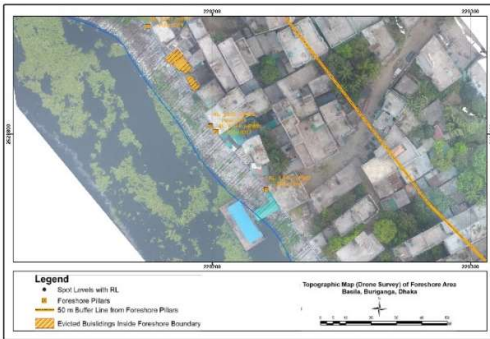
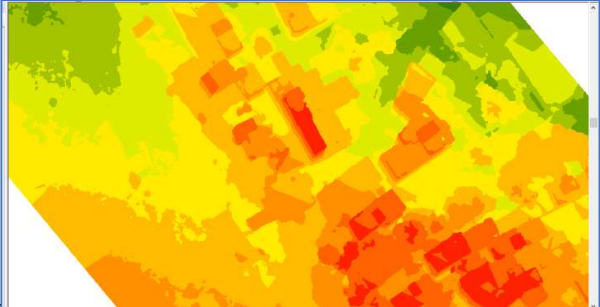
The major deliverables are listed below:

- Orthophotos as GeoTIFF of the Study Area with at least 5 cm GSD (Ground Sample Distance)
- Topographic Features as GIS/AutoCAD Layers
- Digital Surface Model (DSM) with 3m by 3m grid size
- Digital Terrain Model (DTM) with 3m by 3m grid size
- 3D Model of the Study Area
- 3D Points Clouds for better visualization
- Contour Map
- 4K video

Project Description Sheet		PDS-04
Assignment name: Digital Survey and 3D modelling for Jail Khal in Barisal City Corporation		Country: Bangladesh
Assignment Location within Country: 8.5 km along the Jail Khal in Barisal City Corporation		Duration of assignment: 7 Days
Name of Client: Geo-spatial Services and Researches		Professional Staff provided by your Organization: No of Staff: 6
Start Date (Month/Year) 28 th May 2019	Completion Date (Month/Year) 4 th June 2019	No of Person-Months: 42 MD
Name of Resources Involved:		
Md Azizul Islam, UAV Pilot Md Salman Reza, UAV Co-Pilot Md Forhad Ahmed, GIS Specialist Md. Sazid Ibn Zaman, RS Specialist		Md. Golam Mortuza, GIS & RS Specialist Md. Ashrafur Islam, Junior GIS Analyst
Detailed Narrative Description of Project: Jail Khal, the heart of Barisal is being developed against the problem of illegal encroachment, earth filling, and dumping of waste into its water body for many years. For the development, digital Survey and 3D modelling as well as the topographic maps are generated from the very high resolution (5cm GSD) UAV Data. This map illustrates all features on the ground near Khal with high positional accuracies such as buildings, dumping waste, earth filling, and encroachment in the study area. The spot levels are also included in the feature map for a better understanding of the undulation of the ground surface. The total land measurement of the project area is 2.55 sqkm. We have managed to complete a length of 8.5 km covering the width of 150 meter along both sides of the jail khal. The average flying height of the drone was 250 feet from ground level which can produce a very high resolution of Data with less than 5 cm GSD (Ground Sample Distance). During the survey, 1761 Data sets collected over the Jail Khal along with both side features. The project needed 8 individual flights having an average length of 1km. The side overlap and front overlap were respectively 60% and 80% on each flight. After, it has completed processing the Data for making the final deliveries with photogrammetry-based software.		Figure 01: Orthophoto of the Study Area (Source: EagleX, 2019)  Figure 02: AOI of the Study Area (Source: EagleX, 2019) 

The major deliverables are listed below:

- Orthophotos as GeoTIFF of the Study Area with at least 5 cm GSD (Ground Sample Distance)
- Topographic Features as GIS/AutoCAD Layers
- Digital Surface Model (DSM) with 3m by 3m grid size
- Digital Terrain Model (DTM) with 3m by 3m grid size
- 3D Model of the Study Area
- 3D Points Clouds for better visualization
- Contour Map
- 4k video of 3D modelling

Project Description Sheet		PDS-05
Assignment name: Topographic Survey for a Corridor of 148 km along the four major rivers around Dhaka City		Country: Bangladesh
Assignment Location around Dhaka City: On and around the foreshore land of the river Buriganga, Turag, Balu and Sitalakhya		Duration of assignment (days): 40 days
Name of Client: Institute of Water Modelling (IWM) and Bangladesh Inland Water Transport Agency (BIWTA)		Professional Staff provided by your Organization: No of Staff: 6
Start Date (Month/Year) 10 th April 2019	Completion Date (Month/Year) 30 th June 2019	No of Person-Days: 240 MD
Name of Resources Involved:		
Md Azizul Islam, UAV Pilot Md Salman Reza, UAV Co-Pilot Md Forhad Ahmed, GIS Specialist Md. Sazid Ibn Zaman, RS Specialist		Md Golam Rabbani, Cloud Computing Expert Nasif Bin Shafi, Data Scientist Md. Golam Mortuza, GIS & RS Specialist Md. Ashraful Islam, Junior GIS Analyst
Detailed Narrative Description of Project: UAV and Photogrammetry based Topographic survey for Feasibility study for construction of walkway, Eco-park and other allied infrastructure on the foreshore land of the river Buriganga, Turag, Balu and Sitalakhya (3rd Phase) and waste removal from the river bed and along the circular waterways of Dhaka City and also set development program for the elements of Study. The topographic map is generated from the very high resolution (5cm GSD) UAV Data. This map illustrates all features on the ground with high positional accuracy such as Buildings, Roads, water bodies, parks and paly grounds in the study area. The spot levels are also included in the feature map for better understanding of the undulation of the ground surface. The total length of the project area is 148 km. We have managed to complete a length of 148 km covering 100 meter inward along the country side of each river bank. The average flying height of the drone was 250 feet from ground level which can produce a very high resolution of Data with less than 5 cm GSD (Ground sample Distance). We collected 16500 data along the both bank line of the selected rivers. The project needed 184 individual flights having average length of 1km. We have completed processing the Data for making the final deliveries .		 Legend • Spot Levels with RL ■ Foreshore Points — 50 m Buffer Line from Foreshore Points ■ Existing Buildings Inside Foreshore Boundary Topographic Map (Drone Survey) of Foreshore Area Basila, Buriganga, Dhaka Fig 01: Orthophoto of the Project Area  Fig 02: Digital Elevation Model (DEM) of the Project

The major deliverables are listed below:

- Orthophotos as GeoTIFF of the Study Area with at least 5 cm GSD (Ground Sample Distance)
- Topographic Features as GIS/AutoCAD Layers
- Digital Surface Model (DSM) with 3m by 3m grid size
- Digital Terrain Model (DTM) with 3m by 3m grid size
- 3D Points Clouds for better visualization
- Contour Map
- 4K video

Key personnel of the company:

Nasif Shafi

(BSc, BUET, MSc Queen's University, Canada)

Staff Engineer, Sierra Wireless.

Expert in IoT and Drone lidar data processing

Golam Rabbani

(BSc, BUET, MSc, Waterloo University Canada)

Software Engineer, Amazon, Canada. Expert in Cloud computing and Machine learning

Gaji Md. Shahabuddin

(BSc in EEE, BUET)

Expert in IOT, GIS, Google earth, embedded system, hardware and firmware design , software architecture design , project management .

Address of the company: 6071 Azure Road, Richmond, BC, V7C 2P3

Company name: EagleX Robotics

Website: www.exrobotics.ca