

Multi-Task Convolutional Neural Network for Image Classification

V. Tanchuk^{1*}, A. Hyryla¹, and V. Tereshchenko¹

¹Faculty of Computer Science and Cybernetics, Taras Shevchenko National University of Kyiv

Abstract. Nowadays the most popular approaches for solving different image classification problems it is using the convolutional neural network. And very difficult to find the convolutional neural network that can solve more than one problem. Motivated by limited resources, we try to find the unifying solution for more than one problem.

In the present paper, we will describe our approach how to fit one convolutional neural network model with markers which can solve more than one image classification and image recognition problems. Describe the design of convolutional neural network model and training process. Given recommendation about how should use markers for achieving better results with difficult input data. The results are precisely compared with training one multi-task convolutional neural network model with markers for solving two image classification problems and two trained separated convolutional neural network models to solve a particular problem, each.

All training experiments were conducted on one of most popular benchmark dataset.

Keywords: Convolutional Neural Network, CNN, Multi-task Convolutional Neural Network, Image Classification, Image Recognition, Marker, CIFAR-10.