Abstract

In a vision system, every task needs that the operators to apply should be « well chosen » and their parameters should be also « well adjusted ». The diversity of operators and the multitude of their parameters constitute a big challenge for users. As it is very difficult to make the « right » choice, lack of a specific rule, many disadvantages appear and affect the computation time and especially the quality of results. In this paper we present a multi-agent architecture to learn the best operators to apply and their best parameters for a class of images. Our architecture
Selecting Automatically Vision Operators with their Parameters to Accomplish a Segmentation Task

consists of three types of agents: User Agent, Operator Agent and Parameter Agent. The User Agent determines the phases of treatment, a library of operators and the possible values of their parameters. The Operator Agent constructs all possible combinations of operators and the Parameter Agent, the core of the architecture, adjusts the parameters of each combination by treating a large number of images. Through the reinforcement learning mechanism, our architecture does not consider only the system opportunities but also the user preferences.

References


Index Terms

Computer Science
Image Processing
Keywords
Computer Vision  Reinforcement Learning  Multi-agent System  Parameter Adjustment

Operator Selection
Q-learning
Segmentation