Pix4D and Aeryon Labs Create 3D Model of Christ the Redeemer Statue

Pix4D, together with Aeryon Labs and PUC University of Rio de Janeiro, has spearheaded the first accurate 3D reconstruction of the iconic Christ the Redeemer statue in Rio de Janeiro, Brazil. Using the Aeryon UAV for data capture and Pix4Dmapper image processing software for 3D reconstruction, the project team overcame challenging weather and geographic positioning in order to capture the high-resolution images needed for the model.

Christ the Redeemer towers over Rio de Janeiro, standing 38 metres high and perched atop a 700 metre peak. While it's possible to buy hand-designed, small touristic models almost anywhere in Rio, an accurate 3D construction of the monument has not been possible until now because the location and size of the statue made technologies like Lidar too difficult to use.

The NEXT Lab of PUC University in Rio de Janeiro had long dreamt of making an accurate reconstruction, and contacted Pix4D to see if this was possible using the Swiss company's image processing software and UAVs for data acquisition.

Data acquisition

PUC University organised the project logistics, including gaining special permission to fly a UAV near the heritage site. Because the safety of the statue and its guests was imperative, the team chose the Aeryon Scout, with a quad rotor aerial platform capable of flying low and in wind of up to 50 km/h. The data was collected for six consecutive mornings, each day before the visitors arrived. After 19 ten-minute flights, a total of 3,584 images were taken.

The Model

The high-resolution model was created in Pix4Dmapper Pro desktop software, using 2,090 of the images, 82 manual tie points and a linear measurement. The project was processed without geotags, as GPS information was too inaccurate to bring any benefits to the reconstruction and would have misled the camera calibration. The outcome is an impressive 3D model of Christ the Redeemer and the surrounding area in high resolution. Results are in the format of a 134.4 million point point-cloud and a full textured mesh with 2.5 million triangles.

Watch the project video: http://youtu.be/-ucLIckILT4

Discover the 3D model:

Christ Statue only: https://sketchfab.com/models/fa8c4b24898c40ec86a40449cec47474

Corcovado and Christ Statue: https://sketchfab.com/models/41b2a83c75ab4040b490a7d61fdb08c6

More information: www.pix4d.com/mapping-christ and www.aeryon.com/projetoredentor

Read the full story in the next UAS edition of GIM International!