Technische Universiteit Eindhoven University of Technology

Interactive intelligent systems

Offered by:	Department of Mathematics and Computer Science
Language:	English
Primarily interesting for:	Software Science, Web Science and Technische Wiskunde
Prerequisites:	Students are assumed to have basic skills in propositional logic (e.g. as covered in the course 2IT60 Logic and Set Theory) as well as in programming, for example by having followed the course 2IP90 Programming or 2WH20 Programming and modelling. Basic knowledge of Linear Algebra is recommended.
Contact person:	Dr.ir. H.M.M. van de Wetering (H.v.d.Wetering@tue.nl)

Content and composition

This elective package combines Computer Graphics and Artificial Intelligence from an algorithmic perspective.

Course code	Course name	Scheduled	Level
2IV60	Computer graphics	Quarter 2/ Slot A	2
2ID90	Artificial intelligence	Quarter 3/ Slot C	2
2IOE0	DBL Interactive intelligent systems	Quarter 1/ Slot A	3

Course descriptions

Computer Graphics

This course provides an introduction to 2D and 3D computer graphics. The mathematical background of geometric transformations exploiting matrix calculations, and the algorithms realizing them will be discussed. Primitive geometric objects and their attributes such as point, line and curve, and fill-area, color and grayscale, and their use in more complex modeling form the underpinning of more advanced topics like illumination and shading, splines and visible-surface detection. In practical assignments, including the display of a number of robot-like figures moving around a track, the topics discussed during the lectures will be applied.

Artificial Intelligence

Artificial Intelligence is an extensive field consisting of greatly varying sub-disciplines that studies the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with human beings. This course covers some of the approaches, like game search and problem solving, reasoning with uncertainty, neural networks, machine learning, and natural language processing . The intention is to explain relevant techniques and methods up to a level of more or less practical algorithms.

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DBL Interactive Intelligent Systems

In this course based on groupwork, students design and implement an intelligent computer game with non-trivial elements from both Computer Graphics and Artificial Intelligence. For example, the visual concretization of the game involves graphical modeling, application of rendering or a well-specified interaction of the player and program. Programming the intelligence of the game requires to define a heuristic of a strategy or a learning facility. The specification of the game, its software design, and the group process will be guided by tutors.

To facilitate the group work a room in MetaForum will be made available for each group for two time slots including slot E. For flexibility, the choice of the second time slot is up to the student, to be indicated upon enrolling for this DBL via OASE.

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