

ID17- AUTOMATIC PANORAMIC IMAGE CREATION SYSTEM FROM OBSEA PTZ UNDERWATER CAMERA

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Abstract

This article is a description about how to take advantage of an underwater PTZ camera to obtain an immersive panoramic image of the seabed environment.

Keywords – OBSEA, panoramic image, LabVIEW, cabled coastal observatory.

I. INTRODUCTION

The OBSEA is a coastal cabled seabed observatory located at 4km from Vilanova i la Geltrú where an underwater PTZ camera is transmitting continuously real time images from the artificial reef to internet [1]. Since this camera was deployed, an image acquisition system has developed in order to generate panoramic images of the observatory environment.

II. DESCRIPTION

This acquisition system performs a sweep of the 340 x 120 degrees (maximum travel angle for the Sony SNC-RZ25N camera). In order to obtain a panoramic image with enough resolution in a reasonable time, this sweep has been divided in a matrix of 21 columns x 7 rows of VGA quality images. The images are taken with a focal length of 32.8mm that provides a horizontal angle of 21.3°. With this configuration every image has taken with a horizontal displacement of 17 degrees what produces a panoramic image with a minimum overlapping of 25%. The 147 images are captured with the maximum resolution of the camera 640 x 480 pixels for what the resulting panoramic image has a resolution of 10226 x 2596 pixels that is around 26 megapixels (Fig. 3). In order to obtain the panoramic image as much homogeneous as possible, all the 147 images are taken with the same adjust of white balance, exposure and focus. All the com-

munication with the camera has been done with a short set of simple CGI commands executed and automatized by a LabVIEW application (Fig. 1), and takes less than 7 minutes. After the acquisition of the images, Hugin free software (Fig. 2) is used for the perspective manipulation and composition of the panorama. Because the configuration of the panoramic images is always the same for every acquisition the resulting images can be obtained manually with a few clicks.

III. CONCLUSIONS

Automatizing the panoramic image creation allows to monitor the evolution of the complete environment of the OBSEA observatory. With this tool, slow changes can be detected in the immediate vicinity of the observatory as well as differences in visibility and turbidity depending on the sea conditions

IV. ACKNOWLEDGMENTS

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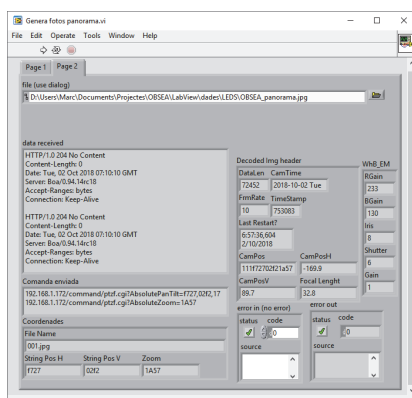


Fig 1. LabVIEW application controlling the camera to obtain the 147 images

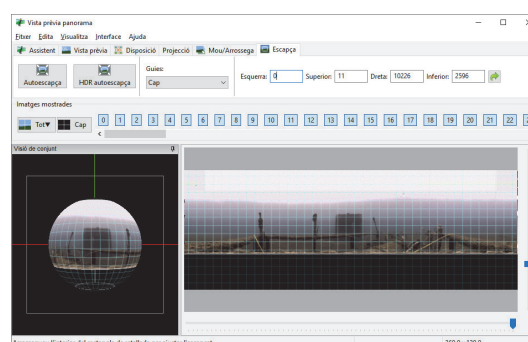


Fig 2. Hugin software interface



Fig 3. Resulting panoramic image