

Semester / Bachelor / Master Thesis:

CamZilla: A GigaPixel Panorama Robot in the Mountains

Motivation and Informal Description:

For automatically capturing GigaPixel-sized panorama images in the mountains, we developed an outdoor camera platform that allows us to remotely pan, tilt and control a Nikon DSLR camera. To this day, our prototype installed in the mountains near Zermatt automatically captures series of images that are manually combined to panorama images in the later stage.

Asking for highest image quality while keeping resource usage (e.g., amount of transferred data) as low as possible, we are looking for motivated students that are interested in image processing (e.g., attendance of related courses, knowledge of image processing toolkits such as OpenCV) for helping us with solving the following challenges:

- Development of an algorithm that allows to evaluate the sight conditions (fog, clouds, snow on the lens ...) before the real image capture process starts.
- Development of an algorithm for assessing the quality of captured images, e.g., focus, number of found features.
- Automated creation of panorama images, maybe in parallel on multiple machines.
- Integration of the developed algorithms into existing work to build an end-to-end solution consisting of image capture, data transport, and automated image processing.

Requirements: Interest in image processing techniques, C/C++ programming skills

Interested? Please have a look at <http://www.tec.ethz.ch/research.html> and contact us for more details!

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