ABSOLUTE ORIENTATION OF STEREOSCOPIC CAMERAS BY ALIGNING CONTOURS IN PAIRS OF IMAGES AND REFERENCE IMAGES

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ABSTRACT:

Most approaches use corresponding points to determining an object's orientation from stereo-images, but this is not always possible. Imaging modalities that do not produce correspondences for different viewing angles, as in X-ray imaging, require other procedures. Our method works on contours in images that do not need to be equivalent in length or contain corresponding points. It is able to determine corresponding contours and resamples those, creating new sets of corresponding points for registration. Two sets of in-plane transformations from a stereo-system are used to determine spatial orientation. The approach was tested with three ground truth datasets and sub-pixel accuracy was achieved. The approach is originally designed for X-ray based patient alignment, but it is versatile and can also be employed in other close range photogrammetry applications.

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