

Maximal Information Compression Index (Mici) and PSO Based Detection of Jaundice

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Jaundice is one of the highest prevalent conditions demanding attention in newborn babies. Infants with high blood levels of bilirubin called hyperbilirubinaemia, evolve the yellow color when bilirubin acquires in the skin. The major symptom of jaundice is yellow coloring of the skin and conjunctiva of the eyes. Jaundice can also make babies sleepy, which can lead to poor feeding. Severe hyperbilirubinaemia can be caused by dehydration, lack of adequate nutritional intake, extravasation of blood, cephalohematoma, contusion and may be potentially cause kernicterus. Because many of these problems affect newborns, they may require critical care from specialty medical disciplines. Thus, in this paper a combination of the Maximal Information Compression Index (MICI) for redundant feature elimination with PSO optimization for complexity reduction is proposed. Statistical features are derived from the texture images and used as features to quantify infant image textures. Finally, a Kernel SVM (Support Vector Machine) is employed as a classifier for selecting infant image textures. The experimental results reveal that the proposed method can act as a supplement to support earlier detection and more effective treatment due to improved jaundice detection.

Keywords: Jaundice, Hyperbilirubinaemia, Maximal Information Compression Index (MICI), Particle Swarm Optimization (PSO), Kernel Support Vector Machine (SVM), Gray Level Co-occurrence Matrix (GLCM).

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