

## ABSTRACT

The thesis is presented in 61 pages. It contains 3 appendixes and bibliography of 14 references. Six figures and 3 tables are given in the thesis.

**Topic relevance.** Today we need to pass questioner with 70 questions (and sometimes more) for defining of psychological portrait traits. It takes a lot of time. Sometimes people don't want to finish it because they are too tired. Meanwhile there are some researches about defining of psychological portrait, based on people activity in social networks. Interesting to know that in future with it help we will automatically search for a new employee not just by their professionalism (that we can do it today with Linked.in professional network), but also by their psychological traits (e.g. consciousness, agreeableness and so on).

**Thesis connection to scientific programs, plans, and topics.** The thesis was prepared according to the scientific research plan of the Applied Mathematics Department of the National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute."

**Research goal and objectives.** The goal of this thesis is to create mathematical model of defining of social network user psychological portrait.

To accomplish this goal, the following objectives were reached:

- define a list of attributes that we will analyze. For this reason we should analyze existing applied program interfaces (API) of most popular social networks;
- analyze of existing researches in area of psychological portrait defining in social networks;
- create math model;
- make some demo program based on created math model;
- test and improve model of psychological portrait defining.

*Object of research* is psychology, social networks, data analyse

*Subject of research* is Big Five personality traits and its relation with social networks.

**Methods of research.** To solve the task, the following methods were used: data analysis methods (for dividing of users in groups), algorithms and programing methods theory (for programing of developed algorithms), probability theory and mathematical statistics methods (for analyzing of experiments).

**Scientific contribution** consists of the following:

- for the first time, was approved and used on practice existing researches in area of analyzing of psychological personality traits based on user activity in social networks.

**Practical value of obtained results.** This math model can provide as with ability of some automatic operations:

- defining of psychological portrait;
- search for a new employees not just by their professionalism (that we can do it today with Linked.in professional network), but also by their psychological traits (e.g. consciousness, agreeableness and so on);
- search for a friends by psychological traits compatibility.

**Approbation of the thesis results.** Basic ideas and results of the research were presented at Ukrainian International conference on Electrical and Computer Engineering (IEEE UKRCON-2017)

**Publications.** Thesis results are published in 3 scientific works:

- 2 publications and thesises on Ukrainian science conferences
- 1 publication on international IEEE science conference

**Keywords:** psychology; psychological portrait; social graph; social network; data analysis; clustering; psychological traits; Facebook; VK.