High quality DSM/DTM generation from high resolution(1-3m) data using artificial intelligence

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The objectives of the project?

- Develop state-of-the-art artificial intelligence algorithms for high-quality elevation data extraction. → We used a really great deep learning algorithm.
- Generate high-quality Digital Surface Models (DSM) and Building Height Models (BHM) using high-resolution data (1-3 meter). → Done!
- Overcome the barrier of high cost associated with obtaining very high-resolution data (30cm to 50cm). → Done!
- Provide accessible and cost-effective elevation data solutions for underdeveloped and developing countries. → Almost Done!

The objectives of the project?

- Enhance telecommunication signal estimation through higher quality and updated elevation data. → Almost Done!
- Benefit people living in urban areas by providing improved elevation data for various applications. → Almost Done!
- Develop a system backed by a deep learning algorithm for high-quality elevation data generation. → May be done in the Future.
- Improve environmental modeling by offering more updated and affordable elevation data. → May be done in the Future.

description of how using tools and data within cloud environments helped?(Positive Points)

- **Data :** Preparing data from cloud was a benefit. Using the platform of the Up42, it was a great experience of ordering satellite imagery.

- **Processing :** The images were stored in my account storage. Then it was possible to process. We processed a considerable sq. km. using the platform processing machine.

- **Processing :** The Up42 was a great option in terms of flexibility. Because it let us to dockerize the algorithm and then deploy it to the cloud.

description of how using tools and data within cloud environments helped?(Negative Points)

- **Processing :** We desired to do all of our workflow in the Up42 platform. But there were some obstacles hindered the process. I referrer to two of them :

1 – We were not able to collect GCPs.

2 – in the training phase, we needed to allocate more shared memory, but it seemed to be impossible in the platform.

benefits to society

- Now the outputs are really helpful for industries like telecommunication.
- Samples of different cities of the output with an emphasis on the building height.