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MapReduce Algorithm for Geometric and Topological Information Extraction from 3D CAD Models

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Abstract : In a digital world in perpetual evolution and acceleration, data more and more voluminous, rich and varied, the new software solutions emerged with the Big Data phenomenon offer new opportunities to the company enabling it not only to optimize its business and to evolve its production model, but also to reorganize itself to increase competitiveness and to identify new strategic axes. Design and manufacturing industrial companies, like the others, face these challenges, data represent a major asset, provided that they know how to capture, refine, combine and analyze them. The objective of our paper is to propose a solution allowing geometric and topological information extraction from 3D CAD model (precisely STEP files) databases, with specific algorithm based on the programming paradigm MapReduce. Our proposal is the first step of our future approach to 3D CAD object retrieval.

Keywords : Big Data, MapReduce, 3D object retrieval, CAD, STEP format
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