

The Professorship of Control Engineering (2023)

Department of Engineering

Closing date: 30 September 2023

Job Reference: NM37129



Professorship of Control Engineering (2023)

Background to the role

The University wishes to appoint to the Professorship of Control Engineering (2023) a candidate with an outstanding research record whose work is in the control systems field.

As a senior member of the academic staff, it is anticipated that the appointee will take on leadership of the Control Group, contributing to the strength of its research activities, overseeing lab organisation, strategic direction and day-to-day running of the group. The Cambridge Control Group has flourished since being established in the 1950s by J.F. Coales, with chaired Professors A.G.J. MacFarlane, K. Glover, R. Sepulchre. Current faculty in the group are M.C. Smith (Head of Group), R. Sepulchre, G. Vinnicombe, I. Lestas, T. O'Leary, F. Forni and S. Bakshi, with J.M. Maciejowski and K. Glover (professors emeritus). The group has been well funded in recent years including three substantial ERC grants and industrial collaborations with McLaren, Ford, The MathWorks and others. The group is seeking to maintain and enhance its reputation for research leadership in the control systems field and is seeking a candidate who will continue to invigorate the breadth and quality of this research. Applications for the post from under-represented groups is particularly encouraged.

Standard Duties

1) Teaching and research

The Professor will be required to deliver lectures and give instruction in the control

systems field and in particular to perform the following duties:

- i) to lecture and hold classes as appropriate to an equitable teaching workload allocation,
- ii) to undertake original work and the general supervision of research and advanced work in their subject and as appropriate in the broad area of engineering, and to assist students in their studies by supervision or informal instruction.

2) Examining

The Professor will be required to undertake such university examining as may be required by the relevant Faculty Board or comparable body.

3) Supervision

The Professor will be required to act as the supervisor of graduate students as and when requested.

4) Administration

Administrative duties are shared equitably among the teaching members of the Faculty. Professors are expected to play significant roles from time to time on the Faculty Board and Faculty Committees dealing with such matters as academic and other appointments, admission of graduate students, research and teaching assessments, the libraries and computing arrangements. They are also encouraged to accept appointment to University Committees.

Person Specification

Candidates will be considered for the Professorship on the basis of the following selection criteria, which you should address in your application.

Criteria	Essential	Desirable
Education		
An outstanding research record of international stature in control engineering.	✓	
The vision, leadership experience and enthusiasm to build on current strengths in maintaining and developing a leading research presence, and an established record in attracting research grant support to further this development.	✓	
The ability to further the academic planning and strategic development of control engineering in the University and, where appropriate, to facilitate its development within the UK.	✓	
The ability to manage and interact effectively with staff and students at all levels.	✓	
The desire and ability to undertake leadership roles in the Department.	✓	
A commitment to fostering and promoting an inclusive, diverse and supportive work environment and research culture.	✓	
An enthusiastic commitment to the recruitment, training and mentoring of the next generation of researchers, including undergraduates, research students, and postdoctoral research fellows	✓	
Candidates will hold a PhD or equivalent postgraduate qualification.	✓	

The Department of Engineering



The Department of Engineering is one of the leading centres of engineering in the world. Renowned for both its teaching and research, the Department's aim is to address the world's most pressing challenges with science and technology.

About the Department

Since its foundation in 1875, the Department of Engineering has grown to become the largest department in the University and the largest integrated engineering department in the UK, with nearly 200 academics and principal investigators, nearly 400 contract research staff and research fellows, 900 graduate students, and 1200 undergraduates.

The University performed strongly in REF 2021. The Department of Engineering submitted to the General Engineering Panel, in conjunction with Chemical Engineering and Biotechnology and

Materials Science and Metallurgy. We achieved a perfect score for our world-leading environment and the overall percentage of activity rated “world-leading” or “internationally excellent” was 99% – the highest score for any University submission to the General Engineering Panel.

Division of Information Engineering

The position falls within the Control Group of the Information Engineering Division of the Department of Engineering (Division F).

Division F is one of six academic Divisions in Engineering, with the others being: (A) Energy, Fluid Mechanics, and Turbomachinery; (B) Electrical Engineering; (C) Mechanics, Materials and Design; (D) Civil Engineering and (E) Manufacturing and Management.

The Department operates as a single entity, and research collaboration across the Divisions is encouraged and expected.

The Information Engineering Division's research focuses on the generation, distribution, analysis and use of information in engineering and biological systems. As such, it straddles the boundary between traditional Computer Science and Engineering Departments.

The Division is organised into four main research Groups: Machine Intelligence Laboratory; Computational and Biological Learning Group; Signal Processing and Communications Group; Control Group. The Machine Intelligence Laboratory leads research in the areas of speech recognition systems, computer vision, bio-robotics and medical imaging. The Computational and Biological Learning Group uses engineering approaches to understand the brain and to develop artificial learning systems. The Signal Processing and Communications Group performs a wide range of signal and image processing projects with diverse application areas.

Division F currently has around 220 members, including 16 Assistant and Associate Professors, 16 Professors, 7 academic-related staff, 30 research staff (predominantly research associates), 125 post-graduate students, 43 taught MPhil students, 7 support staff and 30 official visitors. It is led by Professor Simon Godsill.

Control Group

The Control Group carries out research which ranges from fundamental theory through to applied control. Some areas of recent emphasis include: control of constrained systems; model-predictive control; optimisation; control of large scale networks of interacting agents; nonlinear control systems; modelling and control of mechanical networks; control of power systems and smart grids; bio-inspired robotics; modelling and analysis of neural behaviours; biological applications of control and systems theory; synthetic biology; applications of advanced control and systems methods to challenging applications in the automotive, aeronautic, energy and IT sectors. The Control Group is noted for its collaborations within and beyond the Department of Engineering.

Teaching

Almost all undergraduates in Engineering take a 4-year course leading to the MEng degree. The Engineering Tripos (Course) at Cambridge consists of four parts. Part IA and Part IB examinations are taken by all students at the end of the first and second years respectively. Part IIA and Part IIB examinations, taken by about 80% of students, are at the end of the third and fourth years respectively. The remainder of students take the Manufacturing Engineering Tripos, Management Studies Tripos or the Chemical Engineering Tripos.



At the Part I undergraduate level, courses cover the foundations of engineering common to all of the main disciplines. At the Part II level, the courses are modular and become more specialised, especially in the 4th year where courses often include aspects of current research. In the 4th year, students also do a major project and all staff are expected to propose and supervise projects. These can range from software development and basic experimentation through to mini-research projects.

The teaching responsibilities associated with this post lie across all four years of the undergraduate course, contributing to undergraduate courses, laboratory coursework, student projects, examining and supervising of post-graduate students. Teaching duties are reviewed annually to ensure a fair allocation of load.

Further details about the Divisions and the Department can be found on the Departmental website (www.eng.cam.ac.uk).

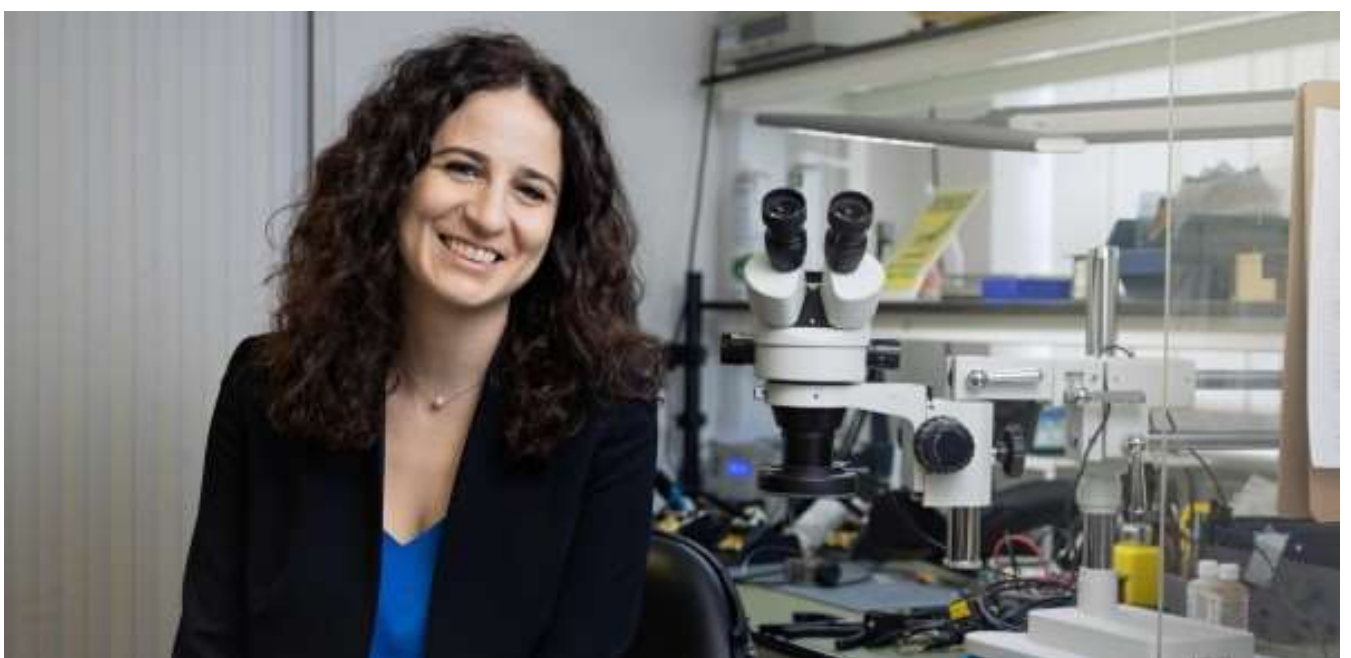
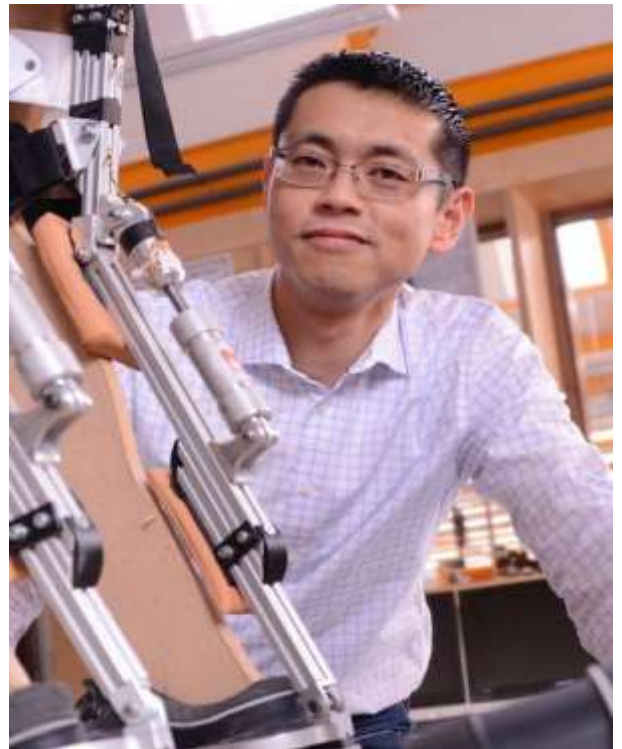


The School of Technology

The Department of Engineering is part of the School of Technology, one of six Schools in the University. The School institutions are: the Department of Engineering, the Department of Chemical Engineering and Biotechnology, the Department of Computer Science and Technology, the Judge Business School and the Cambridge Institute for Sustainability Leadership.

The mission of the School of Technology is to provide a focus and framework for its constituent Departments to formulate and express views pertinent to technology, methods and processes, both within and outside of the University, recognising that technology has its own priorities and its own criteria for success: above all, technology Departments recognise a duty to influence and be influenced by society at large and to work towards the creation of wealth and an improved quality of life.

For further information please see <https://www.tech.cam.ac.uk/>



Terms of Appointment

All appointments to University Offices are subject to the Statutes and Ordinances of the University.

Salary

Salary on appointment will be determined by the Vice-Chancellor at an appropriate point on the University's salary spine for grade 12, taking into account the criteria for the respective contribution band.

Professorial salaries are reviewed periodically, on the basis of research, teaching and general contribution, by the Vice-Chancellor with the assistance of a small Advisory Committee.

Headship of the Department

Should a Professor be appointed to the Headship of a Department, a pensionable payment is made in addition to salary.

Recruitment Incentive

The University has a scheme whereby a single recruitment incentive payment may be made on appointment at the Vice-Chancellor's discretion.

Tenure

Appointments are to the retiring age for established academic positions.

Working Pattern

The appointment is full-time.

Annual leave

Subject to compliance with the Statutes and Ordinances relating to leave, full time officers are entitled in any holiday year to take a minimum of 28 days annual paid holiday. These periods are inclusive of public holidays that fall outside Full Term.

Sabbatical leave

Cambridge has a generous statutory provision for leave of absence of one term for every six terms of service. Academic staff use this opportunity for study and research.

Pension

You will automatically be enrolled to become a member of USS (Universities Superannuation Scheme), a defined benefits pension scheme. If you are already a member of the NHS Pension scheme, you may be eligible to continue in the scheme and should contact the Pensions section of the University:

www.pensions.admin.cam.ac.uk/

College membership

Membership of a College adds an important social and intellectual dimension which many of the University's academic community find attractive. Further details about a College Fellowships are set out below and more details about college membership are provided in a separate section of this document.

The Scheme for newly-appointed University Officers seeking a College Fellowship is set out at: <https://www.ois.cam.ac.uk/uto-scheme>

Residence

It is a requirement of the role that you are resident in the University during term-time. Further information can be found here, p. 679: <https://www.admin.cam.ac.uk/univ/so/pdfs/2020/ordinance11.pdf>



Removal Expenses

If the person appointed is not resident in Cambridge, a contribution from University funds will be made towards expenditure incurred in removal to Cambridge to take up a University office.

Consultancy Work

The University's policy on consultancy work is that consultancy arrangements must be entered into privately between the employee and the organisation concerned. The consultancy work must not interfere with the duties required of the officer under the officer's contract of employment with the University. Consultancy work is not covered by the University's insurances, even when the University has knowledge that such work is being done. The University must not be regarded as being directly or indirectly involved in any consultancy arrangement through the use of University letterheads, advice given or work done in the individual's capacity as an employee of the University. Individuals undertaking private or consultancy work are advised to take out personal insurance.

Alternatively, professional indemnity cover may be obtained by channelling private work through the University company Cambridge Enterprise Ltd. Anyone wishing to do so should, in the first instance, contact them at www.enterprise.cam.ac.uk.

College Fellowships

The great majority of Professors at Cambridge hold a fellowship of a college. Although election to a fellowship is a matter for an individual college, the University takes active steps to draw the attention of Heads of House to the names of those Professors eligible for election. The Scheme for newly-

appointed University Officers seeking a College Fellowship is set out at:

<https://www.ois.cam.ac.uk/uto-scheme>

General information

Pre-employment checks

Right to work in the UK - We have a legal responsibility to ensure that you have the right to work in the UK before you can start working for us. Accordingly, shortlisted candidates, whatever their nationality, will be asked to provide such evidence at an appropriate stage in the recruitment procedure. If you do not have the right to work in the UK already, any offer of employment we make will be conditional upon you gaining it.

Health Declaration - Offers of appointment made to prospective University officers whose work will fall within certain categories are conditional on the completion of a medical questionnaire and, if necessary, on a satisfactory health check by the Occupational Health Service. Only the person elected will be asked to complete the questionnaire, at the time of election.

References – References will be requested prior to the final meeting of the Board of Electors.

Please note: references are not required from your current employer.



Equal Opportunities

The University of Cambridge appoints solely on merit. No applicant for an appointment in the University, or member of staff once appointed, will be treated less favourably than another on the grounds of sex (including gender reassignment), marital or parental status, race, ethnic or national origin, colour, disability (including HIV status), sexual orientation, religion, age or socio-economic factors.

Equality, Diversity and Inclusion

We particularly encourage women and /or candidates from a Black, Asian and Minority Ethnic background to apply for this vacancy as they are currently under-represented at this level within our University.

Information if you have a disability

The University welcomes applications from individuals with disabilities. We are committed to ensuring fair treatment throughout the recruitment process. We will make adjustments to enable applicants to compete to the best of their ability wherever it is reasonable to do so and, if successful, to assist them during their employment. Information for disabled applicants is available at:

<https://www.hr.admin.cam.ac.uk/policies-procedures/disabled-applicants-and-members-staff>

We encourage you to declare any disability that you may have, and any reasonable adjustments that you may require, in the section provided for this purpose in the application form. This will enable us to accommodate your needs throughout the process as required. However, applicants and employees may declare a disability at any time.



Applicants wishing to discuss with or inform the University of any special arrangements connected with their disability can, at any point in the recruitment process, contact Dr Gosia Wloszycka, who is responsible for the administration of the recruitment process for this position, by email on: mw425@admin.cam.ac.uk

The University

The University of Cambridge is one of the world's oldest and most successful universities. We are a renowned centre for research, education, and scholarship that makes a significant contribution to society. The University is consistently ranked amongst the top universities in the world. Our affiliates have won more Nobel Prizes than any other University.

Our sustained pursuit of academic excellence is built on a long history of first-class teaching and research within a distinctive collegiate system. For eight centuries our ideas and innovations have shaped the world. Our principal goal is to remain one of the world's leading universities in an increasingly competitive global higher education sector. Today the University of Cambridge is at the centre of a cluster of over 4,300 businesses employing 58,000 people.

Our capital investment projects include the West Cambridge site, the North West Cambridge development and the growth of the Biomedical Campus in the south of the city. The North West Cambridge development includes the opening of a primary school – the first in the UK to be managed by a University. So we are deeply embedded in, and committed to serving, our local community. These are all conspicuous signs of a University that is not only adapting to new needs, but also anticipating the future.

Our mission is to contribute to society through the pursuit of education, learning, and research at the highest international levels of excellence. Our core values are:

- freedom of thought and expression; and
- freedom from discrimination.



About Us

The University is one of the world's leading academic centres. It comprises 150 faculties and departments, together with a central administration and other institutions. Our institutions, museums and collections are a world-class resource for researchers, students and members of the public representing one of the country's highest concentrations of internationally important collections.

The University has an annual income of £2 billion. Research income, won competitively from the UK Research Councils, the European Union (EU), major charities and industry, exceeds £500 million per annum and continues to grow.

The Colleges and the University remain committed to admitting the best students regardless of their background and to investing considerable resources both in widening access and financial support. The 31 Colleges are self-governing, separate legal entities which appoint their own staff. Many academic staff are invited to join a College as a Teaching Fellow, which provides a further social and intellectual dimension. The Colleges admit students, provide student accommodation and deliver small group teaching.

The University awards degrees and its faculties and departments provide lectures and seminars for students and determine the syllabi for teaching and conducting research.

Our instinct for seeking out excellence and setting up enduring and mutually beneficial collaborations has led us to establish strategic partnerships across the globe. Whether it is the successful Cambridge-Africa Programme involving universities in Ghana, Uganda and elsewhere on the African continent; or the close association with the government of India to pursue new research in crop science; or the creation, with Germany's Max Planck Institutes, of a Cambridge-based centre for the study of ethics, human economy and social change – international partnerships are now an inextricable part of the University's make-up.

“Cambridge graduates and researchers have made – and continue to make – a colossal contribution to human knowledge and the understanding of the world around us. Their work touches on the lives and livelihoods of everyone from patients diagnosed with life-threatening diseases, to residents of areas critically affected by climate change, to children growing up in conflict zones. It has a lasting impact on our society, our economy and our culture: the world is truly a better place thanks to their efforts.”

Stephen Toope, Vice Chancellor 2019



Working at the University

Working at Cambridge you will join a diverse, talented and innovative community, with more than 18,000 students and over 16,000 staff from all walks of life and corners of the world.

The University continually explores strategies to attract and retain the best people. It is committed to supporting its staff to achieve their best. We are a fair, diverse and inclusive society and we believe our staff are our greatest asset. There is strong commitment to developing institutional leadership and supporting and encouraging staff development at all levels.

We offer a variety of roles including academic, research, professional, managerial and support roles. We also offer extensive benefits and excellent learning opportunities within a stimulating working environment.

The University's estate is undergoing the most significant transformation in its history. Cambridge has been able to create a new science and technology campus to the west of the city centre, and is now expanding further to the north west of Cambridge including investing in affordable homes for University key workers and community facilities. Even with our continued development, the University remains within walking or cycling distance across the campus. The University is a major partner on the Cambridge Biomedical Campus and we continue to redevelop our historic city centre sites demonstrating our determination to ensure that we can offer the best facilities and opportunities for our staff and students.



Equality & diversity

The University has built its excellence on the diversity of its staff and student community. We aim to be a leader in fostering equality and inclusion, and in promoting respect and a sense of belonging for all. We encourage applications from all sections of society. All appointments are made on the basis of merit. We have an Equal Opportunities Policy, along with a range of diversity networks for women, black and minority ethnic and lesbian, gay, bisexual and transgender staff. More details are available here: <http://www.equality.admin.cam.ac.uk/>

The University has a bronze Race Equality Charter aware, with framework for improving the representation, progression and success of minority ethnic staff and students within higher education. Furthermore, the University's Athena SWAN award recognises and celebrates good practice in recruiting, retaining and promoting women.

Living in Cambridge

Cambridge is rich in cultural diversity. From beautiful University and College buildings, museums and art galleries, quaint gardens and punts on the River Cam, to a vibrant restaurant and café scene, our employees are surrounded by the wonderful features of this unique city.

You can find a wide-range of high street shops and 3 shopping centres, with independent alternatives at the historic market and nestled within the passageways in the city centre. You will find a cinema, bowling alley, a nightclub and various live performances At the Cambridge Leisure Park, with further entertainment options at the Corn Exchange, Arts Theatre and the ADC Theatre. Further information can be found on the Visit Cambridge website.

If you prefer the faster pace of life, London is a 45 minute train journey away. For those travelling from overseas, Stansted Airport is just 45 minutes away and Heathrow Airport under 2 hours away. The University is a short distance from a host of other attractions such as Ely Cathedral, Newmarket Races and various wildlife parks and stately homes. Cambridge is also within easy reach of the beautiful Broads and coastlines of Norfolk and Suffolk.

Relocation Support

The University recognises the importance of helping individuals to move and settle into a new area. We provide support and guidance to those relocating internationally or domestically to take up a post at the University of Cambridge, liaising with other University offices and selected partners to ensure comprehensive relocation support is available. This includes: accommodation, childcare, schools, banking, immigration and transport. If you would like further information, please visit <https://www.accommodation.cam.ac.uk/relocation>. The Shared Equity Scheme and the Reimbursement of Relocation Expenses Scheme provide financial assistance to qualifying new members of staff with the costs of relocating to Cambridge.

Accommodation Service

The University Accommodation Service helps staff, students and visiting scholars who are affiliated to the University in their search for suitable accommodation in Cambridge. The dedicated accommodation team can provide access to a wide range of University-owned furnished and unfurnished properties, and has a database of private sector accommodation available for short and long-term lets. For further information and to register with this free service please visit <https://www.accommodation.cam.ac.uk/>



What Cambridge can offer

We offer a comprehensive reward package to attract, motivate and retain high performing staff at all levels and in all areas of work.

The University offers a wide range of competitive benefits, from family leave entitlement, to shopping and travel discount schemes. Our generous annual leave package contributes to the positive wellbeing of our University employees. Sabbatical leave enables academics to focus on research and scholarship, whilst still maintaining their full salary. The University also has a career break scheme for academic and academic-related staff, with additional flexible working policies for all other staff.



Pay and benefits

The University salary structure includes automatic service-related pay progression in many of its grades and an annual cost of living increase. In addition to this, employees are rewarded for outstanding contribution through a number of regular pay progression schemes. The University offers attractive pensions schemes for employees, with an additional benefit of a salary exchange arrangement providing tax and national insurance savings. Payroll giving is also a simple, tax-efficient way for employees to make monthly donations to charity.

CAMbens employee benefits

We offer a CAMbens scheme for University employees, providing access to online and in-store shopping discounts and cashback. With more than 2,000 participating retailers, employees can save money on a wide range of household expenses, from groceries and clothes, to holidays and insurance and much more. A range of local discounts are also available, helping employees to save money whilst also supporting local Cambridge businesses and a CAMbens Cycle to Work salary sacrifice scheme is also available, which enables employees to save money on transport costs. A 10% discount rate on the purchase of train season tickets, bulk buy tickets and an interest free travel to work loan are also available for staff of the University.



What Cambridge can offer

Family-friendly policies

The University recognises the importance of supporting its staff. We have a range of family-friendly policies to aid employees' work-life balance including a generous maternity, adoption and shared parental leave entitlement of 18 weeks full pay, and paid emergency leave for parents and carers.

Other family-friendly support includes:

Our highly regarded workplace nurseries, a childcare salary exchange scheme and a high quality holiday Playscheme may be available to help support University employees with caring responsibilities (subject to demand and qualifying criteria). Further childcare information can be found here:

<https://www.childcare.admin.cam.ac.uk/>

The Newcomers and Visiting Scholars Group is an organisation within the University run by volunteers whose aim is to help newly arrived wives, husbands, partners and families of Visiting Scholars and members of the University to settle in Cambridge and give them an opportunity to meet local people. The Postdoc Academy supports the postdoctoral community within Cambridge. Further details are available here: <https://www.postdocacademy.cam.ac.uk/>

Your wellbeing

The University's Sport Centre, Counselling Services and Occupational Health are just some of the support services available to University employees to promote their physical and mental wellbeing. There are many societies in Cambridge catering for almost every taste and interest. Whether you want to take part in a sport, participate in music or drama, pursue a hobby, or join a political group, you will almost certainly find that a society exists for this purpose. The University also hosts the [Cambridge Science Festival](#) and [Cambridge Festival of Ideas](#), as well as [Open Cambridge](#) weekend, which together attract over 50,000 visitors per year. The festivals are a great opportunity to get your first taste of public engagement, through volunteering, supporting hands-on activities or proposing a talk.

Development opportunities

We support new employees to settle in through various activities. The encouragement of career development for all staff is one of the University's values and we put this into practice through various services and initiatives. Our Personal and Professional Development Department provides development opportunities and courses for all University employees. These include face-to-face sessions, online learning modules and webinars. Employees may also apply for financial support to undertake training that will lead to a qualification. We offer reduced staff fees for University of Cambridge graduate courses and the opportunity to attend lectures and seminars held by University departments and institutions. The CareerStart@Cam programme also supports employees in assistant staff roles who do not hold higher education qualifications to develop their skills, experience and qualifications.



College Membership

The University, the Faculties and Departments, and the Colleges are linked in a complicated historical relationship that is mutually beneficial but not simple. Students (both graduate and undergraduate) are admitted by one of the 31 Colleges, although in the case of graduate students the Faculties and Departments determine admissions before the Colleges are involved. Almost all undergraduates, and many graduate students, live in a College.

The teaching of undergraduate students is shared between the Colleges and the Faculties and Departments, with the Colleges arranging small group teaching ("supervision") and the Departments providing lecturing, laboratory classes, and advanced supervisions. Most academic staff will also be invited to join a College as a teaching or professorial fellow.

Membership of a College adds an important social and intellectual dimension which many of the University's academic community find attractive. Most colleges expect their fellows to take part in undergraduate supervision and College administration. Appointment to a College fellowship is a separate matter from a University appointment, for which the College provides modest remuneration additional to University salary. It is not compulsory for academic staff to be a member of a College.

Further advice can be obtained from The Chair of the Faculty/Head of Department or senior colleagues.

The Scheme for newly-appointed University Officers seeking a College Fellowship is set out at: [UTO Scheme | Office of Intercollegiate Services \(cam.ac.uk\)](#)



How to Apply

Applications, consisting of a letter of application together with a statement of current and future research plans, a curriculum vitae and a publications list, should be made online no later than: 30 September 2023.

Applications should be submitted online via the University of Cambridge jobs page www.jobs.cam.ac.uk by clicking "Apply online" in the job advert. You will need an email address to register for our online system.

Conversations about flexible working are encouraged at the University of Cambridge. Please feel free to discuss flexibility prior to applying (using the contact information below) or at interview if your application is successful.

If you have any queries regarding the application process please contact: Dr Gosia Wloszycka at:
professorships@admin.cam.ac.uk and/or
mw425@admin.cam.ac.uk

Appointment Procedure

The appointment will be made by a Board of Electors, chaired by the Vice-Chancellor or Deputy, with a membership which includes members of the Department, members of cognate Departments and external experts.

All applications will be acknowledged. The Board of Electors will decide how they wish to proceed towards making an election, which may include interviews and/or presentations. Short-listed candidates may be invited to visit the Department to give a seminar on their work and meet prospective colleagues in the course of the process.

Candidates will be informed of the progress of their applications as agreed by the Electors.

It is anticipated that the successful candidate will take up the appointment on 1 April 2024 or as soon as possible thereafter.

Informal Enquiries

Informal enquiries about this Professorship are welcomed and should be directed to:

Professor Malcolm Smith (Head of Control Group, Department of Engineering)

Telephone: 01223 332745

Email: mcs@eng.cam.ac.uk



