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Membrane Computing Models: Implementations

- **Presents comprehensive descriptions of the most significant membrane computing tools developed for various models**
- **Describes the most relevant applications, facilitating a better understanding of how the tools are used in building, experimenting with and analysing membrane computing models of complex problems arising in robotics, automatic design of P systems, image processing, ecosystem modelling, systems and synthetic biology, and bioinformatics**
- **Discusses efficient software and hardware solutions, together with the algorithms and platforms used**

The theoretical basis of membrane computing was established in the early 2000s with fundamental research into the computational power, complexity aspects and relationships with other (un)conventional computing paradigms. Although this core theoretical research has continued to grow rapidly and vigorously, another area of investigation has since been added, focusing on the applications of this model in many areas, most prominently in systems and synthetic biology, engineering optimization, power system fault diagnosis and mobile robot controller design. The further development of these applications and their broad adoption by other researchers, as well as the expansion of the membrane computing modelling paradigm to other applications, call for a set of robust, efficient, reliable and easy-to-use tools supporting the most significant membrane computing models. This work provides comprehensive descriptions of such tools, making it a valuable resource for anyone interested in membrane computing models.

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