

ABSTRACT

Master's Thesis: 94 pages, 28 pictures, 16 tables, 1 appendix, 20 sources.

Actuality. Sign language is a complex system: not only gesture is important, but the facial expression, direction and speed of movement. Today, more than 1 million deaf people use American Sign Language. More than 30 million people have hearing impairments and hear only sounds higher than 40 dB, while people with no hearing problems hear from 0 to 20 dB. More than 70 million people worldwide use a particular sign language. 98% of people with hearing impairments do not receive sign language training. 72% of families are unable to communicate with their deaf relatives. 70% of deaf people are unemployed or undervalued at work. One in four deaf people was fired for discrimination.

Currently, there is no commercial analogue to the system of translating sign language from streaming video. Several studies are under development.

Relationship with working with scientific programs, plans, topics. The work was performed at the Department of Automated Information Processing and Management Systems of the Faculty of Computer Engineering of The National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute" within the work "Streaming video (in English) to Sign Language Translation System".

The aim. The aim of the work is to improve the communication environment of people with hearing impairments by improving the architecture of sign language translation system.

To achieve this, you must complete the following **tasks:**

- explore existing algorithms, architectures, and object detection approaches;
- develop a system of translation from sign language;
- adjust the hyperparameters of the model;
- analyze the results of the system;
- work to improve recognition accuracy and speed.

Object. The process of translating sign language from streaming video.

The subject is methods and algorithms for detecting gestures from streaming video and translating them into English.

The practical significance of the results obtained. The developed system can be used in a web application as a plugin to help in communicating to people with hearing problems.

Scientific novelty of the obtained results. Creating an architecture for the system of translating sign language from streaming video.

Publications. The materials of the work were published in the All-Ukrainian Scientific and Practical Conference of Young Scientists and Students "Information Systems and Technologies of Management" (ISTU-2019). "Method of Identifying People and Simultaneously Evaluating Their Poses" and at the 3rd All-Ukrainian Scientific and Practical Conference of Young Scientists and Students "Information Systems and Management Technologies" (ISTU-2019) Stek Y. "Application of Deep Learning Architecture for Gesture Recognition System".

SIGN LANGUAGE, COMPUTER VISION, TRANSLATION, DEEP LEARNING, CNN, STREAMING VIDEO