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The global performance evaluation for local descriptors

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Interest descriptors have become popular for obtaining image to image correspondence for computer vision tasks. Traditionally, local descriptors are mainly evaluated in a local scope, such as repeatability, ROC curves, and recall versus 1-precision curves. These local evaluations did not take into account the application fields of descriptors. Generally, local descriptors have to be refined before application so that they meet the desire of the global tasks. The correspondence toughness between two images depends on the number of true matches. Therefore, the number of correctly detected true matches (NoCDTM), which is the number of matches after random sample consensus (RANSAC) refinement, is proposed as a global score to evaluate descriptors performance. A larger NoCDTM suggests a larger number of true matches and takes advantage of a tougher correspondence. When the evaluation is run over a set of images, all their NoCDTM may be directly shown in a pseudo-color image, in which the pseudo-color of each pixel shows a NoCDTM of an image. In order to show descriptors performance over an image set in an overall way, a histogram of NoCDTM may be employed for evaluation. After dividing the range of the obtained NoCDTM into several intervals, the occurrences of NoCDTM in every interval are counted to generate the histogram. The histogram of a descriptor with a fat-tail suggests a high performance. It may be more reasonable to break descriptors local attribute and evaluate descriptors performance in a global scope.

Biography

Xintao Ding is an Associate Professor at Anhui Normal University. He has completed his PhD from Anhui Normal University. He has spent his entire career working in the field of computer vision and machine learning. He holds three patents and has published more than 10 papers in the areas of image processing and computer vision. He has worked on and managed many funded research projects developing computer vision for use across a range of application.

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