

# Report on a Diploma Thesis

## Posudek diplomové práce

Matematicko-fyzikální fakulta Univerzity Karlovy

**Thesis author** Shivam Sharma

**Thesis title** Simulation of symptoms of Mental Health Disorders in Virtual Reality

**Submitted** 2023

**Program** Computer Science **Specialization** Visual Computing and Game Development

**Review author** Klára Pešková **Role** reviewer

**Position** Department of software and computer science education

### Review text:

The author of the thesis has developed a virtual reality (VR) software that simulates specific symptoms of mental health disorders, like depression or schizophrenia. The software aims to educate the medical students. The plausibility of the simulated symptoms was consulted with the thesis supervisor.

In his thesis, the author analysed the symptoms from a game developer's perspective, and integrated selected ones—such as inner speech, changes in locomotion, visual and auditory hallucinations or loss of focus—into the simulation using available VR tools. The Oculus Quest 2 VR device together with Unity Engine and Oculus Interaction SDK were used.

As a part of the work, an experiment was conducted involving both medical students and experts in psychology and psychiatry, to prove the software's usability. The thesis contains an evaluation of the questionnaire that the participants were given. All 14 participants found the software usable and in most cases the simulated symptoms were easily recognised for what they were supposed to represent.

The text of the thesis is very easy to read, both the psychological background and VR tools are well explained.

In my opinion, the main shortcomings of the theses are:

- smaller scope of the programming part
- missing software documentation. There is a chapter on Implementation in the thesis, but the documentation that would list and describe game objects, scripts, etc. is missing. In his thesis, author writes about the possibility to easily add a new symptom—a guide maybe even for non-technical users could be really helpful.
- the author could better separate the technical and non-technical parts of the thesis. For example, in Chapter 4 – Implementation there is a description of a day scene and a night

scene (Sections 4.2.2 and 4.2.3), where the author describes the effect that these scenes can have on the user, which in my opinion does not belong to the implementation description.

- author mentions that during the experiment the participants were provided with "instructions for the first-time users". I would expect this document to be included as an attachment to the thesis.

Despite of the issues mentioned above, it is my opinion that the thesis qualifies as a master thesis.

**I recommend the thesis for defense.**

**I suggest to not consider the thesis for the annual award.**

28.8.2023

Signature: