ABSTRACT

Thesis: Application of Long short-term memory algorythm in human activity recognition problems.

The explanatory note of thesis contains 93 pages, 12 tables, 28 figures and 22 names of bibliographic sources.

LONG SHORT-TERM MEMORY, RECURRENT NEURAL NETWORKS, TIME SERIES CLASSIFICATION, MULTI-CLASS CLASSIFICATION.

The theme of this work is an application and research of capabilities of long short-term memory (LSTM) method in different problems of human activity recognition.

Object of study is the deep-learning algorithm, one of types of recurrent neural networks – long short-term memory.

The subject of the study is application of LSTM in 3 classification problems and a construction of following models:

1) reading recognition by human gaze movement.
2) human physical activity classification by video (running, hand-clapping, hand-waving etc.).
3) human physical activity classification by data from hyroscope and accelerometer (walking, walking upstairs/downstairs etc.)

The purpose of this work is effectiveness testing and capabilitiy of application of LSTM in the specified problems.

The research gave us the following results:

1) 3 classification model were built based on LSTM.
2) Accuracies of models with LSTM was discovered.
3) Research on application of LSTM with several other deep learning methods.