

## Requirements for Admission

For admission to the program, a professional academic degree (Bachelor or equivalent) is required in the areas of computer science, mathematics, natural sciences, or engineering. Candidates should demonstrate sufficient qualifications in computer science. In some cases additional preparatory computer science courses (a maximum of 30 ECTS points which may not count towards the degree itself) may be necessary. Candidates whose language of instruction for their academic degree was not English must document their proficiency in English (a minimum TOEFL score of 557 paper-based or of 220 computer-based, or equivalent, is required). Admission is solely based on credentials and academic excellence.

## Applying to the Program

The program is open to students of all nationalities. The program starts either in September (winter semester) or in March (summer semester). International students who need to apply for a German visa should send their documents by June 1st for admission in the summer semester of the following year, and by December 1st for admission in the winter semester of the following year.

To apply, please send an email to our Student Registrar's Office ([johanna.ruwwe@h-brs.de](mailto:johanna.ruwwe@h-brs.de)) including the following:

- Your name as it appears in your passport, clarifying which is your first name and which is your family name
- The semester to which you would like to apply to
- Your nationality and country of residence
- An email address to which all future correspondence may be sent to you

## Location

Bonn is home to much more than Beethoven. The headquarters of Deutsche Telekom, DHL, SolarWorld and a number of United Nations agencies, to mention 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).

## The Research Partner: Fraunhofer Institut Intelligente Analyse- und Informationssysteme

The Fraunhofer Institut Intelligente Analyse- und Informationssysteme is located close to Sankt Augustin in Schloss Birlinghoven in the vicinity of the university. Over 240 employees focus on the development and application of autonomous systems in the areas of mobile robots and knowledge computing.

Castle Birlinghoven on the campus of the Fraunhofer Institute at Birlinghoven



With its contributions, Fraunhofer Institut Intelligente Analyse- und Informationssysteme participates substantially in the shaping of a sustained knowledge society.

The development of autonomous mobile robots as reliable assistants and partners of humans leads to a better and more rigorous understanding and advanced design of autonomous systems.

The institute fosters a variety of national and international cooperative relationships and is a member of the Fraunhofer group 'Information and Communication Technology'.

## Contact

The Master's program in Autonomous Systems is offered by the Applied Sciences Institute at the **Bonn-Aachen International Center for Information Technology** (b-it) which is based on a cooperative partnership between two renowned German centres of excellence: **Fraunhofer Institut for Intelligent Analysis- and Information Systems** and Department of Computer Science **Bonn-Rhein-Sieg University of Applied Sciences** (BRSU)

### Student Registration's Office

Bonn-Rhein-Sieg University of Applied Sciences  
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[johanna.ruwwe@h-brs.de](mailto:johanna.ruwwe@h-brs.de)  
(information and application to the program)

### Prof. Dr. Paul G. Ploeger

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(academic advice)

Interested candidates should also check the program website for details and up-to-date information:  
<http://www.inf.h-brs.de/MAS>

last up-date 10/2009

Master's program in

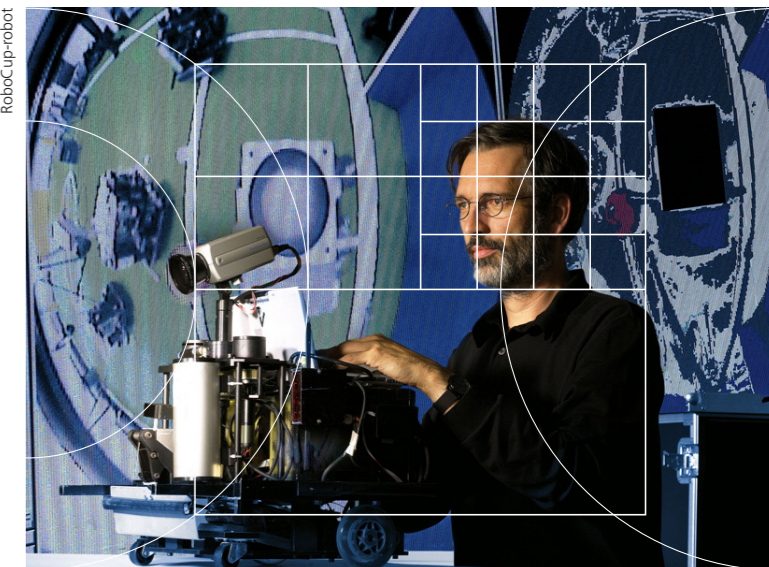
# Autonomous Systems

Accredited since March 2006

Degree  
Master of Science

Gestaltung: causa formalis, Köln

RoboCup-robot



a cooperation between



Bonn-Aachen  
International Center for  
Information Technology

Fraunhofer Institut  
Intelligente Analyse- und  
Informationssysteme



Bonn-Rhein-Sieg  
University of Applied Sciences

Fotos: Dieter Klein, Köln

## Master of Science in Autonomous Systems

The program is Germany's premier master's program on autonomous systems, and is staffed by highly acclaimed faculty members who are regarded among the best in the field. The program is proud to be home to the RoboCup team 'b-it-bots'. The team placed 1st in the World Championships @Home league in the summer of 2009, ahead of the 'eR@sers' team (Tamagawa University, Japan) in 2nd place and the NimbRo team (University of Bonn, Germany) in 3rd.

B-it-bots: World Champions 2009, Austria



This comes one year after placing 2nd in the 2008 championships. The b-it-bots were also awarded 1st place in the German Open in April 2009.

The program uses a variety of robot platforms for educational and research purposes, such as Nao, Pioneer, Aibo, Khepera, and Mindstorms, as well as a number of manipulators.

In pursuit of academic excellence and the highest possible caliber of applicants from all over the world, the program charges nominal fees for tuition, which represent less than 1% of the real cost of tuition. The remaining costs are covered by contributions from the German Government and the B-IT Center. Each student is entitled to this privilege throughout his or her course of study.

This program awards the degree of 'Master of Science'. This M.Sc. in Autonomous Systems offers qualification in an innovative area of applied sciences; a highly competitive admission process and an intensive and rigorous course of study ensures that our graduates are accorded a competitive advantage in the employment market as well as in pursuing higher studies.

Aibo Robots



Graduates of the program are currently employed at renowned companies such as ADA Robotics and GPS Stuttgart, and approximately 40% have gone on to PhD program at universities such as Jaume I/Spain, TU Eindhoven/Netherlands, TU Wien/Austria and the universities of Osnabrück, Stuttgart and RWTH Aachen in Germany. The four-semester program aims to challenge talented, motivated and dedicated students, and involves course work as well as project work. A large portion of the program, including the preparation of the master's thesis, involves research and development projects. The project work takes the form of two R&D projects and a final thesis project. The program's affiliation with the Fraunhofer Institute, one of the leading research institutes in Germany and the largest organisation for applied sciences in Europe, provides an unparalleled opportunity for students to pursue extensive practical training in projects at the cutting edge of the field.

These projects may also be carried out in a number of other broader research efforts at the university. This helps to ensure a high-quality education in the field, and also offers problem-oriented training in soft skills such as project management and presentation. Presentations by leading international guest speakers are scheduled regularly and help to further expose the students to the state of the art in a wide variety of robotics-related fields.

Robot Kurt 2



The number of seats per semester is limited to only 25 candidates, thus ensuring the admitted students a high quality education. An extraordinary level of commitment, proactiveness, selfdiscipline and the ability to work well under pressure is expected of candidates.

This program is fully accredited by ASIIN, the German accreditation agency for study program's in engineering, informatics, and natural sciences. ASIIN is a member of the Washington Accord for the international recognition of accredited degree program's and, as such, the program's accreditation is recognized worldwide.

## Course features

- The course of study is conducted in English
- Multidisciplinary study enhances students' existing skills & knowledge
- Internationally accredited Master of Science degree
- Preparation for PhD
- Professional qualifications
- Special mentoring program by faculty members

Pioneer P3-AT



- Study Buddies (one on one help for international students)
- Free German language classes offered to international students
- Opportunities in high-profile research projects
- Opportunities to become involved in the program's award-winning RoboCup team (<http://www.b-it-bots.de>)
- Opportunity to spend a semester at one of the program's partner universities
- Opportunity to live and study in Bonn, Germany, and learn a new language

## Course structure

The academic year is divided into two semesters. The program covers four semesters (two years) in which a total of 120 ECTS points are accumulated. Individual mentoring characterizes the program, where students are guided through independent scientific work and through interdisciplinary cooperation in research and development projects.

Morpheus robot



The first semester consists of coursework and a seminar, and is aimed at familiarizing students with various robotics-related topics and introducing them to the state of the art in topics selected by the students themselves.

The second and third semesters contain both coursework and project work. Each semester, 15 ECTS points are awarded for the research and development projects. These projects are presented and documented in a report by each student. An additional 15 ECTS points are awarded for the coursework.

In the fourth semester, students research and write the master's thesis. A final defense of the thesis completes the 120 credits requirement.