Saarland University

- Located in the southwest of Germany, near the French border, Saarland University is a campus university offering an extensive range of taught courses and globally connected state-of-the-art research institutes. International students receive excellent supervision and can enjoy a variety of sports and leisure activities during their studies at the university.

- The Visual Computing Master's Programme is coordinated by the Computer Science Department of Saarland University, one of the leading computer science departments in Germany. It is supported by the Departments of Mathematics, Mechatronics, Physics and Computational Linguistics as well as by the Max Planck Institute for Computer Science, the Max Planck Institute for Software Systems, the Fraunhofer Institute for Biomedical Engineering, the Fraunhofer Institute for Nondestructive Testing, and the German Research Centre for Artificial Intelligence. This provides a unique environment for pursuing studies and research in Visual Computing.

Contact & Application

- Information on deadlines and application procedures for the International Master of Science in Visual Computing can be found under
  www.master-visual-computing.de

- The Saarland University homepage is located at
  www.uni-saarland.de

- If you have any questions, please contact us at
  contact@master-visual-computing.de

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UNIVERSITÄT DES SAARLANDES

Master of Science

Visual Computing

Visual Computing

- Visual imagery constitute the most important sensory information for humans. Therefore, more and more information is represented by **digital images** and **visual simulations**. This is apparent in numerous applied fields including industrial quality control, medical imaging, driver assistance systems, multimedia systems, and computer games.

- In order to create and analyse digital images in an appropriate way, profound and broad scientific knowledge is required. Therefore, Saarland University offers a **novel interdisciplinary master's programme** that is entirely devoted to visual information processing. Students with a bachelor's degree in computer science, mathematics, physics, electrical engineering, mechatronics or related fields may apply.

- An Master of Science in Visual Computing is an internationally recognised degree. It offers **excellent job perspectives** in growth sectors such as machine vision, optical industry, medical imaging, automotive industry, robotics, surveillance, telecommunications, multimedia, computer games and media design.

The Master's Programme in Visual Computing includes **classes and seminars** on

- image acquisition and geometric foundations
- image analysis (image processing, computer vision, pattern recognition)
- image synthesis (computer graphics, scientific visualisation, geometric modelling)
- related fields such as telecommunications, machine learning, artificial intelligence, signal processing, computational linguistics, medical engineering, cognitive sciences
- relevant foundations in mathematics, computer science, physics, and mechatronics.

The Programme of Study

Visual Computing is a **research-oriented international** programme that can be studied entirely in English. The European Credit Transfer System (ECTS) has been implemented. The regular duration of studies is two years (four semesters). Students can either start in the winter term with lectures beginning in mid October, or in the summer term where lecturing starts usually mid April. Grants for very gifted students are provided by the International Max Planck Research School (IMPRS).

Examples

of Areas in Visual Computing

Modern acquisition methods allow a representation of all image structures at a high resolution, as one can see from this magnetic resonance image of a mouse embryo.

Image processing deals with methods that transform a digital image into another image that is more useful for humans or computers. Deblurring a distorted image is a typical example.

One of the main goals of computer graphics is to create highly realistic simulations of our 3D world, e.g. by sophisticated ray tracing methods.

Estimating the position of 3D objects and using these models in new synthetic scenes requires advanced computer vision and computer graphics.

Images that can be understood by humans and not by computers avoid the misuse of internet services. Computer graphics and pattern recognition methods allow the creation and validation of such images.