International Programmes in Germany 2017

Master of Science in Intelligent Adaptive Systems (IAS) • Universität Hamburg • Hamburg

Degree

Master of Science in Intelligent Adaptive Systems

Course language(s)

Courses are held in English. Participants with German language skills have the possibility to select individual courses taught in German for choice slots (in agreement with a course adviser). The Master's thesis has to be written in English.

Admission semester

Winter semester only

Beginning

Winter semester - 1 October

Programme duration

Four semesters (two years)

Application deadline

31 March for the following winter semester for all applicants

Course content

Intelligent systems and robots are expected to become an integral part of our daily lives. In order to be accepted by and to interact efficiently and naturally with humans, they have to adapt to changing environments as well as to the users they interact with. Intelligent systems are not only expected to automatically acquire and manage knowledge through a variety of sensors, but also to learn and optimise their behaviour over time. This International Master's programme aims to provide students with the ability to create these intelligent adaptive systems and to prepare them for a future market in which intelligent behaviour is considered the standard for computer systems.

Universität Hamburg
DER FORSCHUNG | DER LEHRE | DER BILDUNG

[http://www.master-intelligent-adaptive-systems.com]
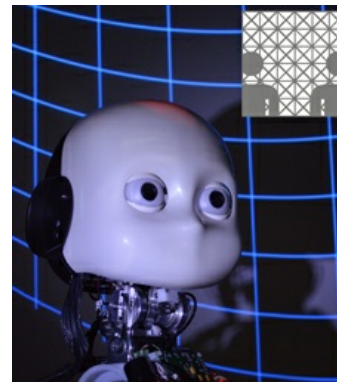
CONTACT

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Department of Informatics

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22527 Hamburg

E-mail [mailto:ias-team@informatik.uni-hamburg.de] »

Course website [http://www.master-intelligent-adaptive-systems.com] »

Twitter [http://twitter.com/IASHamburg]

Submit application to
Dr. Sven Magg
Universität Hamburg
Department of Informatics / WTM / F-210
Vogt-Kölln-Straße 30
22527 Hamburg
Germany

The Intelligent Adaptive Systems (IAS) curriculum is focused on intelligent adaptive behaviour of artificial systems, ranging from robots to computer systems. The selected modules provide a comprehensive overview, including technical aspects and state-of-the art algorithms and methods. Students are introduced to current research in the corresponding fields and have the opportunity to deepen the acquired knowledge by participating in international research projects. The Master's programme in Intelligent Adaptive Systems is a two-year, research-oriented programme, taught in English. Students, both national and international, can profit from an international environment by improving their grasp of the English language and engaging in cultural exchange. This exchange is fostered in seminars and work groups where teamwork is promoted and extended in extracurricular discussions and activities. Thanks to the programme's proximity to current research projects, students can avail of a smooth transition into collaborative research environments and continuing education and study.

Educational organisation

The Master's programme comprises 120 credit points, distributed between compulsory core modules (48 CP), selectable focus (18 CP) and extending modules (12 CP), and project work (42 CP).

Semester one:
Software Architecture (6 CP)
Bio-Inspired Artificial Intelligence (6 CP)
Intelligent Robotics (6 CP)
+ 12 CP Focus Choice

Semester two:
Neural Networks (6 CP)
Databases and Information Systems (9 CP)
Algorithmic Learning (9 CP)
+ 6 CP Focus Choice

Semester three:
Research Methods (6 CP)
Project with integrated Seminar (12 CP)
+ 12 CP Extension Choice

Semester four:
Master's Thesis (30 CP)

Core Lectures:
Core lectures are compulsory for all students. This set of lectures conveys an in-depth understanding of different types of intelligent adaptive systems and introduces students to the most current research in the different topics. All core modules consist of a combination of lecture and seminar/tutorial to foster student participation and constant application of learned concepts.

Focus Choice:
Focus choice slots provide students with the opportunity to strengthen their background in a chosen

field or deepen their knowledge in a field which complements the core modules. Focus modules will be chosen in consultation with an assigned adviser and can be selected from a list that aligns well with the overall focus of the Master's programme. This list contains single modules that supplement core lectures as well as suggested sets of lectures that together form a coherent focus area. It will be reviewed on a regular basis to reflect current research and to include newly emerged and complementary teaching areas. Currently, the choices for focus options include:

- Language Processing
- Image Processing
- Robot Technology
- Mobile Systems and Networks
- Knowledge Processing

Extension Choice:
12 credit points can be selected from a range of modules taught at the Department of Informatics or other departments as well as independent study projects. In comparison to the focus options, these modules can be used to gain knowledge in fields that go beyond the scope of this programme, but are linked to its contents, e.g. psychology or biology. The modules are again chosen in consultation with an adviser to guarantee a sensible choice in alignment with the student's background and aims.

Project and Thesis
Having participated in lectures and seminars where the focus is usually on individual work, students take part in a group project before undertaking a research project that finally leads to the Master's thesis. The group project focuses on teamwork and the scientific exchange and defence of ideas to prepare students for a collaborative scientific environment. Students are encouraged to choose projects in preparation of their Master's thesis and to actively take part in research projects of a chosen area. Two to three students are expected to work as an independent group with a supervisor from the corresponding area. A seminar, where all groups meet, gives students the opportunity to present their work in an environment comparable to a scientific conference.
Finally, in the last semester, students work full-time on an independent research project that ends with submission of the final Master's thesis.

Part-time study is possible. Reference semesters are doubled, and required credit points per semester amount to half of those required in full-time study. Prerequisites for lectures must be met, with courses available only in winter or in summer to be taken at the next opportunity.

Study abroad unit(s)

No study abroad periods are planned within the curriculum.

Forms of assessment

Assessment of lectures is generally via 30-minute oral exams. Few written exams. Seminars, tutorials, and the project are assessed through in-course work (e.g. software development, reports, and oral presentations).

ECTS credits

120

Diploma supplement

Yes

Course-related German language courses

Yes

Course-related English language courses

Yes

Course objectives

The IAS Master's programme is a research-oriented programme which aims to provide students with a comprehensive overview in intelligent adaptive systems. Students who successfully complete the course will have in-depth knowledge on the state of the art in neural networks and learning algorithms for intelligent systems and will know how to integrate these into robots, databases, and information processing systems. Through focus and extension choice slots, students can further select focus areas to deepen their knowledge in IAS core areas or to extend their study to other areas.

Tuition fees

There are no tuition fees for this Master's programme.

Enrolment fees

There is a semester fee of 310 EUR per semester. This fee includes a semester ticket covering public transport in the Hamburg metropolitan area.

Costs of living

We recommend that single students budget at least 800 EUR per month to meet personal expenses (accommodation, living, health insurance, books).

Job opportunities

Students who enrol in a full-time programme will

generally have only limited time for part-time jobs.
As a rule, students who hold an international student
visa may work for up to 120 full days or 240 half days
per year. Further information on work regulations for
international students at Universität Hamburg can be
found here: http://www.uni-
hamburg.de/piasta/beratung_e.html [http://www.uni-ha
mburg.de/piasta/beratung_e.html]

**Funding opportunities
within the university**

International full-time students may apply for merit
scholarships or exam grants of Universität Hamburg.
For more information, please use the provided link. We
also recommend contacting our colleagues in the
Department of International Affairs for further guidance.
http://www.uni-hamburg.de/internationales/studieren-
an-der-uhh/finanzierung-des-studiums_e.html [http://w
ww.uni-hamburg.de/internationales/studieren-an-der-u
hh/finanzierung-des-studiums_e.html]

Language requirements

All applicants must provide proof of their English
language proficiency by (or comparable to):
- CEFR/TELC level B2
- IELTS 6.5
- TOEFL (iBT 90, PBT 575, CBT 230)
- Cambridge CAE or CPE

Academic requirements

A Bachelor's degree from Universität Hamburg or
another university in computer science or a related field
in which 60 CP were acquired in the field of computer
science, comparable to the curriculum of the BSc
"Informatik" (Computer Science) at Universität
Hamburg. Comparability of the degree will be
established by the admission commission.

Where to apply

Dr. Sven Magg
Universität Hamburg
Department of Informatics / WTM / F-210
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22527 Hamburg
Germany

Arrival support

Students and researchers can find information on how
to get started in Hamburg on the website of the
PIASTA programme at the Universität Hamburg
Department of International Affairs (http://www.uni-ham
burg.de/piasta_e.html [http://www.uni-hamburg.de/piast
a_e.html]) and on the website of the Hamburg
Welcome Center (http://english.welcome.hamburg.de [
http://english.welcome.hamburg.de]).

During the International Welcome Week organised by PIASTA, you will be able to get in touch with all the important institutions and contacts which are particularly useful for international students: http://www.uni-hamburg.de/piasta/veranstaltungen/international-welcome-week_e.html [http://www.uni-hamburg.de/piasta/veranstaltungen/international-welcome-week_e.html]

Services and support for international students

The Universität Hamburg CampusCenter is the first port of call for all current and prospective students and offers information, services, and counselling. The PIASTA programme at the Universität Hamburg Department of International Affairs offers support and advice for German and international students, as well as cultural events and workshops.
For more information, refer to: http://www.uni-hamburg.de/piasta [http://www.uni-hamburg.de/piasta] and https://www.uni-hamburg.de/en/campuscenter.html [https://www.uni-hamburg.de/en/campuscenter.html]
The welcome service of the Universität Hamburg Department of International Affairs is the first contact address for international visiting researchers and others: http://www.uni-hamburg.de/internationales/wissenschaft/service-international_e.html [http://www.uni-hamburg.de/internationales/wissenschaft/service-international_e.html]

Accommodation

Accommodation is available through the "Studierendenwerk" (students' services) or on the private market. The "Studierendenwerk" provides rooms in halls of residence, most of which are single rooms with shared kitchens and showers/WCs. We strongly advise students and researchers to arrange accommodation prior to arriving in Hamburg, as demand for affordable accommodation is sometimes larger than supply.
For more information on how to find accommodation and how to plan your first steps in Hamburg, please refer to: https://www.uni-hamburg.de/piasta/beratung/doc/willkommen.pdf [https://www.uni-hamburg.de/piasta/beratung/doc/willkommen.pdf]

Course website

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About the university

As Northern Germany's largest research and educational institution, Universität Hamburg combines diverse study opportunities with excellent research. It provides a broad disciplinary spectrum with numerous

interdisciplinary opportunities and pursues cooperation with an extensive network of excellent regional, national, and international institutions. Universität Hamburg is devoted to long-term scholarship and science and promotes sustainability research in all schools.

Universität Hamburg offers more than 160 degree programmes in the following eight schools: School of Law; School of Economics and Social Sciences; School of Medicine; School of Education; School of Humanities; School of Mathematics, Informatics and Natural Sciences; School of Psychology and Human Movement; and School of Business.

Furthermore, several museums and collections belong to Universität Hamburg, such as the Zoological Museum, the Herbarium Hamburgense, the Geological-Paleontological Museum, the Botanical Gardens, and the Hamburg Planetarium.

Universität Hamburg was founded in 1919 by local private citizens. Important founding figures include senator Werner von Melle and businessman Edmund Siemers. Nobel prize winners such as Otto Stern, Wolfgang Pauli, and Isidor Rabi were active at the university, and many other well-known scholars taught here, such as Ernst Cassirer, Erwin Panofsky, Aby Warburg, William Stern, Agathe Lasch, Magdalene Schoch, Emil Artin, Ralf Dahrendorf, and Carl Friedrich von Weizsäcker, to name but a few.

Total number of students

42,100

Total percentage of international students

12 %

About the city

Hamburg is the second-largest city in Germany with 1.8 million citizens and is also one of Germany's 16 federal states. Due to its location on the River Elbe linked to the North Sea, it has had a long tradition as the cultural and commercial centre of Northern Germany.

Commercially, the Free and Hanseatic City is known as the media capital of Germany and is a leader in the shipping and transportation industries. Culturally, the city is home to, among other things, the leading ballet company in Germany, an opera house, numerous musicals and annual film festivals.

As far as action and fun go, Hamburg is the place to be. The Reeperbahn, known not only to sailors worldwide as the "Mile of Sin", has numerous bars, cafés, and clubs as well as many other interesting sites not to be seen elsewhere. The "Kiez", as the natives call it, even gave the Beatles their start in the early 1960s. Fortunately, Hamburg's many parks and green areas provide the opportunity to relax and recover from the city's active side. Moreover, the city's innumerable canals invite you to spend some time sailing, rowing or

kayaking.

For more information on the city, please see: http://www.hamburg-tourism.de/en [http://www.hamburg-tourism.de/en].