Practical Data Visualization and Virtual Reality

Programme course

6 credits

Tillämpad visualisering och virtuell verklighet

TNM093

Valid from: 2017 Spring semester

Determined by
Board of Studies for Computer Science and Media Technology

Date determined
2017-01-25

Main field of study
Media Technology and Engineering

Course level
First cycle

Advancement level
G2X

Course offered for
- Media Technology and Engineering, M Sc in Engineering

Entry requirements
Note: Admission requirements for non-programme students usually also include admission requirements for the programme and threshold requirements for progression within the programme, or corresponding.

Prerequisites
Algebra and calculus, programming in C++, object orientation and algorithms, 3D Computer graphics

Intended learning outcomes
The student shall, after finishing this course, be able to:
- use common techniques for data exploration and analysis, and virtual reality to implement visualization and computer graphics applications.
- use tracking and correct view projection to implement one-to-one mapping between real and virtual coordinates
- use common software systems to implement basic multi-sensory interaction and visualizations

Course content
- Visualization pipeline
- Visualization techniques
- Tracking and VR views
- Interaction techniques
- Perception
- Applications

Teaching and working methods

The course introduces theories and practical examples within the lectures. In laboratory exercises the students will try out the practical use of various tools and thus acquire skills necessary for using software packages for visualization. Furthermore, VR principles will be applied to correct the graphical view.

Examination

LAB1	Laboratory work	6 credits	U, G

Grades are given as ’Fail’ or ’Pass’.

Grades

Two-grade scale, U, G

Department

Institutionen för teknik och naturvetenskap

Director of Studies or equivalent

Camilla Forsell

Examiner

Jimmy Johansson

Education components

Preliminary scheduled hours: 34 h
Recommended self-study hours: 126 h

Course literature

Additional literature

Books

Charles Hansen and Chris Johnson, *The Visualization Handbook*
John Vince, *Essential Virtual Reality Fast*
Robert Spence, *Information Visualization: Design for Interaction* 2nd Edition

Common rules

Regulations (apply to LiU in its entirety)

The university is a government agency whose operations are regulated by legislation and ordinances, which include the Higher Education Act and the Higher Education Ordinance. In addition to legislation and ordinances, operations are subject to several policy documents. The Linköping University rule book collects currently valid decisions of a regulatory nature taken by the university board, the vice-chancellor and faculty/department boards.

LiU's rule book for education at first-cycle and second-cycle levels is available at http://styrdokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva.