

About us

The Autonomous Systems program is offered by the Applied Sciences Institute at the Bonn-Aachen International Center for Information Technology (b-it) which is a cooperative partnership between two renowned German centers of excellence: the Department of Computer Science of the Hochschule Bonn-Rhein-Sieg (H-BRS) and the Fraunhofer Institute for Intelligent Analysis and Information Systems (IAIS).

H-BRS was founded in 1995 and has around 8,000 students, 152 professors and 261 research associates. The university campuses are located in Hennef, Rheinbach and Sankt Augustin.

H-BRS cooperates with more than 70 foreign universities in 30 countries. In 2017 the proportion of international students enrolled was roughly 15%.

The Department of Computer Science is consistently ranked amongst the top departments in various Germany-wide academic university rankings.

Our co-operation with universities around the world provides great opportunities for spending a semester studying abroad.

In addition, two dual degree programs exist with both the University of New Brunswick (UNB) in Canada and the German Jordanian University (GJU) in Jordan. Students spend a year at H-BRS and another at either UNB or GJU and, after successfully completing their studies, are awarded degrees from both H-BRS and the institution they studied at.

About the Fraunhofer Institute

The Fraunhofer organization is the largest application-oriented research organization in Europe with 66 institutes and research units around Germany. The Fraunhofer Institute for Intelligent Analysis and Information Systems (IAIS) is conveniently located in Schloss Birlinghoven, close to the university.

Over 200 employees focus on the development and application of autonomous systems in the areas of mobile robots and knowledge computing among others. Our partnership with IAIS has enabled our students to benefit from this powerhouse of research and development.



Location

Bonn is home to much more than Beethoven and HARIBO sweets. The headquarters of Deutsche Telekom, DHL, SolarWorld and a number of United Nations agencies, to mention but a few, are all located in Bonn.

The city of Cologne is around 20 minutes by train from Bonn and is home to a million people (making it the fourth largest city in Germany). In addition to the magnificent cathedral, Cologne boasts great shopping and a vibrant cultural scene. It is also home to one of the biggest Carnival parades in the world.

Many other European cities are within easy access by train, such as Brussels (two hours), Amsterdam (three hours) and Paris (four hours). Cologne Airport ensures excellent (and cheap) connectivity to the rest of Europe.



Requirements for Admission

- A bachelor's degree (equivalent to the German degree) in the areas of computer science, mathematics, natural sciences, or engineering
- Sufficient qualifications in computer science
- For all those who do not have English as an official language in their country an upper B2-level of proficiency is required. Please check our website for details: www.h-brs.de/en/inf/application-mas-program
- Admission is solely based on credentials and academic excellence.

Applying to the Program

The program is open to students of all nationalities. Students can start in either of the two semesters: in September (winter semester) or in March (summer semester).

International students who need to apply for a German visa should apply online the year before they wish to enroll. The deadlines are:

- Summer Semester: July 1
- Winter Semester: January 15

To apply, please go to the application page of our website: www.h-brs.de/en/inf/application-mas-program and read the instructions which are followed by the link to the online application system.

Contact

For more details, please contact: mas@inf.h-brs.de

www.facebook.com/AutonomousSystemsProgram

Master's program

in
**Autonomous
Systems**

*Accredited
since March 2006*

Degree
Master of Science



in cooperation with

b-it
Bonn-Aachen
International Center for
Information Technology

Fraunhofer Institut
Intelligente Analyse- und
Informationssysteme

**Hochschule
Bonn-Rhein-Sieg**
University of Applied Sciences

Fotos Eric Lichtenscheidt

last up-date 03/2017

Course Features

- Study in English
- Multidisciplinary study enhances students' existing skills and knowledge
- Internationally accredited degree
- Preparation for PhD
- No tuition
- Mentoring by faculty members
- Study buddies (one on one help for international students)
- Free language classes in German and other languages
- High-profile research projects
- Opportunities to become involved in the program's award-winning RoboCup team: www.b-it-bots.de
- Opportunity to spend a semester at one of the program's partner universities
- Opportunity to work with state-of-the-art robots such as the Care-O-bot 3 and the youBot
- Opportunity to live and study in Germany, and learn a new language
- Dual degree opportunities with the University of New Brunswick (UNB) in Canada and the German-Jordanian University (GJU) in Jordan



Our Program

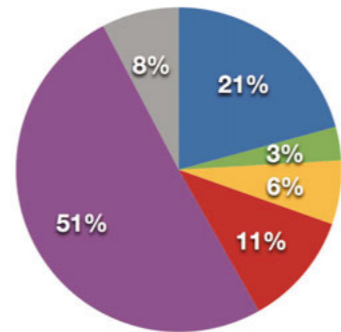
The Master's program in Autonomous Systems is an international program, taught entirely in English, offering multifaceted training in the fields of robotics and artificial intelligence.

The program is proud to be home to the RoboCup team 'b-it-bots', which has secured a spot on the podium in the world championships since 2008, including first place in 2009.

Various robot platforms are used for educational and research purposes, including the Care-O-Bot 3, and the youBot.

The focus is on enabling and integrating the necessary intelligence behind the autonomous behavior of artificial agents rather than on the hardware-related aspects of robotics.

The make up of the student body by geographic region since the program's start in 2002-2003.



- Germany
- Western Europe & Others
- Eastern Europe
- Africa & the Middle East
- Asia-Pacific
- Latin America

Course Structure

	Semester 1	Semester 2	Semester 3	Semester 4
Lectures	Mandatory Lectures Advanced Software Technology (AST, 6) Autonomous Mobile Robots (AMR, 6) Mathematics for Robotics and Control (MRC, 6) Principles of Cognitive Robots (PCR, 6)	Choose 1 of 2 tracks. 5 electives needed. Choose 3 of 7 for this semester. Probabilistic Methods for Robotics (PMR, 6) Robot Perception (RP, 6) Learning and Adaptivity (LA, 6)	Choose 2 of 7 for this semester. Adaptive Filtering (AF, 6) Planning and Scheduling (PS, 6)	
Seminars	Introduction to Scientific Working (ISW, 6)	Advanced Scientific Working (ASW, 6)		R&D Colloquium (RDC, 3)
Lab / Practical Courses		Software Development Project (SDP, 6)	Scientific Experimentation and Evaluation (SEE, 3)	
Research Work			Research and Development Project (RDP, 12)	Master's Thesis Project, MT Colloquium (MT, MTC, 30)

The academic year is divided into two semesters. The program covers four semesters (two years). Individual mentoring characterizes the program, where students are guided through independent scientific work and through interdisciplinary cooperation in research and development projects.

Students take a number of core courses in the first semester as well as compulsory seminars, and practical courses throughout their studies. They may then choose five electives to take during the second and third semester.

The two tracks are:

- Robot Systems Design Track (RSDT)
- Intelligent Robots Track (IRT)

The picture above shows a sample course load. A master's project and thesis as well as the R&D colloquium take up the fourth semester.

Examples of electives

- Hardware/Software Co-Design
- Robot Manipulation
- Robot Navigation
- Robot Systems Design
- Mobile Manipulation
- Advanced Control Methods
- Control for Robotics
- Adaptive Filtering
- Semantic Mapping
- Robot Perception
- Probabilistic Methods for Robotics
- Planning and Scheduling
- Learning and Adaptivity
- Multi-Agent Systems
- Fault Detection and Diagnosis

