Prediction of Depression and Anxiety Disorders via Game Using Machine Learning Model

Abstract:

The utilization of computer games is an efficient and pragmatic approach to gathering information, and consequently, it should be employed to a greater extent than currently observed, considering its available capabilities. One advantage of employing games is that individuals can freely act and exhibit their genuine decisions, which reflect their behavior and personality. Our objective is to employ games to enhance the job selection process, specifically for the software developer profession, by extracting data from game logs.

In this thesis, we initially sought to find models for the personalities and behaviors of software developers, utilizing established psychological frameworks like the Myers-Briggs personality test and previous scholarly articles. Subsequently, by designing and implementing game mechanics, we investigated various game genres. Additionally, with the aid of data mining and machine learning techniques, we analyzed the data associated with game logs, aiming to develop a model that can identify suitable individuals for the software developer field based on their performance in these games.

Within the Myers-Briggs personality test framework, the research highlighted that individuals with a thinking-oriented personality type showcase distinct prominence in software development. Moreover, other characteristics such as adaptability, proficient internet search skills, willingness to seek assistance when necessary, effective time management, and a competitive mindset were suggested as complementary traits to consider alongside the personality test. As a result, participants in this study not only played the designed games but also completed personality questionnaires and supplementary inquiries.

Consequently, the examination conducted on ۱۳۲ participants, including students, computer science majors, and working developers, yielded a positive correlation between their in-game performance and suitability for the software developer job. The model constructed using game logs exhibited a remarkable predictive precision of ۹۷٪. Hence, this project serves as an exemplar, demonstrating the potential to develop more comprehensive and precise systems for job selection processes.

Keywords: Job Selection; Personality Assessment; Serious Game; Game-Based Learning; Data Mining; Machine Learning