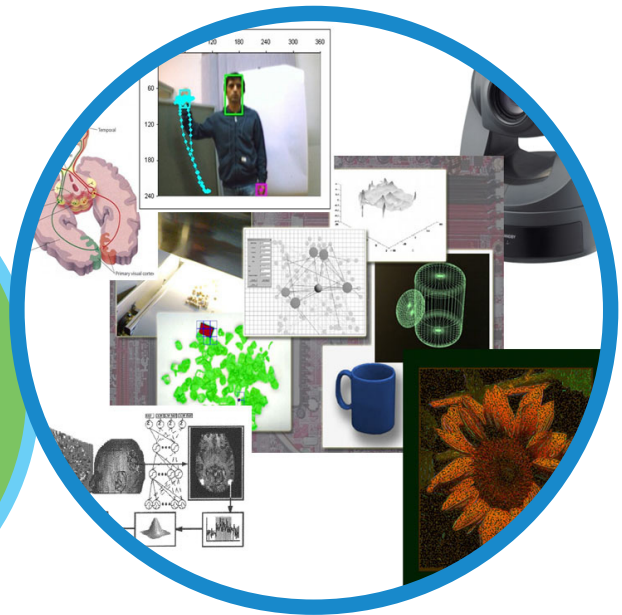


www.sdu.dk/mmmi

THE MAERSK MC-KINNEY MOLLER INSTITUTE



International Master's Degree in Cognitive Vision

This 2-year international programme aims at providing you with competences that will enable you to apply advanced computer-vision techniques on industrial and service robots as well as in other application areas such as video surveillance, quality control and medical image processing.

In addition, the programme provides you with knowledge about human visual processing in an interdisciplinary lecture with Institute of Psychology at University of Denmark (SDU).

Well-qualified students, who have completed a bachelor's degree in electronics, mechanical or computer science, and mathematics (or a closely related discipline) are invited to carry out two years of study for the degree of MSc in Cognitive Vision at The Maersk Mc-Kinney Møller Institute, which is part of the Faculty of Engineering at SDU. Students with a background in human sciences may be accepted for the programme, subject to an individual assessment concluding that supplementary courses may be a prerequisite for acceptance.

Contents of the Programme

The first year of the programme is course work, where students follow courses in classical computer vision, robotics, artificial intelligence, neural networks, and machine learning. In a final course the students are introduced to the research areas of cognitive systems. The theoretical material taught in these courses will be tried out in real applications (mostly connected to robots) in hands-on projects. The study programme is supplemented with elective courses in traditional robot control and software engineering.

The largest part of the second year of the programme is spent on work aimed at the Master's thesis. In addition, an interdisciplinary course on cognitive systems in co-

operation with the psychology department is offered. In this course visual and cognitive abilities of humans are studied to utilize this knowledge for the design of artificial cognitive systems.

The choice of the Master's thesis topic is open; common topics include visual-based robotics (e.g., grasping and manipulation), image processing and computer vision as well as visual learning.

The Cognitive Vision line is a highly interdisciplinary education, and students are encouraged to perform Master's theses bridging other disciplines such as robotics, artificial intelligence or embedded systems as well as joining projects with the Institute of Psychology on cognitive systems.

The degree with its unique combination of theoretical and hands-on work qualifies graduates for employment in industry, public institutions, research institutes or further study towards the degree of a PhD.

Research Group

Among its many international research achievements, the Cognitive Vision Lab (CoViL) has been involved in a number of international projects ranging from humanoid robotics to driver-assistance systems.

CoViL has developed the so called 'Cognitive Vision Software' (CoViS) which is now used by a number of research groups in Europe. CoViS is used as a visual front end operating in real time based on GPU technology which is inspired by human visual processing.

CoViL in particular focuses on the design of artificial cognitive agents which learn by interacting with the environment in the same way as humans do. For further information, see www.mip.sdu.dk/covig.

Cognitive Vision

Common Core Courses: (40 ECTS points)

Robot System Design, RMRSD, 10 ECTS

Introduction to Artificial Intelligence, RMAI1, 5 ECTS

Agent-oriented Programming, RMSSE1, 5 ECTS

Scientific Methods, RMSCM1, 5 ECTS

Robotronic - Hardware/Software Interface Methods for Robotronic, RMEMB1, 5 ECTS

Image Processing, RMVIS1, 5 ECTS

Introduction to Robotics, RMROB1, 5 ECTS

Introduction to Software Engineering, RMSSE0, 5 ECTS (for students only who lack the prerequisite knowledge required in software engineering and object-oriented programming; such students can defer the RMSSE1 course till the following semester).

Elective and Profile Courses (40 ECTS points)

Elective courses shall constitute no more than 20 ECTS of the course load.

Profile courses shall constitute no less than 20 ECTS of the course load. Examples of profile courses are: Advanced Topics of Computer Vision, RMVIS3, and Cognitive systems, RMVIS4

The Thesis (30/40 ECTS points)

This part consists of 10 ECTS allocated elective courses during the 9th semester, and 30 ECTS allocated writing the thesis during the 10th semester. If the thesis is of an experimental nature, students may include the elective part in the thesis part, thereby extending it to 12 months and 40 ECTS.

The thesis is, as default, done in groups of 2 students.

Total Programme (120 ECTS points)

