

ENHANCING ONLINE ANIMAL ADOPTIONS VIA MACHINE LEARNING

Pradeepa Jeyaraj

A dissertation submitted in partial fulfilment of the requirement for
Bachelor of Engineering (Honours) degree in Software Engineering

Department of Computing

Informatics Institute of Technology, Sri Lanka

in collaboration with

University of Westminster, UK

2020

Abstract

Overpopulation of stray dogs is a serious threat to human community since they transmit a dangerous viral infection called rabies and as well they live a miserable life living with lack of resources. Strategies to control overpopulation include sterilizing, euthanizing and adopting the strays. The ethical and popular method of acquisition in controlling strays is adoption. Adoptions are mostly carried out by animal shelters which cause to overcrowd it; hence it is essential to increase the speed of adoption process. The increase in usage of internet has provided platforms for shelters to advertise adoptions online by sharing pictures. Although there have been past researches on analyzing photo traits and factors affecting the adoption speed, yet simpler improvements are required to guide shelters in posting influential photos.

Therefore an automated computerized approach is introduced to guide end users in posting influential photos online which enhances adoption speed. The model used in the project has been built using convolutional neural networks. Mobilenet model has been used as the pre-trained model since this project requires very fine-grained classification. The pre-trained model has been fine-tuned to perform better while making predictions. The developed model is trained with images to predict the adoption speed of the user input image. The model was developed using Keras and Tensorflow framework libraries whereas the web application was developed using Flask framework. The web application contains modules to preprocess the input image, make predictions and decode the predictions. The web application allows user to upload an image and the input is processed to make prediction of the adoption speed.

This project provides a novel approach towards the existing social problem. Although it is a new approach, the results obtained have proved decent enough in performance and its outcome. The developed application has been evaluated using feedbacks from experts and using strategy developed by the author.

Keywords: Dog Adoptions, Online, Image Classification, Machine Learning, CNN, Prediction, Python