Module title	Abbreviation
Game Research Lab - Architectures	10-I=GRAR-182-m01

Module coordinator	Module offered by
holder of the Chair of Computer Science IX	Institute of Computer Science

ECTS	Method of grading	Only after succ. compl. of module(s)
10	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	graduate	--

Contents

The Game Research Labs are project-oriented, master-level courses. In accordance with the definition of Games Engineering, they concern themselves with the effective provision and the systematic application of principles, methods and tools for the development and application of comprehensive software systems for computer games. There are four different directions of Game Research Labs: Theory, Applications, Design and Architecture. All of them implement a scientific process during which the students develop a project based on preceding works and a novel idea or hypothesis worthwhile exploring. Typical steps in a Game Research Lab include a short literature survey, the development of a concept, its realisation and evaluation. The "Game Research Lab - Architectures" is about Software Engineering perspectives in Games Engineering. Among those are the integration of different representations, models and calculi, their efficient and - at the same time - modular extensibility, maintenance and multi-facetted application. Accordingly, the subject of study of the course project can be existing design patterns in game engines, or the functional extension or overhaul of existing (sub-)engines. Next to the reflection and discussion of concrete architectures, efficiency can also be shown by means of performance analyses by profiling softwares. The resulting programming interfaces are another important field which is considered in the context of the "Game Research Lab - Architectures" course.

Intended learning outcomes

We recommend previous completion of basic courses in Games Engineering such as Game Labs II and III, complementing courses (e.g. Software Quality, Networked and Concurrent Programming) or advanced courses (e.g. Principles of Realtime Interactive Systems). The Game Research Labs empower the students to retrace current scientific works in great detail, to improve their research skills and to deepen their expertise with respect to specific challenges in Games Engineering. The "Game Research Lab - Architecture" instills knowledge and skills working with and on big software systems, innovating Software Engineering approaches and programming interfaces (e.g. domain-specific languages or visual programming) in Games Engineering contexts, and documenting their effectiveness.

Courses (type, number of weekly contact hours, language — if other than German)

R (4)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

project report (10 to 15 pages) and presentation of project (15 to 30 minutes)
Language of assessment: German and/or English
creditable for bonus

Allocation of places

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Additional information

Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): GE. Cf. Section 3 Subsection 3 Sentence 8 FSB (subject-specific provisions).

Workload

300 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)
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Module appears in
Master's degree (1 major) Computer Science (2018)
Master's degree (1 major) Computer Science (2021)
Master's degree (1 major) Computer Science (2023)
Master's degree (1 major) Computer Science (2025)