

Development and validation of a numerical tool for the simulation of the temperature field and infrared radiance rendering in an urban scene

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Abstract

We present a numerical tool aimed at simulating infrared images of an urban environment, by solving the direct heat transfer problem, and then computing the radiance rendering at the sensor level. SOLENE (Cerma, Nantes) was coupled with two software packages developed at ONERA: SUSHI (Simulation in Urban Scene of Heat diffusion) and MOHICANS (MODélisation Hyperspectrale d'Images en entrée Capteur pour l'ANalyse et l'inversion du Signal) for realizing this task. SUSHI is also used for computing the surface temperatures: either a 1D model or a 2D model is used. We present the whole software chain, its validation by software and experimental analysis.

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