

ABSTRACT

Thesis work: 64 p., 7 tabl., 31 fig., 1 append., 41 sources.

COMPUTER VISION, IMAGE SEGMENTATION, ARTIFICIAL NEURAL NETWORKS, DEEP LEARNING, OPTICAL CHARACTER RECOGNITION.

The object of study are the image segmentation, document text detection and recognition methods.

The subject of study is a sample of customer receipts from several retail outlets.

The aim of the study:

- 1) research methods and algorithms for image segmentation, document text detection and recognition;
- 2) develop software that performs text extraction and data aggregation;
- 3) describe the recommended pipeline.

Theoretical and methodological basis of the study is the work of foreign scientists in the field of mathematical modeling, artificial intelligence, computer vision and image processing.

In the research process software was developed for aggregating information from user shopping receipts.

The methodology is implemented on the basis of known algorithms such as artificial neural networks (U-net, CNN, Bidirectional LSTM) and using own developments, which include text line detection algorithms and segmentation refinement algorithms .

The software is implemented using the Python programming language, image processing library OpenCV and deep learning framework TensorFlow with Keras frontend. Recommendations for further research are made.