



Image Classification using Convolution Neural Network Based Hash Encoding and Particle Swarm Optimization

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Abstract— Image Retrieval (IR) has become one of the main problems facing computer society recently. To increase computing similarities between images, hashing approaches have become the focus of many programmers. Indeed, in the past few years, Deep Learning (DL) has been considered as a backbone for image analysis using Convolutional Neural Networks (CNNs). This paper aims to design and implement a high-performance image classifier that can be used in several applications such as intelligent vehicles, face recognition, marketing, and many others. This work considers experimentation to find the sequential model's best configuration for classifying images. The best performance has been obtained from two layers' architecture; the first layer consists of 128 nodes, and the second layer is composed of 32 nodes, where the accuracy reached up to 0.9012. The proposed classifier has been achieved using CNN and the data extracted

vehicles to solve choices by utilizing criticism from numerous sorts of sensors around the vehicle [4].

Multi-stage hierarchical image retrieval schemes using color, texture, and shape visual contents had been proposed since single visual content is not producing good retrieval results effectively. Such schemes can reduce the searching space during the image retrieval process to a certain extent due to the hierarchical model [5]. Indeed, content-based image retrieval systems aiming to find similar images to the query image from a database based on its visual content were also investigated [6].

Another strategy utilized in the image retrieval framework is a hash function, or compression function, which means that the output is being shorter than the input. Hash functions are

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