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# Mean Shift算法的收敛性分析

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Abstract
The research of its convergence of Mean Shift algorithm is the foundation of its application. Comaniciu and Li Xiang-ru have respectively provided the proof for the convergence of Mean Shift but they both made a mistake in their proofs. In this paper, the imprecise proofs existing in some literatures are firstly pointed out. Then, the local convergence is proved in a new way and the condition of convergence to the local maximum point is offered. Finally, the geometrical counterexamples are provided for explanation about convergence of Mean Shift and the conclusion is further discussed. The results of this paper contribute to further theoretical study and extensive application for Mean Shift algorithm.

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摘要
作为迭代算法,Mean Shift的收敛性研究是应用的基础,而Comaniciu和李乡儒分别证明了Mean Shift的收敛性,但证明过程存在错误.首先指出了Comaniciu和李乡儒的证明过程存在错误;然后,从数学上重新证明了Mean Shift算法的局部收敛性,并指出其收敛到局部极大值的条件;最后,从几何上举反例分析了Mean Shift的收敛性,并进行了深入比较和讨论.这为Mean Shift算法的深入研究及应用奠定了基础.

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