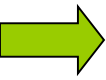


Possibilities to Improve Web-based Assessment in Programming Courses

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AGENDA

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- A green arrow pointing to the right, indicating the start of the agenda.
- Introduction
 - Educational systems and TEL for improving students assessment
 - Personalization as a way of improving students' testing and assessments
 - Integrated learning system for better assessment
 - Pedagogical Agents as instruments for increasing assessment quality
 - Conclusion

Introduction

- E-learning
- Diversity of requirements for commercial learning environments
- Multifunctional systems are needed
 - content production
 - mechanisms for communication and collaboration
 - student modeling
- Department of Mathematics and Informatics
 - Moodle
 - Integrated in-house tools
- MILE
 - on-line courses, testing, automated feedback

Educational systems at our Department

- Several programming courses
- Various aspects of *Technology Enhanced Learning* are utilized:
 - Learning Management Systems and Tutoring Systems
 - LMS Moodle, MILE
 - Programming Environments and Assessment Tools
 - Svetovid, BlueJ, Eclipse, Jeliot
 - Communication and Cooperation
 - Moodle
 - Chat sessions, discussion forums, instant messages, e-mail

Personalization

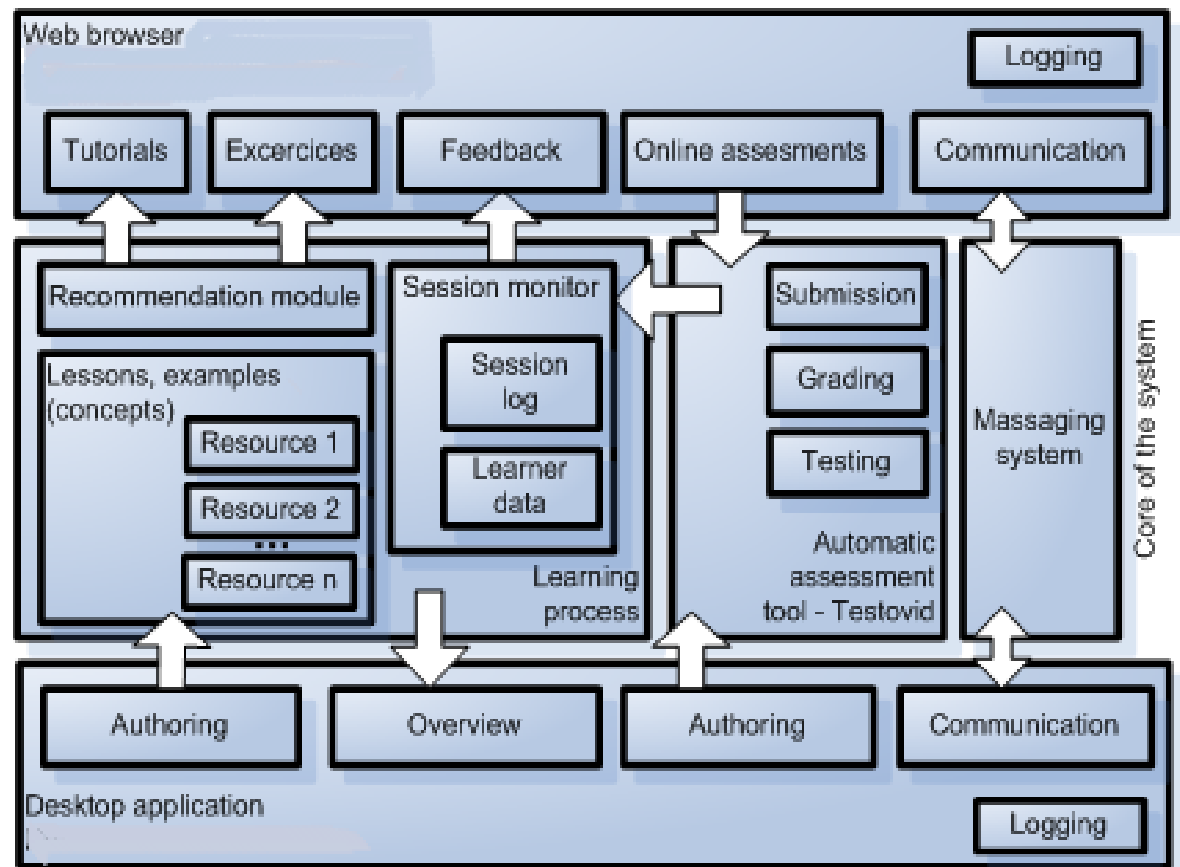
- Internet research and survey methodology
- Testing of learner's knowledge
- Programming assignments
- MILE
 - Multifunctional integrated learning environment
 - Learning styles recognition and content recommendation
 - Tests with numerous multiple-choice questions
- Our goals:
 - Increasing assessment and testing functionalities for Java programming course
 - More accurate learner modelling

Integrated learning system for better assessment

- The goal is to improve assessment of the learners in computer labs or over a network/internet
- Testovid
- Integrated version of MILE system brings new functionalities:
 - do on-line programming
 - self-assessment programming tasks during course and final assessment of gained programming skills
 - submission of programs/solutions for programming tasks and receiving automated feedback and errors report
 - final exams via Internet or in computer laboratory
- Testovid does not replace any of existing modules in MILE system

System's architecture

- Integration of the Assessment module in MILE

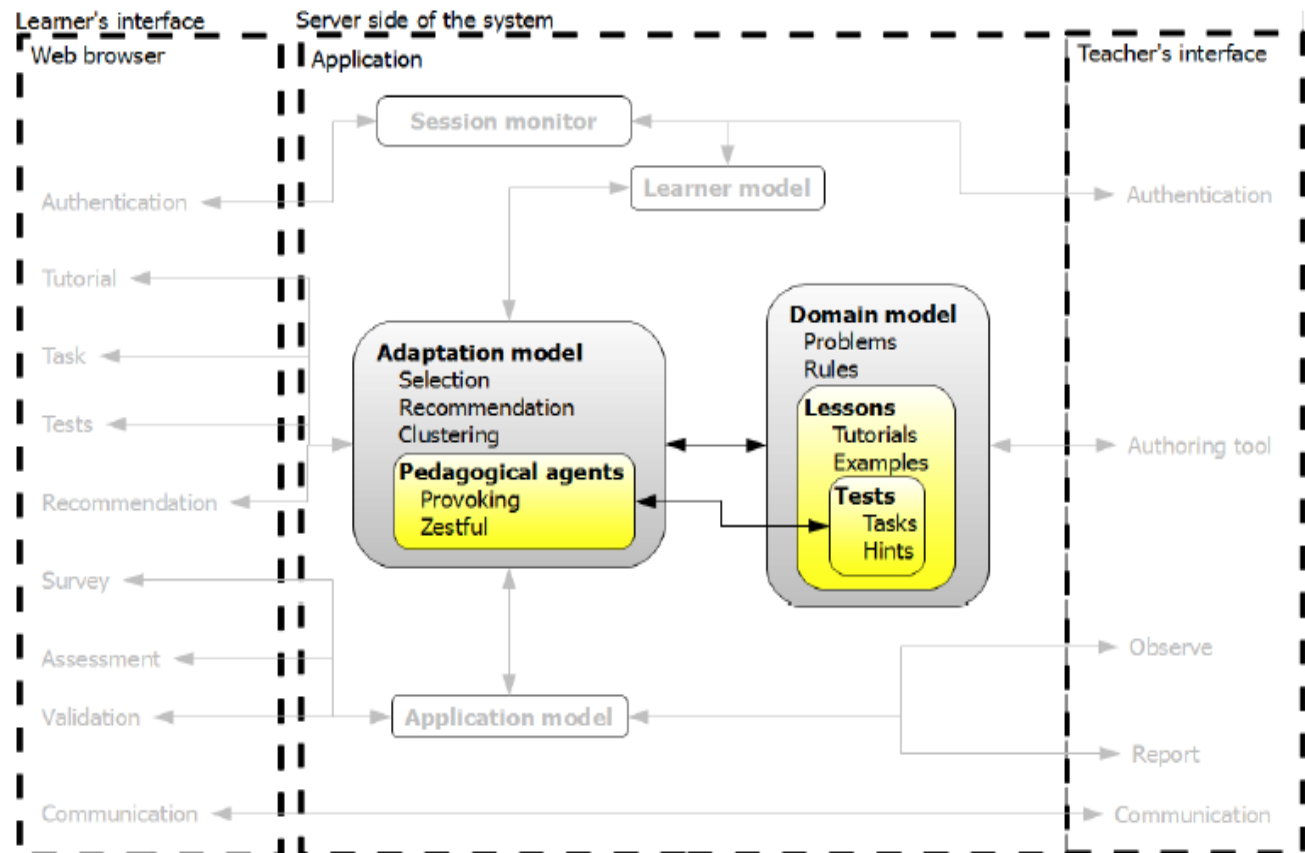


Pedagogical Agents

- Instruments for increasing assessment quality
- Increasing learner's motivation
- Web-based educational systems employ different recommendations and scaffolding techniques
 - pedagogical agents (Provoking and Zestful)
 - guide interactively learners through the learning process
- MILE supports three types of tasks/questions
 - Multiple-choice of syntax check
 - Multiple-choice of execution results
 - Code completion

MILE's architecture

- MILE system with two kinds of agents (Provoking and Zestful)



Conclusion

- Faculty of Sciences, University of Novi Sad, Serbia
- Department of Mathematics and Informatics
- Different web-based tools for:
 - e-learning
 - e-testing
 - e-assessment
- LMS Moodle has been using predominantly for testing students' theoretical knowledge combining in questionnaires different types of questions.
- For practical students' program solutions:
 - MILE - Multifunctional integrated learning environment

Thank you for attention!

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