Background study of paper.
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Neural network model of artificial intelligence for handwriting recognition

Objectives and motivations:

The handwriting recognition system has been developed for a long time now. There was lots of experimentation done before this paper. The writer of this paper observed that though there are lots of systems for handwriting recognition there can be an updated system with additional characteristics. They noticed that there is no way to recognize the description of a person from handwriting. There was no such system where one can find out if the person is male or female, the age of that person, or what is the behavior of that particular person from their handwriting. So such a lack of elements encouraged them to build a system where the system can detect a person's basic description by their handwriting. So they tried to build a system that can detect age, gender, and psychological attributes of a person by their handwriting.

Proposed methodologies:

To recognize handwriting and sex they used neural networks. First, they positioned all the lower case letters in one place then they modified them to the Russian alphabet. After that they used neural networks with artificial intelligence to recognize the gender of a person. They proposed the training rule to acknowledge neural networks. They developed two neural networks to recognize the gender of a person where the first neural network was for identifying males and the second one was for identifying females. They also tried to recognize errors. They used probability to detect errors. They used the Man-Wo-Man program and neural networks with artificial intelligence to make correct decisions. With the program Man-Wo-Man and NNM with AI they developed AFIRS.

Contributions of the work:

Handwritten recognition is an incredible discovery for the world. From this paper, we can see that they not only tried to recognize handwriting but also tried to build an algorithm where they can obtain the gender of the person. This type of system is amazing as it will help us in many ways. Not to mention this system is really acceptable for crime-related incidents. It will be really effortless to find a criminal with such a system. Handwriting recognition can solve a crime within a second. This paper can help build several such systems that will help us in many ways. They developed the system only for the Russian language but with the help of this system many languages' handwriting can be recognized which is not negligible. Also, they proposed a way to recognize errors that can help to get accurate results.

Lacking/flaws of the work:

In this paper, there were three main objectives they tried to achieve. There were three objectives which they wanted to achieve. They wanted to find a person's sex, age, and personality. But we can see that there is only one algorithm to recognize handwriting and detect gender. In this journal paper, they were not able to find out the other two objectives. By just identifying males

or females one can not have exact details. To have more precise information there needs to be a more exact algorithm that can also detect a person's name or other additional information that can help to find the person easily or recognize the person effortlessly.

Short summary:

This paper gives a new algorithm to recognize the handwriting and gender of the person. This paper only works with Russian Cyrillic letters. So from this algorithm and paper, we can get help to build a new system or similar system with different attributes. With help of this paper, we can identify other languages as well. We can get help from this paper to recognize Bangla handwriting and also to detect Bangladeshi people's gender. We can build a system that will recognize handwriting with more fairness with the help of this work. In this paper there are also error detection processes so with this we can tell how perfect our work is and how we can make our program more reliable.

Paper Link:

https://www.researchgate.net/publication/282267650_Neural_network_model_of_artificial_intelligence_for_handwriting_recognition

Neural network-based handwritten character recognition system without feature extraction

Objectives and motivations:

This paper focuses on off-line handwriting recognition with the neural network but without any feature attribute. There is a lot of paper about an on-line and off-line handwriting recognition system. But we can see that on-line is always given more importance than off-line. Everyone tried to recognize handwriting on-line more accurately. So this motivated them to build an algorithm that will recognize handwriting off-line with more accuracy and more precisely. So they tried to build an algorithm that will give the more exact results for handwriting recognition.

Proposed methodologies:

There are lots of methods for on-line and off-line handwriting recognition systems. But in this paper, they wanted to go for a more exact and close result. So they proposed an algorithm divided into several sections to make a more reliable and easier system. They used neural networks to build the system. They tried to build a system that will at first scan the images. Then it will process the image with different techniques. For pre-processing, they used techniques like threshold and Sobel. After that, every image is segmented into sub-images for individual characters. Then with a feed-forward backpropagation algorithm character was recognized. They used feed-forward backpropagation with neural networks to recognize handwriting. Then finally with the recognition index, the system will print the recognized character. This step was their proposed method to recognize handwriting but only for 26 English alphabets.

Contribution of the work:

As we already know this paper is all about building a system that can recognize off-line handwriting systems with more precision. If we research we will notice that everyone gives on-line handwriting recognition systems more importance than off-line. So off-line handwriting

system is lacking behind which is not supportable as it is really beneficent. Off-line handwriting systems can contribute in many ways. It's a great discovery for science and for man as well. The proposed system can help blind people, reading postal addresses, etc which makes it significant. Also, it can digitize the image text in computers which is really considerate for computers.

Lacking/flaws of the work:

In this paper, they mainly focus on off-line English alphabet handwriting recognition. They only tried to build a system that could only recognize 26 English letters. But they could have done further. They could have collected more data sets and made a broader system. They could have collected more data sets from other languages so that it could help other countries as well. Also, they only build the data to recognize the alphabet but they could build a system for digits as well. They could have applied this formula to recognize digits from 0-9. That would have been more helpful. From this proposed system they got an accuracy rate of 83-90%, which is not imperfect. But as they wanted to give a more accurate system for handwriting recognition so they should have built a system that will give more accurate results. The accuracy rate could be bigger.

Short summary:

They gave an algorithm with a neural network to achieve a system that will recognize handwriting with more accuracy. They collect data sets from respective fields and then with the help of a multilayer feed forwarding algorithm they try to recognize handwriting with more accuracy. So we also can get help from this algorithm to build a system that can recognize handwriting off-line. They only use the English alphabet so we can use a different data set with the Bangla language to recognize Bangla handwriting. We want a system that will recognize handwriting with maximum accuracy so with the help of this paper, we can develop a system that will give more accurate results than this one.

Paper Link:

https://www.researchgate.net/publication/238520390_Neural_network_based_handwritten_character_recognition_system_without_feature_extraction