Composition of Radiography Pictures of Whole Helicopter Rotor Blades

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Short description: Helicopter rotor blades were tested by combined neutron and X-ray radiography. Due to the large size of the rotor blades, several images had to be taken and put together to compose one big image. We developed an interactive solution based on artificial markers.

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The whole rotor was divided into several sections. There have been three rows and some 50-70 images in each row. The images contained four artificial markers near their four corners. These markers were affixed to the rotor blade. The neighbouring images had some overlapping areas to provide the same marker positions in these images.
We developed a software for interactively selecting these markers in each image and by using these identified marker positions, for composing one big image. It required the following steps.

- **Preprocessing**: windows/level, homogeneity correction.
- **Marker selection**: interactively in each image.
- **Composition**: matching the markers, cut the images, and put them together.
- **Decision**: display the composed image and decide whether the output is correct.
The results showed that although the software required manual interaction and thus some time, it solved the problem satisfactorily. It would have been possible to develop automated detection functions to speed up the process. Visual inspection and decision would have been necessary in that case also.

Kategória: Industrial Applications

Source URL (retrieved on 2018-02-11 18:25):
http://www.inf.u-szeged.hu/ipcg/projects/rotorpuzzle

Links: