STATEMENT REPORT

under the procedure for acquisition of the educational and scientific degree "Doctor":

by candidate: Dafinka Savova Miteva

of the PhD Thesis entitled: „*Big Data Visualisation*"

In the Scientific field: **4. Natural sciences, mathematics, and informatics**

Professional field**: 4.6. Informatics and computer science**

Doctoral program: **„Information technologies (Information and communication technologies) ",** Department: **„Information technologies",**

Faculty of Mathematics and Informatics (FMI), Sofia University "St. Kl. Ohridski" (SU)

The statement report has been prepared by:

prof. Daniela Ivanova Tuparova, PhD, South-West University "Neofit Rilski",

as a member of the scientific jury for the defence of this PhD thesis according to Order № РД 38-153/03.04.2023. of the Rector of the Sofia University.

1. **General characteristics of the dissertation thesis and the presented materials.**

The PhD thesis has a total volume of 157 pages and includes: lists of figures and tables, used abbreviations and terminology; introduction; seven chapters; conclusion; author reference; bibliography and six appendices. The used bibliography sources are a total of 105, of which 104 are in English and 1 in Ukrainian.

The materials presented are very well organized and structured.

2. **Short CV and personal impressions of the candidate**

The PhD student Dafinka Miteva has a master's degree in informatics from SU "St. Kliment Ohridski". She completed seven specializations at the Regional Cisco Academy at SU. There are a total of 27 scientific papers, two textbooks and two teaching aids on information technology for the secondary school. She participated in 22 national and international projects. She has presented reports at 27 national and international conferences. She has gained extensive experience in the field of e-learning and network technologies within the positions held by her at the Laboratory of Information Services, FMI of SU "St. Kliment Ohridski".

From the reference made in Scopus, Dafinka Miteva has achieved h-index 2, has eight indexed publications and nine citations without auto-citations. In Web of Science, the doctoral student has 12 publications and six citations. These facts define the doctoral student as a recognizable researcher in the international scientific community.

I know some of her publications in the field of e-learning.

3. **Content analysis of the scientific and applied achievements of the candidate, contained in the presented PhD thesis and the publications to it, included in the procedure.**

The PhD thesis and the papers presented on it are in an extremely current topic – learning analytics. The subject and object of the research are formulated, correct and up-to-date research tasks are set, which achieve the set goal of the thesis. An in-depth literature review is done. Methods and tools for learning analytics aimed at optimizing the learning process have been researched. Virtual whiteboard models have been tested in several learning management systems and relevant conclusions and recommendations have been made based on comparative analysis. Requirements for an integrated environment for the analysis of training data have been formulated. The formulation of the requirements is based on expert assessments. A model of a system for learning analytics - eAnalytics - has been developed. The architecture of the model includes components for: connection to data sources, data management, visualization of data analyses. Based on the proposed model, a prototype was implemented. The prototype functional testing and usability testing with users using the Think Aloud protocol is applied.

I accept claims for contributions formulated by the PhD student.

4. **Approbation of the results**

Results of the dissertation research were published in 6 publications. All publications are co-authored, with Dafinka Miteva being the first author in all publications, and separate protocols for the contributions of each of the co-authors in the publications are presented. A search of the scientific information databases Scopus and Web of Science revealed that three of the publications were indexed in Scopus and Web of Science, and two of them had a total of four citations in Scopus. One of the publications is in a journal with SJR, Q2 according to Scimago Journal & Country Rank. This is an indicator that the research on the dissertation work has also been evaluated by the international scientific community.

Since the PhD student was enrolled before May 5, 2018, it should not be required to cover scientific metric indicators. Nevertheless, Dafinka Miteva meets the national minimum

requirements under the Law on the Development of the Academic Staff and the regulations for its application with a total of 66 points (2x18 + 1x30). The publications and their scientific metric indicators exceed two times the minimum national requirements and the additional requirements of SU "St. Kliment Ohridski" for the acquisition of an educational and scientific degree "doctor" in PF 4.6. Informatics and Computer Science.

I did not detected elements of plagiarism in the presented PhD thesis and papers.

5. Qualities of the abstract

The abstract presents in a synthesized form the PhD thesis and the achieved results. It meets the abstract requirements.

6. Critical notes and recommendations

I have no critical notes. I have the following question: In the prototype, in the analysis of data about the quality of teaching surveys, are there procedures for analysing the reliability or validity of the questionnaires used?

7. Conclusions

Having familiarized myself with the PhD thesis presented in the current procedure and the supplemented scientific papers and based on the analysis of their significance and the scientific and applied scientific contributions contained in them, **I confirm** that the presented PhD thesis and the scientific papers to it, as well as the quality and the originality of the results and achievements presented in them, meet the requirements of the Law Act for Development of Academic Staff in Republic of Bulgaria, the Regulations for its application and the relevant Regulations of SU "St. Kliment Ohridski" for the candidate's acquisition of the educational and scientific degree "doctor" in the scientific field 4. Natural sciences, mathematics and informatics and professional field 4.6. Informatics and Computer Science. In particular, the candidate meets the minimum national requirements in the professional field and no plagiarism has been found in the scientific works submitted for the competition.

Based on the above, **I strongly recommend** the scientific jury to award Dafinka Savova Miteva the educational and scientific degree "doctor" in scientific field 4. Natural sciences, mathematics and informatics, professional field 4.6. Informatics and Computer Science, doctoral program: „Information technologies "(Information and communication technologies).

31.05.2023   Signature:

prof. Daniela Tuparova, PhD