



Loughborough
University

Computer Science

Postgraduate programmes



FOR
COMPUTER
SCIENCE
THE GUARDIAN
UNIVERSITY GUIDE 2021



75% OF
RESEARCH RATED
'INTERNATIONALLY
RECOGNISED' OR
HIGHER
REF 2014



UNIVERSITY
OF THE YEAR
WHATUNI STUDENT
CHOICE AWARDS 2020





Welcome

Welcome to the Department of Computer Science at Loughborough University.

The Department of Computer Science is committed to delivering inspiring teaching and cutting-edge research at the forefront of technological innovation.

Founded in 1974, our department is one of the most well-established university computing departments in the UK – with a long track record of developing skilled and highly employable graduates, as well as a reputation for research and industry engagement.

Making use of our excellent facilities (including a designated MSc computer science laboratory supported by a team of systems specialists), you will also gain insights from the cutting-edge research of our academic staff and become part of a rich community that is research active and attracts staff, students and visitors from around the world.

Our postgraduate programmes have been developed in collaboration with a number of national and international partners to ensure they meet the needs of industry and provide students with the latest knowledge and skills sought by employers.

Industry partners not only inform the curriculum but also shape the way research and projects are conducted. Organisations such as BAE Systems, Jennic, Arqiva, Sure, Advantica, Toyota, Sensinode and Rolls-Royce have collaborated with the department to develop new ideas and solve the challenges facing industry today.

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Why choose Loughborough University?

As a postgraduate student at Loughborough University you will benefit from 24-hour exclusive access to state-of-the-art computer labs, including a dedicated MSc laboratory and support from a team of systems specialists.

Excellent facilities

The Department is based in the recently refurbished Haslegrave building and boasts excellent facilities including:

- Five general computer laboratories (180 computers) with 24-hour access for the exclusive use of our students and support from a team of systems specialists
- Four specialist lab facilities for student project work on robotics, networking, HCI and imaging technology
- Online access to lecture material and study resources via the University's Virtual Learning Environment (LEARN) – available from anywhere in the world
- Study rooms and seminar rooms

Visual Paradigm supports Loughborough University with the use of UML tools, BPMN tools and agile story mapping tools, under the Academic Training Partnership.

As a Loughborough student you will also enjoy access to the full range of first-class University resources, including our extensive campus library, the one-to-one support of our Mathematics Learning Support Centre, and the student support services and amenities across our superb 440-acre campus, including our renowned facilities for sport.

Equality and diversity in STEM

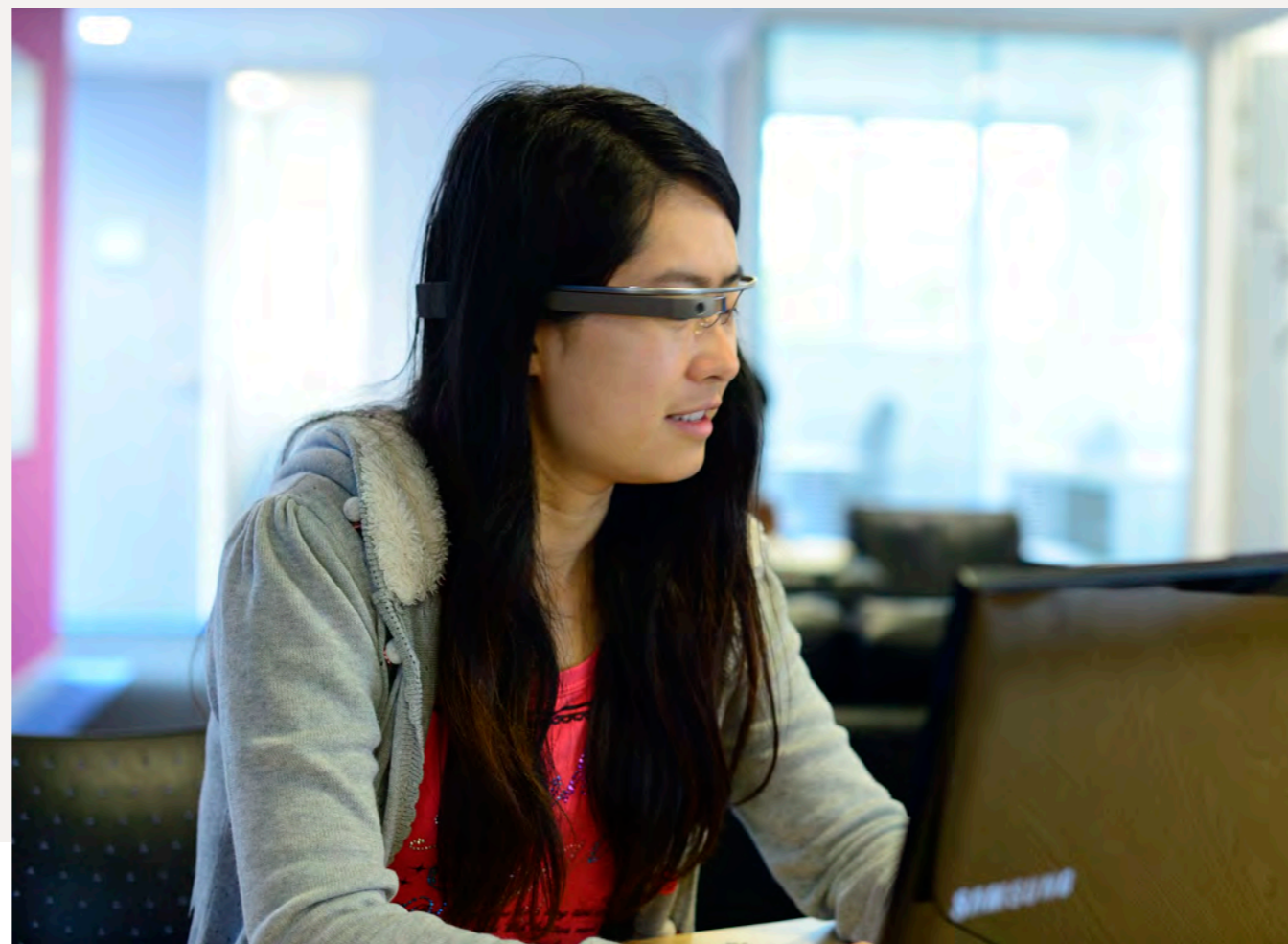
The School of Science is committed to creating a diverse and inclusive working, learning, social and living environment that enables students to achieve their potential and which celebrates and encourages diversity. Our aim is to maximise opportunities for all.



DEDICATED MSC LAB
AND SPECIALIST LABS TO
SUPPORT RESEARCH



PROGRAMME
CONTENT INFORMED
BY INDUSTRY



“The courses Loughborough University provides are very practical and cutting-edge. It helps you to easily and smoothly switch your role from a student to an employee.”



Maximising your career prospects

Our Department of Computer Science is committed to helping you develop the skills and attributes you need to progress successfully in your chosen career.

With module content influenced by industry, and specialist equipment supporting experiential learning, our MSc programmes are designed to support future careers in both industry and academia, while also developing highly transferable personal skills in teamwork, communication, and project management.

Graduates of our programmes have been able to enter a diverse range of organisations including Atos, British Sugar, Nomura, PwC, and Sophos.

Supporting you

Studying a postgraduate qualification is not just about your academic programme or area of research. It is also about developing the right skills and experiences to reach your future career goals.

Our University Careers Network can help you with one-to-one advice and drop-ins with professional careers consultants, workshops on career planning and job hunting, links to thousands of job vacancies and internships, practice job interviews and assessment centres, and access to specialist support for international students.

For more information: lboro.ac.uk/careers



Our international students

Loughborough University has a community of more than 2,000 international students from all over the world. In the Department of Computer Science you will join a diverse team of postgraduate students from outside of the UK and EU.

The Department attracts students from across the globe, including from Europe, Asia, the Middle East and Africa, and international students at Loughborough can expect to receive excellent support services from the University, International Office and Loughborough's award-winning Students' Union.

Supporting your application

Loughborough University has a dedicated International Office to give you support and advice on applying to us. This can be done by email, telephone, or even in person – our International Office staff visit more than 30 countries each year. Further information about these visits can be found at lboro.ac.uk/international/visits

Additionally, we have a number of international advisers and representatives in many countries around the world, details of which can be found at lboro.ac.uk/international/agents

English language, study skills and orientation

Loughborough University has its own Student Advice and Support Service (SASS), which runs a number of courses designed to help you improve your English. So, whether you wish to boost your confidence in using the language, improve your study skills, or want an introduction to living and learning at Loughborough, the SASS offers bespoke courses to help you.

The university's International Office holds a residential induction week for international students immediately before the start of the academic year. It provides practical information about living and studying in Loughborough, and allows you to meet fellow students and settle into your new environment before starting your studies.

More information can be found at lboro.ac.uk/international

Pre-session English language courses

The Pre-Sessional Courses are for international students who have not yet reached the required level of English for their chosen academic course at Loughborough University.

If you have an offer for a Loughborough University degree programme but have not yet achieved the minimum English language requirements, you may be eligible to join one of our pre-sessional courses.

We also deliver programmes that are suitable for students who may have achieved the minimum English language requirements but who wish to prepare more fully for their studies. Please contact our team for advice on the best course for you.

lboro.ac.uk/services/alss/pre-sessional-courses

Supporting international students

Loughborough Students' Union strives to provide the very best experience for international students and encourages you to get involved by engaging with their Global Development Officer and Global Committee.


Throughout the year the Students' Union puts on a number of social and cultural events for international students to get involved in, including trips to popular tourist destinations in the UK and abroad, sporting activities, cultural celebrations, opportunities to teach local communities about international cultures and an annual International Day.

The Global Development Officer and the Global Committee are there for you to voice your ideas and opinions to both the University and the Students' Union.

Web chats for prospective students

We also understand that studying in a foreign country away from your family and friends can be a daunting, yet exciting experience. Online web chats provide you with the opportunity to have your questions answered by staff from our International Office as well as academic staff and current students. Previous chats have focused around a range of topics including postgraduate study options, making a visa application, an introduction to Loughborough, accommodation, in addition to country-specific chats.

For a full list of scheduled web chats visit: lboro.ac.uk/international/web-chat

 1300+ POSTGRADUATE STUDENTS FROM ALL OVER THE WORLD

 FREE AIRPORT COACH SERVICE FROM LONDON HEATHROW TO THE UNIVERSITY

 INTERNATIONAL QS STARS SCHEME 2020 FIVE-STAR PLUS RATING

Shuilin

Department of Computer Science graduate

“The Computer Science department provides really nice devices and computers to support our studies.”



Advanced Computer Science

MSc

Full-time length: 1 year

Part-time length: 2 years

Entry requirements

A 2:2 honours degree or equivalent international qualification in computer science or a related discipline which includes basic programming and networking.

See full entry requirements online.

The School reserves the right to vary the list of all modules.

Our Advanced Computer Science MSc has been developed with input from UK and international organisations to equip students with the cutting-edge practical skills sought by employers.

The fast-paced field of computer science – and the needs of industries and organisations that are driven by technological development – creates a demand for highly-skilled individuals possessing the advanced skills and knowledge with which our MSc programme is designed to equip you.

Drawing on the Department’s research strengths, the Advanced Computer Science MSc will appeal to students seeking to build on a first degree in Computer Science or comparable discipline involving programming and networking. It will develop your professional skills and allow you to specialise in areas such as image processing, multimedia, artificial intelligence, robotics, and theoretical computer science.

Modules

Semester 1

Advanced Programming; Building Secure Networks; Computer Vision and Embedded Systems; Project Preparation.

Semester 2

Cryptography and Secure Systems; Robotics and Intelligent Systems; Wireless Networks; Research Methods; Research Project.

Learning, teaching and assessment

You will be taught through a range of lectures, seminars, presentations, tutorials and computer-based self-managed materials, in combination with laboratory exercises. You will be assessed by a combination of exams, coursework, class presentations and a dissertation on an agreed topic.

Career prospects

Our graduates have gone on to pursue rewarding careers within a wide variety of organisations including Atos (software development), Sophos plc (network and security engineering) and ESOS Ltd (web development).

Doug

Department of Computer Science graduate

“The course, staff and the whole department have opened the door for me to work on the cutting edge of this exciting industry, for which I will always be grateful.”



Artificial Intelligence

MSc

Full-time length: 1 year

Part-time length: 2 years

Entry requirements

A 2:2 honours degree or equivalent international qualification in computer science or a related discipline which includes basic programming and networking.

See full entry requirements online.

The School reserves the right to vary the list of all modules.

Our master's in Artificial Intelligence has been developed with input from UK and international organisations to equip you with the cutting-edge practical skills sought by employers across a range of sectors.

Artificial Intelligence (AI) is rapidly changing the world and the advances being made in this fast-paced field of computer science creates a demand for highly-skilled individuals possessing the skills and knowledge with which our MSc programme is designed to equip you.

Drawing on the Department's research strength, our MSc Artificial Intelligence will appeal to students seeking to build on a first degree in Computer Science by specialising in the quickly evolving fields of AI, data mining and machine learning – areas that are already having a profound impact in everything from business and finance to health and the environment.

Modules, reflecting the expertise of our academic staff, will enable you to develop your professional skills and specialise in such areas as image processing, artificial intelligence, robotics and data science.

Our strong links with industry put us at the forefront of technological development. Our research not only informs the curriculum, but also provides opportunities to work on collaborative projects with industry partners.

Modules

Semester 1

Programming for Specialist Applications; Artificial Intelligence; Robotics and Intelligent Systems; Applied Machine Learning.

Semester 2

Project Preparation; Data Mining; Computer Vision and Embedded Systems; Research Methods; Artificial Intelligence Project.

Learning, teaching and assessment

You will be taught through a range of lectures, seminars, presentations, tutorials and computer-based self-managed materials, in combination with laboratory exercises. You will be assessed by a combination of exams, coursework, class presentations and a dissertation on an agreed topic.

Career prospects

This was a new programme for 2020 so no graduate data is available as yet. However graduates of from the Department of Computer Science have gone on to enjoy careers within a diverse range of organisations, including Google, Credit Suisse, Ocado, Rolls-Royce, Winton Capital and AVG Technologies, and in a wide variety of roles, such as software development, network security, and systems engineering.

Dr Georgina Cosma

Programme Director, MSc Data Science

“The programme draws on our research specialisms in machine learning, artificial intelligence, computer vision, and data science and analysis.”



Data Science

MSc

Full-time length: 1 year

Part-time length: Coming soon

Entry requirements

A 2:2 honours degree (or equivalent international qualification) in any discipline (except computer science).

See full entry requirements online.

The School reserves the right to vary the list of all modules.

Our MSc conversion programme in Data Science offers an excellent solution for graduates from varying academic and professional backgrounds who now seek to up skill to support their career aspirations in data science, data analysis, data management or data stewardship.

Designed in collaboration with industry partners and supported by funding from the Office for Students (OfS), our new MSc Data Science conversion programme has a distinctive focus on problem-based learning and offers modules designed to support your career goals and aspirations. Programme content is focused not only on fundamental data science but also on design thinking and innovation, data governance, ethics and data analysis.

This unique master's offers an excellent solution for graduates wishing to upskill to support their career aspirations in data science, pursuing roles in data analytics, management and stewardship. It is suitable for students from industry, including those who come from managerial, leadership and information administration posts and who wish to upskill in to enter the world of data science. The programme also appeals to science graduates and those from the social sciences (eg criminology, economics, public health and psychology), life sciences (eg biological and biomedical sciences) and applied sciences (eg engineering and medicine) who wish to learn how to analyse data or who wish to understand the world of data science from a business perspective.

The programme is designed for students who do not have a first degree in computer science (those who do may wish to consider our MSc Artificial Intelligence or our MSc Advanced Computer Science). We would however consider applications in their own merit, so we encourage anyone to get in touch.

You can tailor your degree by selecting modules from complementary STEM and non-STEM pathways depending on your academic/professional background and career goals.

Modules

Core modules:

Introduction to Data Science; Programming for Data Science; Data Governance and Ethics; Research Methods; Data Science Project.

STEM pathway modules:

Applied Machine Learning; Data Mining; Statistical Methods and Data Analysis.

Non-STEM pathway modules:

Building Data-driven Strategy; Design Thinking for AI-driven Services; Stories as Data: Storytelling Approaches for Decision Making; Artificial Intelligence and Big Data.

Learning, teaching and assessment

You will be taught through a range of lectures, seminars, presentations, tutorials and computer-based self-managed materials, in combination with laboratory exercises. You will be assessed by a combination of exams, coursework, class presentations and a dissertation on an agreed topic.

Career prospects

This was a new programme for 2020 so no graduate data is available as yet. The kinds of positions we would anticipate graduates of this programme gravitating towards would include roles in analytics engineering, big data engineering and business intelligence, and as data architects, data analysts, data scientists and statisticians.

David

PhD

“It’s a great campus with some excellent facilities and there are plenty of opportunities for networking. I like being more involved in the day-to-day workings of the university and it’s always interesting to meet other PhD students from completely different areas.”



Research degrees

PhD: 3 years full-time, 6 years part-time

Integrated PhD: 4 years full-time

MPhil: 2 years full-time, 4 years part-time

Entry requirements

A 2:1 honours degree or equivalent international qualification or equivalent experience in an area related to computer science

See full entry requirements online.

The School reserves the right to vary the list of all modules.

The Department’s research continues to have a high-profile impact in diverse areas of Computer Science that condense into our three main themes: Vision, AI, Autonomous and Human-Centred Systems (VAAH), Networks and Systems (NetSys) and Theoretical Computer Science (TCS).

As a PhD student in the Department of Computer Science you will have the exciting opportunity to make a valuable contribution to the rapidly growing sector. Here at Loughborough University we have a talented research community focussed on areas such as wireless communications, multimedia, logistics, healthcare and the environment.

Our postgraduate students join a vibrant team that not only prides itself on research but also offers a varied programme of seminars with both internal and external speakers, organised social activities and opportunities for research skills training and networking.

If you can’t find a suitable PhD project that fits your interests and experience from our advertised opportunities, you can submit a research proposal to the Department of Computer Science to find a supervisor who will work with you on your project.

Our areas of research

Vision, AI, Autonomous and Human-centred Systems

This research theme focusses on both the theoretical and application aspects in artificial intelligence, computer vision, robotics and autonomous systems, machine-learning, bio-inspired AI, pattern recognition, embedded intelligence, image processing, as well as HCI and human factors.

Networks and Systems

Our research focusses on all aspects of networking and communicating systems, and addresses specific issues related to the internet and control, wireless sensor networks, network performance modelling and measurement, performance evaluation with Quality of Service constraints, and application performance investigation.

Theoretical Computer Science

This research covers a wide range of established and emerging fields in Theoretical Computer Science, including mathematical logic, formal languages, computability and complexity theory, numerical analysis, cryptography, geometric computation, algorithmic learning theory, and energy efficient scheduling.

For more information visit our website:

lboro.ac.uk/study/postgraduate

**TOP
10** IN EVERY UK
UNIVERSITY
LEAGUE TABLE

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This brochure was written several months in advance of the academic year to which it applies (2021). Every effort has been made to ensure that the information contained within is accurate at the time of publishing, but updates (for example to course content) are likely to occur due to the time between publication and the course start date. It is therefore important to visit our online prospectus at www.lboro.ac.uk/study before applying to check for any updates, as this will be the most up-to-date repository of information.

