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Characterization of pore space using a non-hierarchical decomposition model

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Bio-CAD and in-silico experimentation is getting a growing interest in biomedical applications, where scientific data coming from images of real samples are used to evaluate physical properties. In this sense, analyzing the pore-size distribution is a demanding task to help to interpret the characteristics of porous materials by partitioning it into its constituent pores. Pores are defined intuitively as local openings that can be interconnected by narrow apertures called throats that control a non-wetting phase invasion in a physical method. There are several approaches to characterize the pore space in terms of its constituent pores, several of them requiring prior computation of a skeleton. This paper presents a new approach to characterize the pore space, in terms of a pore-size distribution, which does not require the skeleton computation. Throats are identified using a new decomposition model that performs a 2D spatial partition of the object in a non-hierarchical sweep-based way consisting of a set of disjoint boxes. This approach enables the characterization of the pore space in terms of a pore-size distribution.

Biography

Irving a Cruz-Matías is full time professor in the Computer Science Department at University of Monterrey, Mexico. He received the PhD in Computing from the Polytechnic University of Catalonia, Barcelona, Spain in 2014. His research interests include modelling, analysis and visualization of 3D biomedical samples, digital image processing and in general, the application of computer graphics in the bioengineering field.

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