Impact of a Lossy Image Compression on Parameter Estimation with Periodic Active Thermal Imaging.

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Résumé en anglais	Periodic thermal imaging is a method of active thermography based on a periodic thermal stimulation of an inspected sample material and the analysis of its thermal response when a steady regime is reached. The original data, a sequence of images sampling the thermal response on a large number of periods, are usually stored in a raw format. For accurate exploitation of these measurements, the whole sequence of images requiresa significant amount of storage space. In this report, we address the question of the lossy compression of these sequences of images when they are applied to perform physical parameter estimation. The study investigates the impact of lossy image compression on the performance of the physical parameter estimation procedure, and shows the possibility of preserving robust estimation with high compression rate. Perspectives and applications are then discussed. Performing good enough estimate of physical parameters with compressed images would permit the use of portable thermal cameras with limited resources in terms of data storage. This would enable the use of periodic active thermal imaging to perform relatively low cost embedded characterization of thermal properties of materials.
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