Academic year
2025/26 entry

Cranfield University

Postgraduate master's courses in

Artificial intelligence, autonomous systems and robotics

Advanced Air Mobility Systems MSc
Applied Artificial Intelligence MSc
Autonomous Vehicle Dynamics and Control MSc
Robotics MSc

Cranfield University

Our reputation

We are the UK's only specialist postgraduate university in technology and management, with longstanding relationships with some of the most prestigious global companies. Our close collaboration with industry, and passion for the areas we operate in, will help your career.

Specialist postgraduate
A research-focused professional community.

We work with over
1,500
businesses and governments based in over **40 countries.**

Over £150m
of investment in new facilities over the past five years.

5,000+
postgraduate students from 100+ countries.

A network of
80,000+
alumni, from 170+ countries.

As we are postgraduate only, we are not listed in many league tables that help compare undergraduate universities.

What our alumni say

"I wanted to fill my knowledge gaps and improve my understanding of the applied aspects of AI in the physical world with all of the challenges that come with that. This MSc has done exactly that. It aligns strongly with the needs of aerospace, defence, and the automotive sectors where there are significant benefits to the application of AI but also significant pitfalls that must be understood and avoided. My Cranfield MSc experience has been truly rewarding and insightful."

Nick Colosimo,
Lead Engineer – Future Combat Air System,
Global Engineering Fellow, BAE Systems,
(Applied Artificial Intelligence MSc 2021)

Reasons to study **artificial intelligence, autonomous systems and robotics** with us

1 **Focused learning environment**
Cranfield University encourages a mature, focused and stimulating learning environment, attracting a diverse international student body.

2 **Industry links**
You will have regular contact with industry through group and individual project work as well as guest lectures from partner organisations. Courses are regularly reviewed by an advisory panel of leading professionals from industry to ensure the content is relevant and meets the expectations of employers.

3 **Learning from the best academics**
We attract top-quality staff from across the world that are involved in relevant projects in the area of Applied AI such as HumanDrive – the longest autonomous journey in the UK – or autonomous inspections with unmanned aerial vehicles (UAVs) and computer vision.

4 **Excellent facilities**
You will have access to state-of-the-art equipment, tools and research facilities, including our high-performance computing centre, with dedicated high-end graphics processing unit (GPU) nodes, workstations for GPU-accelerated training of deep learning models and hands-on experience on NVIDIA Jetson embedded boards.

5 **Networking opportunities**
Our industry advisory panel members propose all individual research projects and attend our project presentations. This provides an excellent opportunity for you to work on industry-relevant problems, meet employers and forge valuable links and contacts for career development purposes.

6 **Opportunities for further study**
Some of our graduates go onto PhD degree programmes, often addressing specific, live topics agreed with employers or industry.

Top: A student working on a UAV in a lab.

Courses

Artificial intelligence (AI), autonomous systems and robotics are transforming industry and creating new opportunities for innovation and growth. From manufacturing to healthcare, from education to entertainment, AI and robotics are enhancing productivity, quality, and efficiency.

Modules are listed in the order they are delivered.

Advanced Air Mobility Systems

www.cranfield.ac.uk/AdvAirMobility | **Full-time/Part-time** | **MSc**

The Advanced Air Mobility Systems MSc is designed to equip you with the skills required to pursue a successful career in transforming the aviation industry, applying the knowledge learned to introduce new automated and autonomous solutions, to enable a safe, orderly and expeditious integrated airspace, where uncrewed aerial systems operate alongside crewed aircraft.

Compulsory modules

- Introduction to Advanced Air Mobility,
- Statistical Learning Methods,
- Air Traffic Management Systems,
- Communications Systems,
- Uncrewed Traffic Management,
- Data Analytics and Visualisation,
- Artificial Intelligence for Autonomous Systems,
- Guidance and Navigation for Autonomous Systems.

Applied Artificial Intelligence

www.cranfield.ac.uk/aai | **Full-time/Part-time** | **MSc**

Artificial intelligence technologies are being increasingly adopted across a broad range of industries, creating demand for talented graduates who can help realise the transformative potential of AI. With a fundamental interest in AI, machine vision and computer sciences, you will have the desire to apply this knowledge to solve real-world engineering problems.

Taught through a unique combination of theoretical and practical-based sessions you will cover subjects in logic and reasoning, data analytics, deep learning, agent architectures, alongside the broader systems engineering and ethical considerations required for implementation in real-world systems.

Compulsory modules

- Statistical Learning Methods,
- Search and Optimisation,
- Deep Learning for Computer Vision,
- Intelligent Cyber-Physical Systems,
- Data Analytics and Visualisation,
- Deep Learning for Autonomous Decision Making,
- Logic and Automated Reasoning,
- Ethical, Regulatory and Social Aspects of AI.

Accredited by: bcs The Chartered Institute for IT

Autonomous Vehicle Dynamics and Control

www.cranfield.ac.uk/AutonomousVehicleDC	Full-time	MSc

Students on this course benefit from a distinct educational experience and unique facilities, including our drone laboratory, allowing you to gain hands-on experience in the development of the autonomous flight systems and technologies of tomorrow. The course content has been designed based on advice and industry insights from our industrial advisory panel and is accredited by the Royal Aeronautical Society (RAeS) on behalf of the Engineering Council as meeting the requirements for Further Learning for registration as a Chartered Engineering.

Compulsory modules

- Unmanned Aircraft Systems (UAS) Dynamics and Control,
- Aerial Communications Systems,
- UAS Modelling and Simulation,
- Sensor Fusion,
- Autonomous Vehicle Control Systems,
- Artificial Intelligence for Autonomous Systems,
- Guidance and Navigation for Autonomous Systems,
- Logic and Automated Reasoning.

Accredited by: Royal Aeronautical Society

Robotics

www.cranfield.ac.uk/robotics	Full-time/Part-time	MSc

Cranfield is proud to be at the front of technology and we understand robots are becoming ubiquitous in industrial environments as well as in everyday life. Industries like automotive, oil and gas, aerospace, and energy, have significant future growth for robot deployment.

This course will improve your employment prospects by providing you with relevant theoretical knowledge and practical skills to become robotics engineers and experts in robotics, and to meet the rising global demands. It is unique in its focus on human aspects supported by practical applications.

The course provides insight into multiple application domains for intelligent and autonomous robot systems including industry, hazardous environments, healthcare, domestic/assistive robotics, and autonomous vehicles.

Compulsory modules

- Fundamentals of Robotics,
- Robotics Control,
- Artificial Intelligence and Machine Learning for Robotics,
- Programming Methods for Robotics,
- Psychology, Ethics and Standards,
- Human-Robot Interaction,
- Machine Vision for Robotics,
- Autonomy in Robotic Systems.

Accredited by: Institution of Mechanical Engineers

The compulsory and (where applicable) elective modules offered for the 2024-25 academic year are shown to give you an indication of the current course content. To keep our courses up-to-date, relevant and for practical purposes, modules may be subject to change from cohort to cohort; please check our website for the latest information.

Course **structure**

Our specialist, sector-focused master's courses are set up and developed in close collaboration with industry partners, ensuring the content of our courses remains industry-relevant and employers are impressed with our graduates' business-readiness.

This diagram illustrates the standard course structure for our master's programmes. Please check your course structure online for more detailed information.

Taught programme

An intensive learning experience providing the knowledge you need to excel in your specialist field.

Group project

The ability to understand how your part of a project affects the whole, giving you **a head start for the world of work.**

Individual project

An opportunity to think and work in an original way. For example, this could be working on a project for a university partner, delving deeper into an area of specific interest or a real-world challenge in the sector you want to work in.

Group projects

Some recent projects include:

- BAE Systems UAV Swarm Challenge,
- Projects offered by Kaggle, Amazon and Hackatons,
- Enhancing Airport Safety Using Crowd Monitoring and Social Distancing Analysis,
- Creating Explainable Interfaces for Autonomous Flight.

Industry **links**

Cranfield has unrivalled links with industry, and you will benefit from our extensive contacts and track record of close collaboration with decision-makers in your chosen sector.

These benefits range from the various high-profile guest speakers we are able to attract, to the ability to network with future employers at our group presentation days and careers fairs held on campus.

Industrial advisory panel

Our courses are directed by an industry advisory panel who meet twice a year to ensure they provide the right mix of hands-on skills and up-to-date knowledge suitable for the wide variety of applications that this field addresses.

Companies represented on the panel include Airbus Defence and Space, BAE Systems, Barnard Microsytems, BioCarbon Engineering, Blue Bear Systems, Boeing, Callen-Lenz, General Atomics Aeronautical Systems, Jaguar Land Rover, Lockheed Martin, Mass, MBDA, Rolls-Royce, Spirent, Thales, THHINK Wireless Technologies, United Technologies Research Centre, QinetiQ.

Careers

Our alumni can be found around the world in leading roles. Here are a few examples of the roles our alumni have secured in recent years:

Roles:
- Applied Machine Learning Engineer,
- Big Data/Software Engineer,
- Data Scientist,
- Expert Analyst,
- Machine Learning Engineer,
- Power Electronics Engineer,
- Research Scientist,
- Robotics and Automation Research and Development Engineer.

Organisations:
- Airbus,
- BAE Systems,
- Google,
- Huawei,
- Jaguar Land Rover,
- MBDA,
- Mercedes-AMG Petronas Formula One Team,
- Rolls-Royce.

Read more on our website
www.cranfield.ac.uk/careers

Academic **staff**

You will be taught by a wide range of subject specialists at Cranfield and from industry, who draw on their research and industrial expertise to provide stimulating and relevant input to your learning experience.

The list of academics below represents a small proportion of our staff; we also have a large number of highly-experienced guest lecturers.

Dr Gilbert Tang,

Senior Lecturer in Robotics

www.cranfield.ac.uk/gtang

Gilbert has been conducting robotics research at Cranfield University for over 13 years, particularly related to large-scale robot system development, intuitive human-robot interface, human-robot collaboration, and service robotics.

Professor Phil Webb,

Head of the Centre for Robotics and Assembly

www.cranfield.ac.uk/pfwebb

For the last 25 years Phil has been conducting research into the application of advanced robotics automation to aircraft and aero-engine structural assembly. He has served as an elected Council member of the British Automation and Robot Association and has acted as the UK representative to the International Federation of Robotics.

Dr Yang Xing,

Senior Lecturer in Applied Artificial Intelligence for Engineering

www.cranfield.ac.uk/yxing

Yang's research interest focuses on artificial intelligence, deep learning, computer vision, human-autonomy collaboration, and autonomous vehicles.

Professor Argyrios Zolotas,

Professor of Autonomous Systems and Control

www.cranfield.ac.uk/azolotas

Argyrios is an expert in Autonomous Systems and Control, with several years of experience in researching and developing engineering applications for dynamically complex systems in the transportation and aerospace industries. He is a Senior Member of the Institute of Electrical and Electronics Engineers (IEEE), and a Fellow of the Higher Education Academy (HEA/Advance HE).

Key facts and statistics

Course information

Full-time
One year.

Part-time
Two to three years. See the individual course webpage for more information about part-time study.

Start date
September.

Award
MSc.

Fees
Please see the individual course pages on our website for full fee information and full-time or part-time options. Terms and conditions apply. See **www.cranfield.ac.uk/fees**

Cohort profile*

Geographic spread
28% UK.
72% International.

Average cohort age
20–29.

Average cohort size
20.

Gender
84% Male.
16% Female.

*These figures give an indication of the cohort make-up at registration for Applied Artificial Intelligence MSc, Autonomous Vehicle Dynamics and Control MSc and Robotics MSc, for the entry year 2023-24.

"My previous experience and my passion for robots enabled me to hunt for a university that provides a master's degree which is research-intensive and industry-orientated in the field of robotics. I found Cranfield University, which is renowned for its intensive research. Cranfield University have a great heritage in aerospace, and they have also highly-skilled professors in the field of human robot interactions."

Raviteja Burugu,
current student, (Robotics MSc)

Useful **information**

Financing your studies

Whether you are a UK-based or international student, we provide information, advice and a range of online tools to help you put together the funding package you need. Take a look at our funding finder which provides a searchable database of sources of financial support. We also offer bursaries for high quality applicants. Visit our website where we provide a range of additional sources of potential funding and helpful organisations and contacts for information, advice and guidance.

Learn more at **www.cranfield.ac.uk/funding**

More than a degree with the **Cranfield Enhance programme**

Cranfield graduates are valued for their distinctive skills and capabilities. We have developed these programmes to complement and enhance what you learn on your chosen qualification. On the Cranfield Enhance programme, you will be able to earn 'digital badges' in areas such as employability and entrepreneurship to showcase your new skills to prospective employers.

Read more at **www.cranfield.ac.uk/enhance**

"Cranfield allowed me to gain knowledge in an exceptionally specialised topic, relevant to today's rapidly developing aerospace industry. It was a rewarding experience to conduct research. Our innovative group project concerned drone swarm solutions. My individual thesis project was industry supported. Equally important was the environment. Immensely international and open-minded with people from all around the world, from whom I had a chance to learn and make long lasting friendships."

Aleksandra Marciniak,
Systems and Software Engineer, Rolls-Royce,
(Autonomous Vehicle Dynamics and Control MSc 2021)

Life at **Cranfield**

A welcoming, professional campus community.

Explore our University

You can personalise your virtual visit to our campus by choosing the subject area you are interested in on our interactive tool:

virtualexperience.cranfield.ac.uk

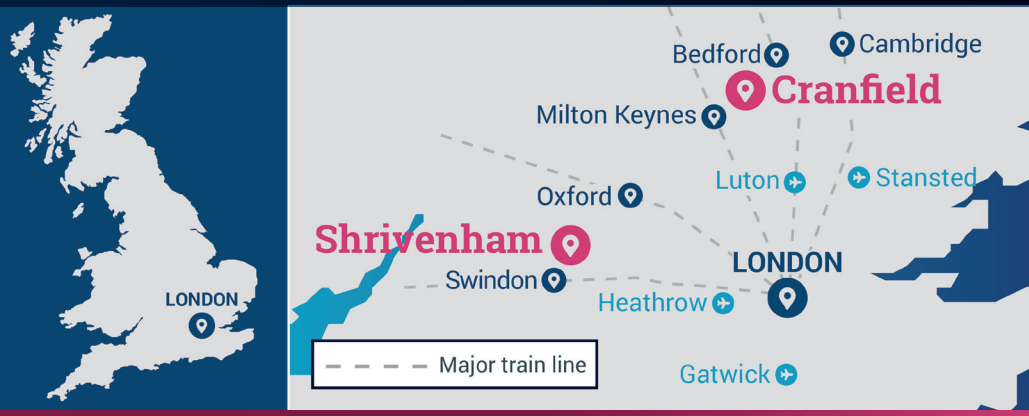
How to **apply**

Read more about our entry requirements and how to apply at **www.cranfield.ac.uk/apply**

Our **location**

Located just over an hour from London in the English countryside, Cranfield's campus environment supports close, working relationships between our multinational postgraduate students and academic and industry experts.

www.cranfield.ac.uk/visit



www.cranfield.ac.uk/computing-ai

Our sector study areas:

Aerospace,
Defence and Security,
Energy and Sustainability,
Environment and Agrifood,
School of Management,
Manufacturing and Materials,
Transport Systems,
Water.

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For a full list of Cranfield courses, please see our prospectus and website.

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