

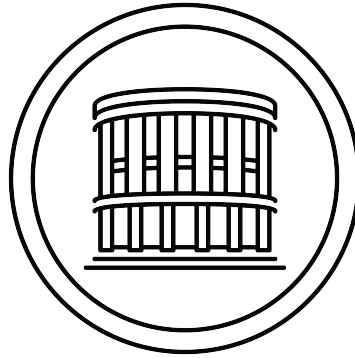
COMENIUS UNIVERSITY IN BRATISLAVA
FACULTY OF MATHEMATICS PHYSICS AND INFORMATICS



**OPTIMISATION AND EXTENSION OF THE
MEI:COGSCI CONFERENCE MANAGEMENT
SOFTWARE**

Master thesis

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FACULTY OF MATHEMATICS PHYSICS AND INFORMATICS



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Master thesis

Study program: Applied informatics
Branch of study: Applied informatics
Department: Department of Applied Informatics
Supervisor: RNDr. Kristína Malinovská, PhD.



Comenius University Bratislava
Faculty of Mathematics, Physics and Informatics

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Study programme: Applied Computer Science (Single degree study, master II. deg., full time form)
Field of Study: Computer Science
Type of Thesis: Diploma Thesis
Language of Thesis: English
Secondary language: Slovak

Title: Optimisation and extension of the MEi:CogSci conference management software

Annotation: Managing scientific conferences, especially medium to large ones, requires good tools for communicating with authors, managing submissions, assigning reviews, and overseeing the smooth functioning of the review process in general. The MEi:CogSci International Student Conference brings together cognitive science students in an international consortium and allows them to present the results of their research projects to an interdisciplinary audience. Within the conference, students present their work either in the form of posters or lectures and, as in regular scientific conferences, they also have a publication output in the form of a short research paper and a peer-review process. The management of this process is usually handled by the MEi:CogSci team at the University of Vienna using the so-called Open Journal System (OJS) [1]. The OJS is an open-source system from Springer, which is freely available. The problem is that it is rather inflexible and does not satisfy all user needs. This creates a large amount of manual work for the organizers, such as filling in spreadsheets and so on. To make their work more efficient, it is necessary to create a superstructure on top of the existing system, either in the form of additional modules or as a separate software (dashboard), which would work on top of the system and allow more efficient data management. At the same time, the topic of text processing of scientific articles is rich in possibilities of using machine learning methods [2] to implement advanced functions of the proposed system, such as automatic generation of article summaries, keywords, semantic search.

Aim: The first goal of this thesis is to improve the processes related to the management of the MEi:CogSci conference. The product of this work will be intelligent interfaces - dashboards and/or add-on modules - to the OJS and its database that will help automate manual processes. Therefore, first of all, it is necessary to study the components and methods of creating OJS modules. This work requires active cooperation with the Vienna team and the processing and analysis of predefined requirements and their implementation. Another goal is to analyse the possibilities of using machine learning methods to further extend the functionality of the system, such as the above mentioned text processing functions of scientific articles. The rich history of the conference offers a large dataset for the processing and experimentation needed to explore and evaluate machine learning methods. Once the methods have been subsequently explored



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and evaluated, the goal is also to port these methods to the existing system and test them in collaboration with the conference organizers.

- Literature:** [1] Open Journal System (OJS) <https://pkp.sfu.ca/software/ojs/>
[2] Liu, Y. and Zhang, M., 2018. Neural network methods for natural language processing.
[3] Lynch, P.J. and Horton, S., 2016. Web style guide: Foundations of user experience design. Yale University Press.

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I hereby declare that I have written this thesis by myself, only with help of referenced literature, under the careful supervision of my thesis advisor.

Bratislava, 2026

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Acknowledgement

Abstract

Managing academic conferences efficiently requires robust tools that streamline submission handling, peer review, and communication with participants. The MEi:CogSci International Student Conference, organized by a consortium of cognitive science programs, has traditionally relied on the Open Journal System (OJS) for these tasks. However, OJS's limited flexibility has necessitated significant manual intervention, leading to unnecessary work for conference organizers. This master's thesis presents the optimisation and extension of the OJS software through close collaboration with the University of Vienna's organizing team. By developing a dashboard interface that operates on top of OJS, we accomplished significant automation and simplification of the administrative workflow. Additionally, the thesis explores the integration of machine learning techniques for enhancing textual data processing within the system. This includes automatic keyword extraction, article summarization, and semantic search functionalities, leveraging the conference's historical dataset. The resulting system not only reduces manual workload but also introduces intelligent features that elevate the overall quality and efficiency of the conference management process.

Keywords:

Abstrakt

Kľúčové slová: vesmírny odpad, strojové učenie, klasifikácia vesmírnych objektov

Contents

List of Figures

List of Tables

Bibliography

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