

## CREATION OF COMPUTER APPLICATION FOR PSYCHOLOGICAL HANDWRITING ANALYSIS

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### Introduction

Graphology is a branch of applied psychology, a projective technique of personality assessment, according to which there is a stable relation between a person's handwriting and his individual characteristics. Projection method study of personality is characterized by creating an experimental situation, which allows multiplicity and ambiguity of a subject behavior [1].

Graphological analysis is mainly used in the field of personnel management - above all, it is recruiting and rating the most appropriate candidates in specific professions and rating the compatibility of business partners. Handwriting analysis is used in special services: police, army and court for psychological profiling. Private individuals also use handwriting analysis in order to check a third person's reliability and personal qualities, in case of choosing a baby-sitter, as well as for diagnosing children and adolescents [2]. Speaking about the urgency of graphology and its study, it is worth noting more practical reasons than such obvious ones as simple curiosity. The growing popularity of graphological knowledge and learning about graphology opportunities are caused by their applicability in almost all areas connected with interaction between people [3].

Handwriting analysis is a difficult procedure that requires concentration. Analysis of multiple handwriting samples may take quite a lot of time. Thus, simplification of this procedure using a computer is becoming even more urgent. Automatic handwriting analysis is a complicated technical procedure. A computer must recognize about 15 main handwriting signs, such as letters' slants, angles, size and the degree of pressure. Realization of this process involves creating a variety of templates, which will be compared with samples being evaluated, as well as procedure of recognizing each letter individually (due to different degrees of handwriting legibility it poses certain problems). Apart from this, the fact that some handwriting characteristics are difficult to be assessed objectively (such as the degree of handwriting legibility or the degree of pressure) makes automatic handwriting analysis difficult to implement. The presented program does not provide the complete handwriting identification, but it enables to reveal the intensity of some human characteristics, which makes the task urgent.

### Functional characteristics of the application

This paper applies the techniques described in D.Sara's [4] and S.Yu.Aleksovskiy's [5] writings to identify handwriting features and assess personality

traits on the basis of the information received. According to D.Sara's methods a user assesses handwriting on a given set of 14 handwriting features, each of which is treated separately. As D.Sara recommends, a sample being evaluated must meet certain criteria [4]. A user may have an analyzed text fragment, both in paper and electronic formats, as it is illustrated in Fig.1.

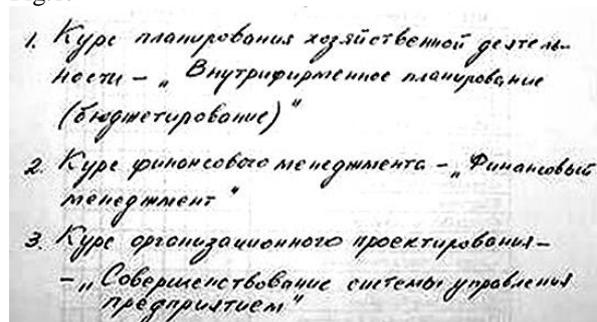


Fig.1. Handwriting sample

According to S.Yu.Aleksovskiy's method, there is a connection between several features of handwriting and a single characteristic. Besides that Aleksovskiy focuses not only on handwriting sample under evaluation, but also on the procedure of this sample obtaining. To assess each feature the program provides a template using which the intensity of features in a handwriting sample under value will be chosen.

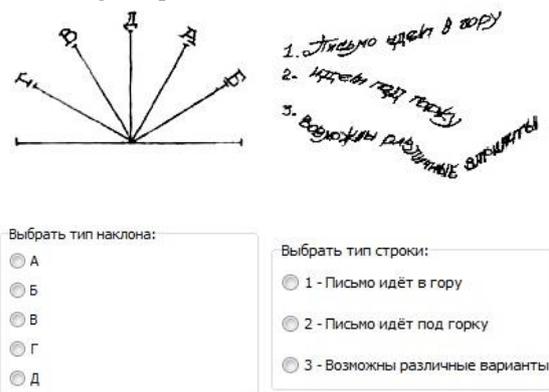


Fig.2. «Letter slant» and «Row pitch» inquiries for handwriting features analysis

Thus, the program is aimed not only at people, who want to make a complete analysis of personality but also at those, who need information about certain qualities of a person, with the purpose of self-analysis or assessing some traits of a subject.

To store information about handwriting assessment during the brief analysis there is a descriptor, repre-

senting a string of symbols corresponding to the amount of handwriting features. After selecting a particular variant its value is entered in a descriptor cell corresponding to a handwriting feature being assessed, by means of a special software method. For example, in assessing the feature "Letter pitch" the descriptor cell №1 is filled and pitch types from A to D shown in the figure are numbered from 0 to 4, respectively. A handwriting sample presented in Fig.1 is obviously of a pitch type A, so the user chooses the type number 0, and the method will set "0" in the descriptor cell number 1.

To store information about handwriting assessment via the holistic method, an assessment matrix is created in addition to a descriptor. An assessment matrix is filled using a special method, according to the information recorded in a descriptor. The number of rows in the assessment matrix corresponds to the number of assessed personality characteristics, there are 6 of them and the number of columns is 6. In the first two columns, there are some handwriting features corresponding to one of the opposing human character trait. For example, the number of features corresponding to emotional stability is entered in the first column of the first row and the number of features corresponding to emotional instability is entered in the second column. The next three columns are the calculations columns, and the last column is the column of resulting indexes generated by the three previous ones via a special method.

After a handwriting analysis is complete, a profile is formed. To create a personality assessment of a subject after the analysis based one holistic method is accomplished, the obtained values are taken by turns from the cells in the column of indexes in the assessment matrix. Each of these values corresponds to the row number in a certain component in a data form. After the line with the characteristic of each feature is received, the subject description is over.

To form a profile by means of the trait-method a descriptor line is assessed. The line consists of 13 zero cells and one cell, which stores information about an

evaluated feature. The application analyzes this information and assigns the particular characteristic, stored in the information form, to the current value.

#### Conclusion

The described methods were applied for analyzing handwriting samples of some people and the handwriting samples characteristics are presented in various publications [4]. The analysis was conducted by using both methods. After comparing the results, it was concluded that the application works correctly. Obvious contradictions haven't been identified; the profiles obtained by both methods are consistent with each other. Thus, the described application allows you to simplify graphological analysis, by restricting this complicated procedure to a simple multiple-choice technique. The results can be considered truthful. Of course, no test can provide a 100% result. Besides, the obtained characteristic is not a guide to action and not a rule to be followed implicitly. The test allows producing an objective analysis and identifying the direction to be followed, it identifies the qualities of the subject that are worth paying attention to. And presented application can execute all these functions completely.

#### References

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