

## ICM与数学形态学在图像处理中的等价性

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## Equivalence property between ICM and mathematical morphology in image processing

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**摘要** 通过对交叉视觉皮层模型(ICM)运行特点的研究, 揭示了ICM与数学形态学间的本质联系, 并以颗粒分析为例进行了详尽的推导, 得出ICM与一定结构元素下的数学形态学方法等效的结论. 研究还发现, 当ICM用于图像处理时, 其脉冲并行传播特性行为完全等价于数学形态学中一定结构元素下的基本运算, 从而为ICM日后的研究与发展提供了严谨的数学依据.

**关键词:** 交叉视觉皮层模型 数学形态学 图像处理 颗粒分析

**Abstract:** By researching on the function properties of Intersecting Cortical Model (ICM), the inherent relations between ICM and Mathematical Morphology (MM) have been revealed. Moreover, the conclusion that ICM is equal to the MM algorithm with certain structuring elements can be deduced from the elaborate analysis of granule. Meanwhile, our study shows that the parallel pulse transmission behavior is entirely equivalent to the basic operators of MM with certain structuring elements. Obviously, the above conclusions provide ICM with precise mathematical bases which are beneficial to the intending researches and development of ICM a lot.

**Key words:** intersecting cortical model mathematical morphology image processing granule analysis

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