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Produced by researcher Benedikt Bengler, Polymetros is an interactive, collaborative music system that enables a group of people to play, improvise and compose music together on the fly.
The Queens’ Building, Mile End, has a proud association with not one, but four queens: Queen Victoria; Queen Mary (wife of King George V); Queen Elizabeth The Queen Mother; and our Patron, Queen Elizabeth II.

QMUL highlights

• World-class research – QMUL ranked 9th in the UK (REF 2014) among multi-faculty universities
• Teaching by international leaders in their field
• In the top one per cent of the world’s universities
• Member of the Russell Group of leading UK universities
• Attractive residential campus in the heart of London
• Commitment to financial support – £9m in research studentships last year
• Distinguished history dating back to 1123 (the foundation of St Bartholomew’s Hospital), and the start of teaching at the London Hospital Medical College in 1785.
Do you want to do cutting-edge research? Explore your academic interests in depth? Develop new knowledge and skills? Advance your career, or embark on a completely new path? A postgraduate degree from Queen Mary University of London (QMUL) can help you achieve your ambitions.

We are one of the UK’s leading universities – in the most recent national assessment of research quality, we were placed ninth in the UK (REF 2014) among multi-faculty universities. This means that the teaching on our postgraduate programmes is directly inspired by the world-leading research of our academics.

Our programmes prepare you for professional life or further study, and we offer a commitment to generous financial support in the form of studentships and scholarships. We also offer something no other university can: a friendly, self-contained residential campus at our home in the east of London.

We have a rich history in London with our roots in Europe’s first public hospital, St Barts; England’s first medical school, The London; one of the first colleges to provide higher education to women, Westfield College; and the Victorian philanthropic project, the People’s Palace at Mile End.

This commitment to the local area and public good underpins our work today, especially in our collaborations with hospitals, cultural organisations, government, charities, businesses and industry.

If you join QMUL, you will be welcomed into a diverse and supportive family of staff and students from all over the world, with a wide variety of life experiences. This makes QMUL a place of academic and personal self-discovery, and postgraduate study with us a stimulating – often life-changing – experience.

Meet us

The best way to get a feel for QMUL life is to join us for one of our Postgraduate Open Evenings. You can explore our campus, meet our tutors and students, and get a taste of what studying here will be like. If you are unable to visit us in person, we run virtual open events where you can speak online to current staff and students. We also have representatives in 35 countries and staff who regularly travel overseas. For more information, see page 59 or qmul.ac.uk/visitus
WHAT WE OFFER

WORLD-CLASS UNIVERSITY

• 1% – we’re in the top percentile of universities in the world (Times Higher Education and QS World University Ranking)
• We are a member of the Russell Group – the UK’s 24 leading universities

INNOVATIVE RESEARCH

• QMUL was ranked 5th in the UK for “world-leading or internationally excellent” research outputs (4*/3*) in the Research Excellence Framework (REF 2014)
• 2nd: electrical and electronic engineering at QMUL was ranked 2nd in the UK for the percentage of 4*/3*research
• 7th: computer science and informatics at QMUL was ranked 7th in the UK for the percentage of 4*/3*research
• £100m – total research income per year

CAREER SUCCESS

• £37,166 – average salary of postgraduates from the School of Electronic Engineering and Computer Science on completing their course
• 400+ employees and training organisations visited the campus last year
• 325+ students placed into 45 local charities under our award-winning QProjects scheme (Guardian employability initiative of the year 2014)
EXCEPTIONAL FACILITIES
- £142m on new facilities in the past five years
- 7,700 square metres of new learning and teaching space with the new £39m Graduate Centre opening in 2016

INTERNATIONAL OUTLOOK
- Students and staff from more than 150 countries
- “One of the world’s 20 most international universities” (Times Higher Education, 2015)

HIGH-QUALITY TEACHING
- 6 Nobel Prize-winning alumni
- 55 academy and society fellows among QMUL academic staff
- Personal Adviser support system for every student

GREAT LOCATION
- Short walk from Brick Lane and Shoreditch, and close to London’s financial centres, the City and Canary Wharf
- Mile End station is well connected – it’s on the Central, District, and Hammersmith and City lines
- Just a couple of miles away is the area around Old Street, known as Tech City or Silicon Roundabout, home to 400+ digital startups including Mind Candy, SoundCloud and Last.fm, as well as world-leading companies such as Google. We have links with many companies in the area.

GENEROUS SUPPORT
- £9m worth of studentships, scholarships and bursaries distributed in 2014–15
Our School of Electronic Engineering and Computer Science has grown out of some of the oldest departments of their kind in Britain. We are proud of this history of innovation, but our passion is for the future. Our ground-breaking research, award-winning teaching and innovative public engagement are what make us really special.

Find out why our community of over 3,000 students and 150 academic and research staff have chosen us...

**Our research-led approach**
You will be taught by leading academics in the field. Research in the School is at the cutting-edge; we work on core developments and novel technologies, making meaningful and long-lasting contributions that apply to real-world problems.

Our researchers engage with industry partners and academic colleagues around the world in a variety of sectors and disciplines. Our research has left indelible marks in areas as diverse as the foundations of programming languages, digital signal processing, parallel computing, augmented human interaction, and intelligent systems.

**Our outstanding resources**
Our students have access to our award-winning Informatics Teaching Laboratory (ITL), with over 250 workstations, specialist software and powerful servers, interconnected by high-bandwidth networks. All the systems are accessible remotely, with wireless networking across the campus.

You will also have access to our specialist laboratories to carry out your own research. Our Augmented Human Interaction (AHI) Laboratory combines pioneering technologies, including full-body and multi-person motion capture, virtual and augmented reality systems and advanced aural and visual display technologies. We also have specialist laboratories in multimedia, digital signal processing, antennas and electroencephalography (EEG).

| 150 | members of academic and research staff |
| 3,100 | students based in the UK and China |
| 127 | years of teaching electronic engineering and 44 years of computer science |
Dr Sadrzadeh discusses her research using computational and algorithmic tools to statistically analyse the meanings of words and sentences in natural language.

“We have logicians and theorists and people who do music and cognitive science all in one stretch of the corridor. It is so refreshing to go to seminars with lots of maths in them and seminars when an artist plays a piece of experimental music and then analyses it for you”

Dr Mehrnoosh Sadrzadeh, EPSRC Career Acceleration Fellow and Lecturer

Our links with industry
You will benefit from our strong links with industrial partners. We have collaborations, partnerships, industrial placement schemes and public engagement programmes with a variety of organisations, including Vodafone, Google, IBM, BT, NASA, BBC and Microsoft.

We nurture and foster entrepreneurial spirit. We’ve been home to a number of original research ideas that have subsequently become successful spin-out companies. For example:

- **Monoidics** – specialises in automatic verification tools detecting errors in software systems. The company was bought by Facebook in 2013.
- **QApps** – provides smartphone and social networking apps
- **Chatterbox** – provides natural language processing software to understand brand-related discussions
- **Vision Semantics Ltd** – develops software to manage facilities and enhance security
- **Actual Experience** – assesses how well network-based services perform, providing services for a range of organisations from large blue chips to governmental organisations
- **Agena** – provides risk management software for a range of major clients including Phillips and Motorola.

Dr Sadrzadeh discusses her research using computational and algorithmic tools to statistically analyse the meanings of words and sentences in natural language.
EECS researcher Laurel Pardue shows off an augmented violin – it’s adapted to control real-time projected computer visuals and DMX lighting.
School highlights

- Close links with Tech City and industry, including Intergence, Juniper, IBM, BT, BBC and Microsoft
- Excellent teaching and research facilities, including our state-of-the-art video and audio recording and post-production studios
- Staff draw on their research and commercial consultancy work to develop teaching materials
- Current research grant portfolio of £41.5m
- All relevant degrees are accredited by the Institute of Engineering and Technology (IET) or the British Computer Society (BCS).
PROUD OF OUR HISTORY

1888
Electronic engineering first taught at QMUL

1936
High Voltage Research Lab opens, one of the best in the UK

1953
Nuclear Particle Laboratory opens in purpose-built building

1968
We're the first UK university to provide the now popular Unix workstations for students

1971
Our first graduates in Computer Science – one of the first courses of its kind in Britain

1973
Telecoms research group forms

1976
We help set up the first internet node in the UK

1985
Antennas research group forms
C4DM (Centre for Digital Music) and Multimedia and Vision (MMV) research groups form.

2001

Electronic Engineering launches fully recorded Telecoms distance-learning programmes.

2003

2004

We're the first UK university to launch a joint degree programme with a Chinese university. Our ground-breaking programme with the Beijing University of Post and Telecommunications (BUPT) now has almost 2,300 students enrolled.

2002

Our EPSRC research funding portfolio stands at £6m.

2008

Electronic Engineering and Computer Science departments merge.

2009

Our EPSRC research funding has grown to over £25m. Our total grant portfolio is £41.5m.

2011

Launch of our unique Media and Arts Technology Centre for Doctoral Training.

mat.qmul.ac.uk

2015

We launch our own app store – QApps – where apps developed by our staff and students are available for download.

qappsonline.com

2004

Launch of our unique Media and Arts Technology Centre for Doctoral Training.

mat.qmul.ac.uk

2008

Electronic Engineering and Computer Science departments merge.
Whether you are mid-career looking for your next career move or a recent graduate wanting to explore your subject in more depth, one of our postgraduate qualifications can give you an edge in today's job market.

There is currently a shortage of highly qualified graduates in computer science and electronic engineering, meaning there are lots of exciting career opportunities for graduates with the right skills.

Your future plans may involve working on the research and development of new technologies and applications – either in the laboratories of a large manufacturer or in a smaller contract research and development company, where you would be able to work with a variety of clients.

Or you may prefer to work on large projects that require organisational skills and leadership, with the potential to lead onto senior project and company management.

Our postgraduate programmes and the support we provide will equip you to do all these things.

How we can help
Our strong links with industry have helped our students find work after graduation. Many of the organisations we work with offer graduate opportunities and help is available from the QMUL Careers and Enterprise Centre as well as our dedicated specialist Industrial Placement Manager.

Some of the careers and networking events we host:

- **The Technology Fair** – recruiters, including Barclays Capital, CGI, IBM, and Transport for London (TfL) seek new talent

- **Meet a Mentor** – tech industry professionals, including QMUL alumni, network with current students

- **‘Start Up, Stand Up’** – an event that sees entrepreneurs from local start-ups share the spotlight with up-and-coming comedians providing light-hearted reflections on the road to entrepreneurial success, and inspiring the audience to pursue their business ideas.

Additional career support:
- **QMUL job board** – advertising over 2,500 paid part-time, full-time and internship opportunities as well as voluntary positions in the UK and internationally

- **Careers consultants** – offering year-round appointments for CV checking, mock interviews, help with career choice, finding work experience and part-time work, job and PhD application support.
**Industrial experience programmes**
We offer an industrial experience option on all our full-time taught MSc programmes, combining academic study with a one-year industrial placement.

Taking this option as part of your degree gives you a route to apply your skills in a professional context, giving you an important edge in the graduate job market.

Although we cannot guarantee a placement (employers conduct their own application and interview processes), we provide help to identify suitable opportunities and, as a leading research School, we have excellent links with industry. We can also help you with writing your job applications and preparing for interviews.

If you are an international student, the placement option also allows you to gain valuable UK work experience; as well as this, being registered on a degree with industrial experience will mean your student visa will cover the duration of the two-year course.

### Some of our graduate destinations:
- Alcatel
- BT
- Citigroup
- Motorola
- Ford Motor
- IBM
- RBS
- TFL
- World Health Organisation
- Microsoft
- Comic Relief

£37,166 average starting salary for our graduates*

89% are in work six months after graduating*

**Vodafone, IBM, BT, NASA, Microsoft Research**

some of our current partners. We work with them on collaborations, partnerships, student industrial placement schemes and public engagement programmes.

*in a survey of UK MSc students six months after graduating.
FEES AND FUNDING

Fees
The latest information on tuition fees can be found at: qmul.ac.uk/tuitionfees

As a guide, fees for 2015 entry (which are subject to change for 2016) were:

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<th>Home/EU</th>
<th>Overseas</th>
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<tr>
<td></td>
<td>Year 1</td>
<td>Year 2</td>
</tr>
<tr>
<td>Full-time</td>
<td>£8,200</td>
<td>N/A</td>
</tr>
<tr>
<td>Part-time</td>
<td>£4,100</td>
<td>£4,040</td>
</tr>
<tr>
<td>Full-time with industrial experience</td>
<td>£8,200</td>
<td>£1,800</td>
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Our scholarships and studentships
We want to attract the best students to QMUL, and every year we offer a generous range of scholarships for academically excellent students. For the latest information, please visit: qmul.ac.uk/postgraduate/funding

As a guide, in 2015 we were able to offer the following:

For home/EU candidates:
Science and Engineering taught scholarships
We awarded £1,500 to every Home/EU student accepted onto a science and engineering programme with a UK first class bachelors degree or equivalent.

New ways to fund your masters degree (Home/EU):
The government is planning a new loan scheme for postgraduate students for September 2016 entry. It is expected that loans of up to £10,000 will be available for Home/EU students under 30 years old wishing to do a postgraduate taught masters in any subject. We will provide guidance at qmul.ac.uk/postgraduate/funding once the details have been confirmed. For a summary of the proposals, see: findamasters.com/funding/guides/new-uk-postgraduate-loans-scheme.aspx

For international candidates:
Chevening scholarships
The British Council administers the UK Government’s Chevening Scholarship programme. This is a special worldwide scheme to fund masters-level study by international students and QMUL attracts about 20 Chevening Scholars every year.

For further information, please visit chevening.org or your local British Council office (britishcouncil.org), who will also be able to inform you of any other scholarship opportunities open to you.
International Science and Engineering Excellence Awards
This extensive scheme provided awards of up to £5,000 for students, based on academic achievement. To achieve the highest award students had to hold a UK first class bachelors degree or equivalent.

For all candidates: Computer Vision MSc Scholarship
The Computer Vision MSc offered two MSc fee waivers on a competitive basis. In addition to this, we awarded two PhD fee waivers for top-ranked students in this MSc who wanted to continue onto our PhD programme.

Santander Masters Scholarship (for Big Data Science MSc)
Santander offered a scholarship worth £3,000 to students of Big Data Science MSc. The award (which was offset against tuition fees) was on the basis of academic excellence, professional achievements (if any) and the personal statement submitted in response to the set question asked on the application form.

For QMUL alumni: Queen Mary Alumni Loyalty Award
QMUL alumni starting masters degrees with us in September 2015 were rewarded for their loyalty with a £1,000 discount on their tuition fees.

PhD studentships
The School has a number of EPSRC, QMUL, industrial and internationally funded research studentships available for PhD students beginning in the autumn of each year. These are available to UK, EU and international students and pay for tuition fees and/or provide a tax-free maintenance grant. There is always strong competition for these awards and interested students should apply as early as possible, preferably between January and March. There is no separate scholarship application form; however, please ensure that you indicate on the postgraduate application form that you wish to be considered for a scholarship. For further information, visit: eecs.qmul.ac.uk/phd

“The facilities are awesome. The library is brilliant and has a separate silent study floor and areas for group study. The lab facilities are good, with all the equipment needed and helpful lab technicians”

Daria Stefic, Computer Science
Masters-level study can be an intense and rewarding experience. If you decide to take on this exciting challenge, there are a range of study options:

**Full-time study: one-year’s duration**
Full-time programmes are organised into three semesters. In the first and second semesters, you will study a set of core and option modules. In the third semester, you will carry out a large research project (dissertation) full-time.

**Part-time study: two-years’ duration**
All of our programmes are available for part-time study, meaning the number of modules taken is reduced per semester, with all the modules being spread over two academic years.

**Taught courses**
The majority of our programmes are taught courses of study. They may provide a foundation for research, a route to career advancement, or give you the edge over competitors in the job market.

**By research**
A masters degree by research gives you the opportunity to complete substantial, in-depth research and make a real original contribution to the field. The assessment focuses more on coursework, your thesis and individual projects. If you enrol on our MSc by research in Computer Science or Electronic Engineering, you’ll join one of our world-leading research groups (see page 42) to complete your extended research project.

**Industrial projects scheme**
This scheme is open to all of our MSc students and allows you to do your final project in collaboration with an industrial partner.

You’ll have the opportunity to apply to be involved in a project that has been submitted by one of our industrial partners – you get the chance to be involved in a real, commercially focused project and the firm, in return, benefits from your creative, highly skilled and fresh approach.

Our industrial partners always reserve the right to interview students for suitability for the project, but we provide support through the application process and vet the projects themselves for suitability before offering them to you.

**Some of the organisations we have worked with include:**
- Alcatel-Lucent (alcatel-lucent.com)
- BBC (bbc.co.uk)
- BFI (bfi.org.uk)
- BT (bt.com)
- IBM (ibm.com)
- Last.fm (last.fm)

**Industrial Experience programmes**
All of our full-time taught MSc programmes have the option to complete over two years, with a year of work experience in industry. Find out more on page 15.
Entry requirements
For specific entry requirements for your chosen programme, visit our website. In general, however, most of our programmes require:

- An upper second class degree is normally required, usually in electronic engineering, computer science, maths or a related discipline*. Students with a good lower second class degree may be considered on an individual basis.

- For international students whose first language is not English, we require English language qualifications, with an IELTS score of 6.5.

* The main exceptions to this are the MSc in Computing and Information Systems (for graduates of non-Computer Science disciplines) and the MSc by Research in Media and Arts Technology. For some other programmes, unrelated degrees will also be considered if substantial relevant industrial experience is shown.

Please note: the availability of the programmes of study and module options listed in the following sections are subject to change. Please visit our website or contact us to confirm the latest availability of specific modules before you apply.

“I’m constantly inspired by the enthusiasm our students show and the way they embrace the opportunity to explore, specialise and research. Postgraduate study isn’t easy – and it isn’t supposed to be. Studying for a masters is a big step up from undergraduate study. But it’s fantastically rewarding for those that have a real passion for the subject – and it’s great to see people graduating each year fired up to start new careers and apply new skills”

Matthew Purver, Senior Lecturer in Computer Science
Sixty years since the introduction of the first commercial computers, they have transformed the way we live and work. Computers are used for communication, entertainment and commerce; controlling robots, monitoring hospital patients, flying aeroplanes and helping us to drive cars. Devices are smaller and cheaper, yet more powerful, and change shows no sign of slowing. To stay ahead, it is vital to understand how computers work as well as how people and computers work together. Our Computer Science programmes encourage you to be analytical and logical, yet also innovative and creative. They combine programming, the design and theory of computers and networks, as well as usability, media and creativity. Studying computer science will give you the confidence to play a significant part in the greatest wave of technological innovation we have ever seen.

Academic profile – Dino Distefano
As society becomes increasingly reliant on software-based systems, and less tolerant of errors, the work of people like Professor Dino Distefano becomes ever-more crucial. Dino is one of the world’s leading experts in the process of automatically finding errors in software systems. At the School he is Professor of Software Verification, but he is also the co-founder and CEO of Monoidics, a code-checking start-up company that was bought by Facebook in 2013. The scale of the technical advances that Dino has made in this field is striking. When he began in 2004, tools were applied to toy programs of tens or hundreds of lines. Now, Dino’s ideas are being applied to industrial software systems of over a million lines of code.

Find out more at: eecs.qmul.ac.uk/~ddino
Academic profile – Félix Cuadrado
As we collect more and more data, the possibilities of what we can do with it seem almost endless. Dr Felix Cuadrado – Lecturer in Networks – has research interests in some of the most recent emerging uses of computer science – big data and cloud computing. Felix sees the processing of the massive amount of data we now hold as a kind of magic trick: one which the Big Data Processing module he teaches helps uncover.
Find out more at: eecs.qmul.ac.uk/~fcuadrado

Research in focus
Project profile – CHI+MED
What happens when a busy nurse is distracted while setting up an infusion pump (giving drugs for treatment and pain relief)? Mistakes are easy to make and, worse, can kill the patient. A well-designed machine, though, would make it impossible to make many common mistakes, or at least help nurses recover, and prevent harm, when mistakes are made.

CHI+MED is a six-year project funded by £5.7 million from the EPSRC to learn more about how to design safer medical devices. Working with the regulators who check devices are safe to be used, we are developing tools and theories for future standards to be based on so as to help manufacturers ensure they design devices that prevent, rather than contribute to, people making mistakes using them.
Find out more at: chi-med.ac.uk

Career focus
Information technology is vital in many industries, giving you a wide range of career choices. You may choose to work in fields ranging from the finance industry, providing the mechanisms for transactions across the world, through to one of London’s creative start-up companies clustered in the east London.

Just a few employers of our recent graduates: Accenture, BT, KPMG, Lancaster University, Bank Melli Iran.

Typical job roles include: Security analyst, social network analyst, software risk analyst, system designer, software engineer, programmer, usability consultant, software architect, systems developer, web developer, database developer, systems analyst.
Computer Science MSc
One year full-time, two years part-time, two years full-time with industrial experience
eecs.qmul.ac.uk/PGprogrammes

The demand for better products and commercial services drives the search for creative solutions using computing-based systems, and has established a critical dependence between computing and practically every industry and sector. This flexible programme offers a broad range of advanced study options, reflecting the emerging technologies in industry.

Overview
You will be able to shape your programme to match your interests and career ambitions, choosing modules from a range of areas, including the development of human–computer communications (dialogue systems), ubiquitous computing, applying interactive digital multimedia techniques, security and surveillance, and building decision-support tools for uncertain problems in various contexts (eg legal, medical, safety). This is a multidisciplinary programme and, in addition to pure computer science modules, you may choose options where computer science intersects with other fields and builds on your first degree.

For details of our two-year full-time industrial experience MSc option, please see page 15.

Programme outline
Core modules: MSc Project module

And a further two from:
• Advanced Program Design
• Bayesian Decision and Risk Analysis
• Functional Programming
• Security and Authentication
• XML and Structured Documents
• Interactive System Design

Option modules:
• Advanced Database Systems and Technology
• Big Data Processing
• Business Technology Strategy
• Design for Human Interaction
• Foundations of Intellectual Property Law and Management
• Information Retrieval
• Introduction to Computer Vision
• Introduction to Law for Science and Engineering
• Machine Learning
• Mobile Services
• Program Specifications
• Real-Time and Critical Systems
• Software Analysis and Verification
• Techniques for Computer Vision
• The Semantic Web
• Advanced Object Oriented Programming
• High Performance Computing
I truly love our enthusiastic students who are not afraid to get involved, take risks and push boundaries in what they learn and do. I also love the people who go beyond their personal interests to grasp the bigger picture, and from there are able to guide and support others.

Hatice Gunes, Lecturer in Digital Media
Big Data Science MSc
One year full-time, two years part-time, two years full-time with industrial experience
eecs.qmul.ac.uk/PGprogrammes

This programme is designed for those who want to pursue a career as data scientists, deriving valuable insights and business-related information from large amounts of data.

Overview
The big data science movement is transforming how internet companies and researchers all over the world address traditional problems. Big data refers to the ability to exploit the massive amounts of unstructured data that are generated continuously by companies, users and devices, and extract key understanding from them. The job market has a current shortage of trained professionals with this set of skills, and demand for data scientists is expected to increase significantly in future years.

The programme leverages expertise in research with our strategic partnership with IBM and other leading IT sector companies. It is taught by academics from the Networks, Centre for Intelligent Sensing, Risk and Information Management, Computer Vision and Cognitive Science research groups. This is a team of more than 100 researchers, performing world-leading research.

You will cover the fundamental statistical (eg machine learning) and technological tools (eg cloud platforms, Hadoop) for large-scale data analysis.

For details of our two-year full-time industrial experience MSc option, please see page 15.

Programme outline
Core modules:
• Big Data Processing
• Data Mining
• Applied Statistics
• MSc Project module

Option modules:
• Advanced Program Design
• Advanced Database Systems and Technology
• Business Technology Strategy
• Digital Media and Social Networks
• Information Retrieval
• Machine Learning
• Sensors and the Internet of Things
• Introduction to Computer Vision
• Techniques for Computer Vision
• The Semantic Web
**Software Engineering MSc**

One year full-time, two years part-time, two years full-time with industrial experience

eecs.qmul.ac.uk/PGprogrammes

Whether it's the computers in our offices, the smartphones in our pockets, the electrics in our cars or the technology that enables us to monitor patients in critical care, software is at the heart of our society. This MSc programme focuses on advanced theoretical and practical techniques in program design, and the management of software project risk.

**Overview**

You will learn advanced techniques in program design (including software patterns and component technologies) and information handling (structured information and databases). You will also cover vital areas such as security, specification, risk management, usability, and design integrity. You can study key issues of interactive system design, leading to the ability to identify issues and trade-offs in the design of human–computer interaction, and to invent and evaluate alternative solutions to design problems. You will study the mathematical foundations of software and their use in practice. You will develop skills to manage software project risks and learn about the development of tools to support decision-making.

For details of our two-year full-time industrial experience MSc option, please see page 15.

**Programme outline**

**Core modules:** MSc Project module

And a further four from:
- Functional Programming
- Program Specifications
- Big Data Processing
- Real Time and Critical Systems
- Software Analysis and Verification
- Interactive System Design
- Bayesian Decision and Risk Analysis

**Option modules:**
- Advanced Program Design
- Advanced Database Systems and Technology
- Mobile Services
- Design for Human Interaction
- Security and Authentication
- Techniques for Computer Vision
- Business Technology Strategy
- The Semantic Web
- Machine Learning
- XML and Structured Documents
- Distributed Systems and Security
- High Performance Computing
- Advanced Object Oriented Programming
For graduates of non-computing disciplines:

Computing and Information Systems MSc
One year full-time, two years part-time, two years full-time with industrial experience
eecs.qmul.ac.uk/PGprogrammes

Graduates who are able to fully exploit the potential of computing and information systems by combining specialist technical skills with other knowledge and experience are highly sought after. If your first degree contained little or no technical experience, but you’re now looking to change direction or enhance your employability by developing your skills in this area, then this programme (commonly referred to as a ‘conversion course’) is for you.

Overview
Guided by academics with a wealth of industrial experience, this is an intensive one-year MSc programme for highly motivated graduates with a good honours degree, but with little prior experience of computer science. You will develop your theoretical knowledge and practical technical development skills through extensive training in the subjects at the heart of computing, including object-oriented programming (using Java), database systems, and information systems (covering system design, networking and computer architecture). You will be able to extend your areas of technical expertise to specialist areas by choosing from a variety of option modules, such as Mobile Services, Business Technology Strategy and Graphical User Interfaces.

You can personalise your programme to follow a technical or business focus, developing practical and theoretical skills that will be highly relevant in today’s job market.

For details of our two-year full-time industrial experience MSc option, please see p.15.

Programme outline

Core modules:
• Database Systems
• IT Programming (double module)
• Information Systems (double module)
• MSc Project module

Option modules:
• Artificial Intelligence
• Business Information Systems
• Business Technology Strategy
• Distributed Systems and Security
• Graphical User Interfaces
• Mobile Services
• Security and Authentication
• Bayesian Decision and Risk Analysis

26 eecs.qmul.ac.uk
Computer Science by Research MSc
One year full-time, two years part-time
eeqs.qmul.ac.uk/PGprogrammes

This MSc involves an extended individual research project carried out as part of one of our established research groups, combined with selected taught modules.

Overview
This programme offers you the chance to undertake an advanced masters programme through an extended research project. The programme is suitable for outstanding students who have an interest in advanced research-based study in one of our research specialisms: Computer Vision, Cognitive Science, Risk and Information Management, and Theoretical Computer Science. The expectation is that every graduate from the degree will publish at least one conference paper as part of their research. The MSc by Research programme will give you solid theoretical and practical research competences in your chosen field of study and will enhance your employability. Successful completion of the programme may also provide a route to further study at doctoral level or for a research position in industry.

Programme outline
• You will join one of our research groups, completing an extended research project
• You will take four taught modules, chosen from any of the modules offered in the School, in line with what is most appropriate for your chosen research project.

Teaching and assessment
• Teaching for all modules includes a combination of lectures, seminars and a virtual learning environment
• Taught modules are assessed through a combination of coursework and written examinations
• The individual MSc Research Project will be conducted under close supervision throughout the academic year, and is evaluated by thesis, presentation and viva examination.
Financial Computing MSc
One year full-time, two years part-time, two years full-time with industrial experience
qmul.ac.uk/msc-fin-comp

Financial institutions rely on a blend of mathematics, technology and finance to develop, enhance and sustain their competitive edge. This unique programme, run jointly with the School of Mathematical Sciences, provides numerate graduates with the expertise needed to develop a professional career in the profitable and intellectually challenging triangle formed by mathematics, technology and finance.

The financial industry is undergoing a second wave of technological transformation related to new electronic trading platforms; improved risk management and pricing accuracy; and the high-performance computing implications of enhanced regulatory requirements. As a result, there is a high demand from investment banks, hedge funds, financial software companies, brokerage and consultancy firms for numerate and technologically capable graduates. Other types of businesses are also developing similar ways of working where numerate, technologically able staff are an essential part of innovation and decision-making.

The Financial Computing MSc is aimed at science and engineering graduates with mathematical exposure and some experience in computer programming. The content of the programme is a combination of technology and financial mathematics. It contains modules related to up-to-the-minute industry challenges such as high performance and GPU (graphics processing unit) development.

As well as the modules below, there are also pre-sessional modules in mathematics and financial markets enabling you to develop the necessary prerequisite knowledge.

For details of our two-year full-time industrial experience MSc option, please see page 15.

Programme outline
Core modules:
• Advanced Program Design
• Financial Programming
• Foundations of Mathematical Modeling in Finance
• Topics in Scientific Computing
• MSc Project module

Option modules:
• Functional Programming
• Big Data Processing
• Machine Learning
• General Processing on GPU
• Advanced C++ course
• Stochastic Calculus and Black–Scholes Theory
• Advanced Portfolio Theory and Risk Management
• Advanced Computing in Finance

You may also be interested in:
Network Science MSc (page 35).
“Computer Science is a constantly evolving subject and so I enjoy being challenged with new problems and having the chance to learn about the latest developments in my studies. Students have the opportunity to carry out their own research in an area they are interested in for the final year project. This is my favourite part of the postgraduate degree, as I have the freedom to work independently and acquire knowledge in a subject I am enthusiastic about.”

Aminah Sayed, Computer Science MSc
Electronics allows us to make our thoughts and ideas a reality, and the internet is growing globally at an astounding rate, connecting people in ways never seen before. Facebook, Google and mobile phones running a vast array of apps are taken for granted by much of the world. But supporting this new world of networks requires a whole new generation of engineers educated to a high level in the technologies that have made global networking possible. If you want to pursue a career responding to rapid developments and shaping and defining the new generation of converged networks, then our MSc programmes are ideal.

**Career focus**
You will learn the specialist skills that you need to prepare for an exciting career in fields such as digital and analogue electronics, networking, audio systems engineering, and business information technology.

Rapid advances in technology mean that your employment options are broad. As well as conventional electronics and telecommunications companies and research and development, opportunities span through to creative media and healthcare.

**Just a few employers of our recent graduates:**
Schlumberger and Wateen Telecom, China Mobile, Nokia Siemens China, King’s College London, Bank of America, Merrill Lynch.

**Typical job roles include:**
Network engineer, telecommunications system specialist, mobile control consultant, communications engineer.

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**Research in focus**

**Project profile – the Internet of Things**
Our world is fast developing into one where it seems everything can be ‘smart’... Smart shoes, homes, cities...

The Internet of Things (IoT) is a fast-growing area of research taking us towards a smart world of networked computing in which objects or machines (‘things’) are enhanced with new functionality that allows them to be used in ways never before dreamed of.

Keeping up with this fast-moving area of research are Dr Eliane Bodanese, Dr Stefan Poslad and Dr Michael Chai. Their EPSRC- and EU-funded projects allow them to develop solutions for any number of ‘things’ from smart shoes to traffic lights, and from pedometers to drilling rigs and tsunami detectors.

Your smart watch may seem like a bit of fun, but applied to emergency response situations and the location of civilians in distress, monitoring the flow of daily commuters or to environmental warning systems, this technology could be truly world-changing.
Research in focus
Project profile – Actual Experience
Whether it’s your home broadband or the network of a multinational organisation, we are now so reliant on our networks that when they don’t perform, we really feel the impact.

The result of more than ten years of research here at QMUL, Actual Experience, a spin-out company, developed an innovative business information tool that takes a novel approach to analysing and assessing networks.

It focuses on us – the people using them. The tool developed makes improvements to digital supply chains, not by measuring the technology, but by measuring the human experience (perceptual quality).

With an eye on unlocking some of the lost billions of dollars invested in our digital economy, they can allow businesses large and small to improve the only thing that matters – people’s actual experience. Find out more at: actual-experience.com

Academic profile – Hamed Haddadi
Our digital footprint, user privacy, wearable tech – as a Lecturer in Digital Media, these are all things you may expect Hamed Haddadi to be interested in. But would you expect him to also be interested in sustainable food production?

A research project Hamed is working on (with Spitalfields City Farm – see connectedseeds.org) is creating a ‘smart’ seed bank, using connected sensors and tracking technologies to tell the stories of seeds and plants, as well as their growers. Sponsored by an EPSRC research grant, the project aims to help raise awareness, empower communities and increase participation in sustainable urban food practices. Find out more about our eco-warrior at: eecs.qmul.ac.uk/~hamed
TELECOMS, MOBILE AND NETWORKS
OUR TAUGHT PROGRAMMES

Telecommunication and Wireless Systems MSc
One year full-time, two years part-time, two years full-time with industrial experience
eecs.qmul.ac.uk/PGprogrammes

This programme is designed to educate a generation of network engineers in the fundamental science, mathematics and technologies that have made global networking possible, and will continue to develop it into the future. If you want to pursue a career shaping and defining the new generation of converged networks, responding to rapid developments such as social networking, seamless mobility, mobile data and the proliferation of applications for mobile and handheld devices, then this MSc programme is for you.

Overview
This MSc programme teaches Java programming for network and service design, provides an in-depth treatment of the technological foundations of converged all-packet networks, and covers current mobile networks from WCDMA 3G to LTE and LTE-Advanced. It will enable you to develop an extensive understanding of 21st century networks, current mobile and WLAN technologies, software for network and services design, network modelling, and the new realm of sensors and the Internet of Things. Your teachers will be international experts in the fields of converged all-IP networks, modelling, measurements and quality of experience, and wireless technologies.

For details of our two-year full-time industrial experience MSc option, please see page 15.

Programme outline
Core modules:
• 21st Century Networks
• Communication Theory
• Mobile and WLAN Technologies
• Mobile Services
• Network Modelling and Performance
• Software and Network Services Design
• MSc Project module

Option modules include:
• Digital Media and Social Networks
• Security and Authentication
• Sensors and the Internet of Things
Telecommunication and Wireless Systems Management MSc
One year full-time, two years part-time, two years full-time with industrial experience
eecs.qmul.ac.uk/PGprogrammes

This programme provides training in the principles of converged networking, network planning, network management and network performance through an integrated curriculum designed to respond to rapid developments and growing demand in the discipline.

Overview
The programme will provide a greater appreciation of the business context in which networked applications and underlying information and communications technologies are used by organisations. Increased exposure to, and understanding of, the benefits of technology, business and strategic knowledge and thinking will prepare you thoroughly for management roles within such organisations.

This programme prepares you for a career in telecommunications and its applications, for example, in the integration of voice and data applications within a business context. The programme combines in-depth coverage of the main technical aspects of telecommunications with advanced business modules. At the end of the programme, you will be equipped with the skills needed for a wide range of jobs in the expanding telecommunications industry, with an emphasis on those that are relevant to business/financial needs, particularly in the small business and start-up sector.

For details of our two-year full-time industrial experience MSc option, please see page 15.

Programme outline
Core modules:
• Business Technology Strategy
• Network Planning, Finance and Management
• Communication Theory
• Mobile and WLAN Technologies
• 21st Century Networks
• Software and Network Service Design
• MSc Project module

Option modules include:
• Next Generation Mobile
• Sensors and the Internet of Things
• Network Modelling and Performance
• Mobile Services
• Digital Media and Social Networks
MSc in Electronic Engineering by Research
One year full-time, two years part-time, two years full-time with industrial experience

On this programme you will use theoretical and experimental research techniques to explore and create innovative state-of-the-art technologies, enabling you to transfer your knowledge for practical application in the future.

Overview
An MSc by Research will provide you with the necessary skills to undertake research either in an academic or industrial environment. The expectation is that every graduate from the degree will publish at least one conference paper as part of their research. You will develop excellent technical skills, and will be able to demonstrate to employers your ability to undertake high-level independent research.

The programme is suitable for outstanding students who have an interest in advanced research-based study in one of our research specialisms: Antennas and Electromagnetics, Centre for Digital Music (C4DM), Multimedia and Vision (MMV), and Networks. This programme is a pathway to a PhD, providing the necessary training to prepare for a career in research and development.

For details of our two-year full-time industrial experience MSc option, please see page 15.

Programme outline
• You will join one of our research groups, taking four selected taught modules and completing an extended research project
• You can choose four taught modules from any of the modules offered in the School, in line with what is most appropriate for your chosen research project.

Teaching for all modules includes a combination of lectures, seminars and a virtual learning environment. Modules are assessed through a combination of coursework and written examinations.
Network Science MSc
One year full-time, two years part-time
qmul.ac.uk/msc-math-net

This specialist masters programme is run jointly with the School of Mathematical Sciences, providing a thorough grounding in analytical and numerical methodologies, as well as mathematical modelling as applied to networks, opening up a host of career opportunities in network and modelling-related industries. It is aimed at those with an undergraduate degree in mathematics or a related discipline, such as physics, computer science or engineering, who wish to enter a career involving analysis and optimisation of diverse networked systems.

Overview
Network theory is a very active and rapidly evolving research field that stands at the crossroads of graph theory, complex systems and data analysis. It addresses the mathematical and numerical description, modelling of the architecture, and dynamics of the complex systems composed by the many interacting units that show collective behaviour. Its impact and applications outside academia pervade technological sectors such as communications (internet, transportation networks), biostatistics and network biology (brain modelling, postgenomic era), infrastructures (energy networks, road networks, urban mobility) and public health (epidemic spreading models), to mention but a few.

Your dissertation project will be led by a member of the Complex Systems and Networks research group, based in the School of Mathematical Sciences. There are research opportunities available in different areas including epidemiology and public health, complex networks and multiplexes, infrastructure, transportation and energy networks, time series analysis and networks, or systems biology.

Programme outline
Core modules:
- Graphs and Networks
- Processes on Networks
- Research Methods in Mathematical Sciences
- Topics in Scientific Computing
- MSc Project module

Option modules:
- Computational Statistics
- Complex Systems
- Digital Media and Social Networks
- Machine Learning
In the digital creative industries, there is a strong worldwide demand for new people with both creative and technical knowledge and skills. You may be passionate about the visual arts or sound/music and want to develop creative technology to affect and change the way humans interact with each other and with technology; you may want to explore methods of processing, analysing, synthesising and manipulating musical signals; or you may want to contribute to a growing need for our computers to analyse and interpret images and video. Whichever it is, our unique media technology programmes will enable you to pursue your interests in greater depth.

**Academic profile – Andrew McPherson**

Dr Andrew McPherson is a Senior Lecturer in digital media. Andrew brings his unique perspective on electronic engineering (he is a classically trained composer) to the School’s Centre for Digital Music (C4DM), where he leads a research team called the Augmented Instruments Laboratory. An augmented instrument is a traditional musical instrument whose capabilities have been extended through electronics. Imagine an acoustic piano where the performer can continuously shape the pitch, volume and timbre of every note. Violins or bagpipes that actively help you learn how to play them by detecting the position of your fingers. Or an instrument that can be hacked and rewired in creative ways to generate new sounds.

Find out more at: eecs.qmul.ac.uk/~andrewm
Career focus
Graduates from our programmes develop the range of artistic, design and technical skills to fulfil many posts in creative industries within Tech City and beyond.

Just a few employers of our recent graduates:
Ableton, Last.fm, Creative Labs, Sonnox, Intrasonics, EMI, Calrec Audio, Rockstar Games. Additionally, some MAT MSc students have received scholarships to progress straight to our MAT PhD.

Typical job roles include:
Interaction designer, user experience consultant, interactive audio designer, digital media producer, audio engineer

Academic profile – Peter McOwan
The human brain and the complexities of how it works have fascinated scientists for centuries. It is also an area that preoccupies Peter McOwan, Professor of Computer Science.

Peter’s approach is to treat the brain as a computational system, finding algorithms to mimic some of the key things our brain does. Imagine how different the world might be if we truly understood how our perceptions affect our actions. Peter uses magic tricks to illustrate both how computer algorithms work and to demonstrate how easily we can be tricked into making mistakes (and how better software design might help to solve this).

Find out more at: eecs.qmul.ac.uk/people/view/3010/prof-peter-mcowan

Research in focus
Mortimer, the amazing drumming robot
PhD student Louis McCallum has a fascination with how we, as humans, interact with robots. What better way to look at this than to create a robot that actively collaborates with humans through music? Mortimer, the robot he created, plays in a duo and changes his drumming pattern in response to his human (improvising) piano-playing bandmate. Yes, that’s right, a robot can jam too. See page 47 and find out more at: richannel.org/mortimer
Sound and Music Computing MSc
One year full-time, two years part-time,
two years full-time with industrial experience
eecs.qmul.ac.uk/PGprogrammes

Developed by the acclaimed Centre for Digital Music (C4DM), this programme responds to a growing skills shortage in industry for engineers and computer scientists trained specifically in sound and music processing, as digital media become ever more advanced and ubiquitous.

Overview
You will develop core knowledge of advanced music and audio technologies, giving you the background and skills you need for careers in the technical aspects of audio production or engineering, broadcasting, intelligent signal processing, computational music analysis, music information retrieval and other areas of sound and music computing. You will graduate with the potential to become a pioneer in developing future generations of leading-edge music technologies. The taught modules are fully supported by computing and laboratory work. The MSc is intended for graduates in a related discipline, who wish to hone and enhance their skills, and for industrialists with experience of sound and music computing seeking formal qualifications.

For details of our two-year full-time industrial experience MSc option, please see page 15.

Programme outline
Core modules:
- Fundamentals of DSP
- Music Perception and Cognition
- MSc Project module

Plus one of:
- Sound Recording and Production Techniques
- Interactive Digital Multimedia Techniques

At least two from:
- Music and Speech Processing
- Digital Audio Effects
- Music Analysis and Synthesis
- Real-Time DSP

Option modules include:
- Machine Learning
- Advanced Transform Methods
- Interactive System Design
- The Semantic Web
Media and Arts Technology by Research MSc
One year full-time
eecs.qmul.ac.uk/PGprogrammes

If you are passionate about the visual arts or sound/music and want to develop creative technology to affect and change the way humans interact with each other and with technology, this programme is for you.

It is intended for graduates in a related discipline (creative and/or technical), who wish to hone and enhance their skills, and for industrialists with experience of sound and music computing seeking formal qualifications. You will graduate with excellent technical and creative skills, and a unique vision of how digital technology transforms creative, technical and social possibilities. You will also receive training in the full research cycle, from identifying a problem, choosing suitable methods to address it and communicating your results.

Overview
This innovative programme, unique in the UK, comprises four main components: a series of specially tailored advanced taught modules completed during the first six months that include programming interactive digital media, production skills for audio and video, and research methods; two additional advanced option modules that cover topics ranging from advanced technical skills through human interaction to performance; and specialist project work and a placement project with an external partner leading to a thesis (see mat.qmul.ac.uk for a list of some past projects and partners). You may also undertake your placement project with a research partner in a different department or, where appropriate, collaborating departments in other universities.

Media and Arts Technology (MAT) MSc students work alongside PhD students from the MAT EPSRC/AHRC Centre for Doctoral Training and benefit from access to the MAT workshop, recording facilities and a dedicated MAT lab.

Programme outline
The core modules on this programme are assessed through coursework alone. Option modules are examined through a combination of coursework and written examinations and the advanced placement project is examined by thesis and viva, plus a public presentation.

Core modules:
• Digital Arts Documentary
• Interactive Digital Multimedia Techniques
• MSc Advanced Placement Project
• Research Methods
• Sound Recording and Production Techniques
• Plus two appropriate Level 7 EECS or Drama modules
Computer Vision MSc
One year full-time, two years part-time, two years full-time with industrial experience
eeqs.qmul.ac.uk/PGprogrammes

What if your smartphone could recognise that it was you before switching on, and could sense your mood by recognising your facial expressions? What if you could use a real thumbs-up for ‘liking’ things on Facebook? How can you play games on an Xbox using only your body gestures? How can you equip cars with in-vehicle technology that could automatically read road signs? These are just some of the fascinating questions that you will strive to answer on this programme.

Overview
This programme is intended to respond to a growing skills shortage in research and industry for engineers with a high level of training in the analysis and interpretation of images and video. It covers both low-level image processing and high-level interpretation using state-of-the-art machine learning methodologies. In addition, it offers high-level training in programming languages, tools and methods that are necessary for the design and implementation of practical computer vision systems. You will be taught by world-class researchers in the fields of multimedia analysis, vision-based surveillance, structure from motion and human motion analysis. Aside from your lectures, you will be working on cutting-edge, live research projects, gaining hands-on experience.

Programme outline
Core modules:
• Advanced Transform Methods
• Emerging Topics in Learning and Vision
• Introduction to Computer Vision
• Machine Learning
• MSc Project module
• Techniques for Computer Vision

Option modules:
• Artificial Intelligence
• Big Data Processing
• C++ for Image Processing
• Computer Graphics
• Real-Time and Critical Systems
• Real-Time DSP
“QMUL is the best university in the UK for interactive media and maybe in Europe. And the lecturers, installations and workshops are amazing. The lecturers and lab managers are very friendly and helpful. Their knowledge is amazing and they encourage you to be creative and give you free rein to do whatever you want, even the craziest ideas!”

Daniel Gabana, Media and Arts Technology MSc
We are well known for our pioneering research and pride ourselves on our world-class research projects. Our main research groups are:

**Antennas and Electromagnetics**
The group has comprehensive experimental facilities in the Antenna Measurement Laboratory. Their areas of research include: the possible advances in antennas offered by new nano-materials such as graphene and carbon nanotubes; helping scientists visualise structures with Terahertz Spectroscopy; the interaction of electromagnetic waves with biological tissue; and radio propagation for body-centric wireless communications.

**Centre for Digital Music (C4DM)**
Leading the UK in digital music research, this multi-disciplinary group works in the field of music and audio technology – from record/replay equipment in the home or studio, to the simulation and synthesis of instruments and voices, acoustic spaces, music understanding, delivery and retrieval. They have a state-of-the-art listening room and performance lab and regularly release algorithms under open-source licenses, while maintaining a healthy portfolio of patents.

**Cognitive Science**
Combining ideas from the arts, engineering and science, this group examines how technology changes what it is possible for people to do. They have built up world-class research facilities, including the groundbreaking Augmented Human Interaction (AHI) Laboratory, which combines motion-capture equipment with novel 3D auditory and visual displays. Their current projects include safer medical devices, socially aware robots, and technology in clinical interactions in mental health.

**Computer Science Theory**
What are the logical foundations of computer science? This group specialises in the foundations of computer science using logic, maths and statistics. They tackle the hard problems in discovering the power and limitations of computer systems and collaborate with NASA, ARM, Intel, Microsoft and others on techniques for finding bugs and security flaws. In 2013, a successful spin-out company (Monoidics) born out of this research was bought by Facebook.

**Computer Vision**
Our surveillance society is big in the news, but what is the technology behind this and how can a computer interpret the myriad of CCTV images we capture? This group’s work has been applied to vehicle and people detection, object tracking, counting and recognition in public space CCTV, human gesture recognition and abnormal behaviour recognition in visual surveillance. The research attracts significant interest from industry and the government, with a current significant focus on crime prevention.
Multimedia and Vision
This group conducts research in image and video processing, ranging from multimedia coding to visual information retrieval. Their work includes scalable source and channel video coding, tracking for surveillance, multi-view-based 3D modelling, pattern recognition and video processing for social networking.

Networks
With an international reputation for bringing intelligence and performance assessment techniques to fixed and mobile communication networks, this group has been supported by a succession of funded projects. Their wireless research covers areas including cognitive radio, cooperative networks, smart antennas, energy efficiency and network security. They are also active in many key areas of the current and future internet, such as cloud, content delivery, and online social networks.

Risk and Information Management
We have a deluge of data but can we find what we want and use it to make decisions? This group focuses on problems of uncertainty and decision-support using methods from statistics, machine learning and psychology. The power of advanced computing is combined with the insights of human expert judgments to address challenges of scale and complexity in a wide range of applications, including medical, legal, systems engineering, bioinformatics, security, risk and safety.

“My team is working on any where, any time, any thing communications. This doesn’t just mean delivering information in any kind of media, but also doing it in a non-intrusive and intelligent way – opening a new world of possibilities and applications. A great opportunity for people with creative and productive minds”

Dr Eliane Lucia Bodanese, Senior Lecturer

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11th in the UK for quality of computer science research (REF 2014)
6th in the UK for quality of electronic engineering research (REF 2014)
300 research publications per year (average over last three years)
30 industrial partners collaborating with us on research in the last five years
Joining us as a PhD student gives you the chance to experience the buzz of being involved in our pioneering research shaping the future of electronic engineering and computer science.

We have a dynamic community of 240 PhD students and 80 research assistants in our labs working on leading-edge research. We offer well-integrated doctoral study programmes and a comprehensive and supportive training environment. You’ll work as part of a friendly and vibrant research community under the supervision of experts in the field.

Our research groups are involved in internationally leading research funded by UK Research Councils, the European Union and industry around the world. As a member of one of these groups, you will be accommodated in a research laboratory alongside other PhD students and full-time post-doctoral researchers. Students often participate in funded group research projects.

Postgraduate resources
As well as the resources available to all our taught postgraduate students, PhD students have generous study space in our research laboratories.

- In 2011 we developed new experimental facilities in antennas (£1m) and digital music (£0.5m)
- The Interdisciplinary Informatics Hub, completed in collaboration with the Schools of Biological and Chemical Science and Mathematical Sciences, provides laboratories and associated office spaces for around 40 researchers, providing a meeting place for postgraduates from all departments to interact and exchange ideas
- Distinguished lecturer series – this features major research figures from outside organisations and industry. In addition, each research group runs its own individual seminar series.

Doctoral College
As a PhD student at QMUL you will draw on the dedicated support of our Doctoral College, which oversees the recruitment and admission, training, and examination of our PhD students. The Doctoral College provides a strong community of support for all our PhD students. The Doctoral College offers a wide range of subject-specific and professional training to enhance your research skills, and will help you make the most of QMUL’s thriving research environment. Find out more at: www.doctoralcollege.qmul.ac.uk
Career focus
Our PhD graduates go on to exciting careers, both in industry and higher education:

Research in industry – Vodafone, Microsoft Research, IBM, Apple, Hewlett Packard and Philips – just a few companies employing our graduates in research capacities.

Higher education – recent PhD graduates found post-doctoral positions at New York University, Stanford University, University of Amsterdam, University of Glasgow, and here at QMUL.

PhD studentships and funding
We provide a generous travel budget to enable our research students to present papers at international conferences. Budgets for expenditure on experiments, equipment and software are also available.

The School has a number of EPSRC, QMUL, industrial and internationally funded research studentships available for PhD students beginning in the autumn of each year. These are available to UK, EU and international students and pay for tuition fees and/or provide a tax-free maintenance grant. There is always strong competition for these awards and interested students should apply as early as possible. Applications for most funded positions close in January. For further information visit: eecs.qmul.ac.uk/phd

PhD in focus: PhD in Media and Arts Technology (MAT)
This is an innovative interdisciplinary training programme in the science and technologies that are transforming the creative sector. Our mission is to produce postgraduates who combine world-class technical and creative skills and who also have a unique vision of how digital technology transforms creative, technical and social possibilities.

This unique four-year PhD programme is built around core modules in advanced research methods, interactive digital multimedia, arts documentary production and digital sound production techniques. You will work under the supervision of internationally recognised experts and develop a working partnership with one of our strategic collaborators, who include companies such as BT, IBM, Proctor and Gamble as well as innovative enterprises such as M&C Saatchi, Cinimod Studio, Inition and United Visual Artists.

Our programme is jointly funded by the EPSRC and AHRC and is exceptionally well resourced. Our state-of-the-art MAT studios include the Listening Room, the Control Room and the Performance Laboratory, and other facilities include the Augmented Human Interaction Laboratory and the Pinter Studio Theatre. For more detailed information and funding opportunities, see: mat.qmul.ac.uk
FURTHER INFORMATION

Entry requirements
See page 19 or visit: eecs.qmul.ac.uk/PGprogrammes

Tuition fees
See page 16. You can also find a full list of both UK/EU and overseas tuition fees here: qmul.ac.uk/tuitionfees

Funding
See page 16. For all funding information for taught and research students, visit: qmul.ac.uk/postgraduate/funding

Accommodation
We are in the enviable position of being the only university in central London to offer a completely self-contained campus experience with close to 2,000 beds at our Mile End campus, including those in our purpose-built Student Village.

We are also able to offer dedicated halls at our Charterhouse Square and Whitechapel campuses. We have a thorough grasp of alternative local housing options, and can provide you with comprehensive guidance and information to help you find a suitable place to live, whether on or off campus.

For more information on your accommodation options:
Tel: +44 (0)20 7882 5522
email: residences@qmul.ac.uk
residences.qmul.ac.uk

Contact us
School of Electronic Engineering and Computer Science
Tel: +44 (0)20 7882 7333
eecs-msc-enquiries@qmul.ac.uk
eecs.qmul.ac.uk

For general admissions enquiries for taught masters programmes:
Freephone: 0800 376 1800
From outside the UK: +44 (0)20 7882 5533
email: admissions@qmul.ac.uk

For general admissions enquiries for research degree programmes:
Tel: +44 (0)20 7882 2207 / 5860
email: researchadmissions@qmul.ac.uk
Mortimer the drumming robot, the brainchild of PhD student Louis McCallum, develops his own drum patterns in response to human piano playing (see page 37).
QMUL has a cosmopolitan postgraduate community, with students from over 150 countries making a valuable and active contribution to academic and social life. Wherever you are from, you will find a very warm welcome at the university.

**Entry requirements**
Each application received at QMUL is evaluated on a case-by-case basis, comparing international and UK qualifications. We look at your qualifications, the institution you have attended, and any relevant work experience. You can find detailed country-specific entry requirements here: qmul.ac.uk/international/countries

**Support for international students**
We offer a range of support services to help you feel at home:

**Airport collection**
New international students are offered a free airport collection service before the start of term in September 2016. This service will be advertised on our website, along with an online booking form: qmul.ac.uk/prearrival

**The welcome programme**
A welcome programme will be provided for all new international students before the start of term in September 2016. This is an opportunity to meet other international students studying a variety of programmes and gain practical advice about living and studying in London. Following the welcome programme, you can take part in a number of social events throughout the year. In 2015, these included trips to Amsterdam, Bruges, the Scottish Highlands, Wales, and the Wye Valley.

**Advice and counselling**
The Advice and Counselling Service offers professional advice and support to international students. They can advise you on finance and funding, Tier 4 Entry Clearance, Tier 4 extensions, immigration problems, UK work schemes after study, and offer counselling support for personal issues, such as homesickness. For further details, see: welfare.qmul.ac.uk

**Healthcare**
There is a Student Health Service on campus. You (and your spouse and children if they are in the UK with you as your dependants) are entitled to free medical treatment on the UK National Health Service (NHS) if you are registered on a programme lasting six months or longer (please note: from September 2015 this may change – international students may face a small charge to access NHS services). If your programme lasts for fewer than six months, you should make sure you have adequate medical insurance cover. If you are a European Economic Area (EEA) national, you should obtain a European Health Insurance Card (EHIC) before coming to the UK, which entitles you and your family to full NHS treatment. For more information, visit: studenthealth.qmul.ac.uk
Living costs
International students will need to show evidence of having at least £9,180 for living costs (based on 2015 guidance), plus 100 per cent of your tuition fees in order to obtain Entry Clearance under Tier 4 of the UK Visas and Immigration’s points-based system of immigration. Additional amounts need to be shown for dependants. £9,180 is based on nine months of study and is an immigration requirement only – most students require more money than this for 12 months’ living costs – normally around £12,000. For further information, visit: welfare.qmul.ac.uk/international/money

Scholarships
We want to attract the best students to QMUL. In recognition of the important investment that international students are making in their education, we are pleased to offer a range of scholarships to reward outstanding academic achievement. For more information, visit: qmul.ac.uk/international/feesfinance

Representatives in your country
In many countries we have offices or representatives who you can visit to discuss applying to QMUL. Contact details can be found at: qmul.ac.uk/international/countries

QMUL International Office
Members of staff at QMUL regularly make visits overseas to meet students and their families.

To see when we will be visiting your region or for more information on any aspect of life at QMUL, see: qmul.ac.uk/international/events

Contact us
Tel: +44 (0)20 7882 6530
email: internationaloffice@qmul.ac.uk
qmul.ac.uk/international

English language
All tuition and examinations at the university are in English, so a sound command of the language is essential for success. QMUL provides a number of programmes in English for academic purposes to help you get the most out of your study. You need to be able to cope with reading; note-taking from lectures, books, journals, and other materials; to speak well in seminars, discussion groups, and tutorials; and to present yourself effectively in written assignments and examinations.
English language requirements
If your first language is not English, you must provide evidence that your English skills are sufficient by including details of recognised language qualifications with your application. If you are an international applicant you are strongly advised to contact your local British Council Office, take the academic IELTS (International English Language Testing Service) test and submit the results with your application. QMUL’s minimum requirement for postgraduates is an IELTS score of 6.5; however, some courses require a higher score. For detailed English language entry requirements for all of our programmes, including individual component scores, see: qmul.ac.uk/international

If you have English language scores slightly below the required band, you may be eligible to attend one of our pre-sessional English language summer programmes before the start of your course.

English language summer programmes (pre-sessional programmes)
From June to September, we arrange a series of English language programmes for students who wish to improve their proficiency in English before starting university. The programme aims to improve your listening, speaking, reading, and writing skills; teach study skills such as note-taking, academic writing, and seminar participation; develop skills essential to working independently; and to introduce you to life in Britain. We encourage independent work and use of English by setting individual projects.

QMUL academic staff and other visiting lecturers will give a series of lectures. We provide some residential accommodation on summer programmes in our halls of residence. Find out more: http://language-centre.sllf.qmul.ac.uk/presessionals

In-sessional English language support
The Language Centre runs a series of in-sessional English programmes in academic writing, grammar and vocabulary, lecture comprehension and seminar skills, and general English during the main teaching periods of the academic year. These are free of charge. Find out more: http://language-centre.sllf.qmul.ac.uk/in-sessionals

Academic study support
To help you with the transition to higher degree study, the Library runs a programme of short courses, tutorials, and drop-in classes in skills such as organisation and time management, research and note-taking, oral communication and presentation, academic writing, personal development planning and revision, and examination skills. For more information, see: library.qmul.ac.uk/academic_study_tutorials

English Language and Study Skills Office
Tel: +44 (0)20 7882 2827
e-mail: elss@qmul.ac.uk
http://language-centre.sllf.qmul.ac.uk
Students review each other’s work at our research showcase event.
London – the world’s favourite destination

With festivals, libraries, museums, shops, Royal Parks and nightlife, it is no surprise that London is one of the most popular cities in the world to be a student. The political, cultural and business centre of the UK, London attracts people and talent from across the globe. Our students have the opportunity to engage with an unparalleled array of academic resources, including a wealth of world-renowned libraries, museums and research institutes on their doorstep. With a population of 7.8 million and more than 300 languages spoken, the people of London represent cultures from every corner of the Earth. It's a welcoming city, and to become a Londoner all you need to do is live here.

Where we are – an oasis in a busy city

When thinking about where to study, you are often faced with a choice between city or campus life. QMUL is the only university that can offer the best of both: a friendly, self-contained residential campus in the heart of the capital. We are close to Shoreditch and Brick Lane, the Tech City technology cluster, and the financial centres of Canary Wharf and the City. We are only 15 minutes from Oxford Circus on the Tube. On campus there’s plenty of greenery and attractive outdoor spaces, and with the familiar rhythms of student life, it’s easy to forget that you’re in the middle of a bustling capital city.
East London – the place to be

Next to the City of London, east of the medieval walls that marked the city’s original boundaries, you’ll find the East End – a captivating place, with a rich history, vibrant cultural scene, and a sense of community all of its own, which we are lucky to be able to call home. The East End is one of the most rapidly changing parts of the capital, combining the best of old and new. Cycle ten-minutes from our campus, for example, and you’ll find the world-class sports facilities of the Queen Elizabeth Olympic Park. Around campus, you can take a turn down a residential street and stumble across a rare mural by graffiti legend Banksy, a hidden garden square, or an atmospheric Victorian pub serving good food. That’s the thing about the East End; there’s always something new to discover.
Here are some of the highlights of living in the East End:

**Amazing restaurants**
The cultural variety of the East End is reflected in the range of restaurants on offer. One street can represent food from all over the world, and there are some great restaurants close to campus. Exploring the streets surrounding Mile End Park, such as Burdett Road, will reveal Bangladeshi, Indian, Arabic, Italian and Chinese restaurants, to name a few. If you like to step out of the tried and tested, Shoreditch is known for culinary innovations such as the infamous Cereal Café (Cereal Killer).

**Great shopping**
Perhaps the worst that can be said about shopping in the East End is that there’s simply too much choice, from charity shops to one of Europe’s biggest indoor shopping centres in Stratford. The East of London is particularly famous for its open-air markets, like Brick Lane’s Sunday stalls, where great food from all over the world sits alongside stands of imaginative clothing, vintage furniture and bric-a-brac.
**Culture scene**

East London easily has the most vibrant cultural scene in the city. The music, art, and history of the region create a potent and exciting mix. If you’re a fan of art, several galleries in the area are celebrated for their interesting and unique exhibitions – Whitechapel Gallery is particularly popular. You don’t even have to go indoors to see some of the most iconic art of the East End - famed graffiti murals dot the streets of Hackney, Whitechapel and Shoreditch. East London is also renowned for the amount of musicians, artists and actors that started out or grew up in the area.

**Eclectic nightlife**

Whether you’re after a drinks with friends, a late movie or a club night, you’ll find something to suit your mood around campus. The area around Shoreditch has grown to represent an alternative experience to the formulaic bars of the West End, while local cinemas, like Genesis, and coffee shops are a lot less packed than those in the centre. Modern clubs, such as Cargo or the Hoxton Pony, sit alongside hundred-year-old pubs like the Old Blue Last, creating an eclectic and colourful mix.
“My research interests focus on the perception and cognition of complex sensory signals. I am especially interested in music, which (along with dance) is a universal and quintessentially human mode of expression. Much of my work focuses on understanding the cognitive and neural processing involved during ongoing, dynamic listening to music.”

Dr Marcus Pearce, Lecturer in Sound and Music Processing
HOW TO APPLY/ NEXT STEPS

Visit eecs.qmul.ac.uk/PGprogrammes to find out more about the programme you’re interested in.

Check you meet the entry requirements
Note: if you’re an international student English language requirements also apply.

Visit qmul.ac.uk/postgraduate/funding for more information on scholarships and studentships you may be eligible for – remember some funds have separate applications, so check the deadlines as early as possible.

International students need to show evidence of having funds for tuition fees and living costs – visit: welfare.qmul.ac.uk/international/money for more information.

We want you to be sure about your application and welcome informal enquiries. If you wish to discuss any aspect of the programme, School, or university before submitting your application, please contact: eecs-msc-enquiries@qmul.ac.uk

We organise campus tours throughout the year – book a place at qmul.ac.uk/visitus

Our Postgraduate Open Evenings on campus allow you to meet students and academics: qmul.ac.uk/pgopenevening

If you can’t make it to us in person, we also hold virtual events: qmul.ac.uk/postgraduate/virtualopenday

By selecting your chosen programme at: eecs.qmul.ac.uk/PGprogrammes. There are no set deadlines, but we advise you apply by July at the latest (to begin studies that September).
A Postgraduate Open Evening in the Octagon at our Mile End campus, historically the university’s library and now an event space.
**Campus tours**  
We organise campus tours throughout the year. Restricted to small groups so that everyone has the chance to ask questions, these informal events are a great way to find out about living and studying here. They normally last an hour and you will be shown around by a current student. To book your place, please visit: qmul.ac.uk/undergraduate/openday/campustours

**Postgraduate open events**  
We hold a variety of postgraduate open events at the Mile End campus. Each event is different but usually includes the opportunity to meet academics, see subject-specific facilities, tour research and learning facilities, and speak to our support services, including Careers staff.

For more details and to book, please visit: qmul.ac.uk/pgopenevening

**Virtual events**  
We also hold virtual events during the year. For dates, virtual tours of the campus, videos and more, visit: qmul.ac.uk/postgraduate/meet-us/virtualopenday

**Around the UK**  
We visit local and national postgraduate education fairs, conventions and events across the country each year. Come along to an event near you to find out more about postgraduate study and student life with us. For more information, please visit: qmul.ac.uk/postgraduate/meet-us/around-the-uk

**International students**  
If you are from outside the UK, please see our ‘Meet us overseas’ page for details of where you can meet the International Office over the coming year: qmul.ac.uk/international/international-students/events
The easiest way to get to QMUL is to use public transport. There are two Underground stations and many bus stops within a few minutes’ walk of the Mile End campus.

**Underground**

QMUL’s Mile End campus is located between Mile End station (Central, District, Hammersmith and City lines) and Stepney Green station (District, Hammersmith and City lines). Both stations are in London Underground Zone 2.

Our Whitechapel campus is right behind the Royal London Hospital on Whitechapel Road. Whitechapel Underground station (Hammersmith and City, District and Overground lines) is directly across the road from the Hospital.

Based in the City of London, close to the Barbican, QMUL’s Charterhouse Square campus is five minutes’ walk from Barts Hospital. The nearest Underground station is Barbican (Hammersmith and City, Metropolitan and Circle lines). Farringdon is also not far away.

The nearest Underground station to the Postgraduate Law Centre at Lincoln’s Inn Fields is Holborn (Central and Piccadilly lines).

**Buses**

All of our campuses are well-served by London bus routes. To plan your journey, visit: tfl.gov.uk

**Docklands Light Railway (DLR)**

The nearest DLR station to QMUL is Bow Church.

**Travelcards and Oyster cards**

The most cost-effective and convenient way to pay for public transport in London (buses, trains, tubes, boats, trams, and DLR) is to get an Oyster card. You can also now pay with contactless debit or credit cards too. As a student at QMUL, you are eligible for an 18+ Student Photocard, which gives you 30 per cent off the price of adult-rate travelcards and bus and tram passes.

A discounted monthly Travelcard – which gives you unlimited travel on buses, trains, tubes, and the DLR within Zone 1 (Central London) and Zone 2 (which includes Mile End) – is approximately £86. For more information, please see: tfl.gov.uk/oyster
Cars
Traffic is heavy and parking difficult, making driving in London an unattractive option. There are no parking places for students on campus, with the exception of students displaying an authorised blue disabled sticker (who have applied for and received a QMUL parking permit). Contact the Disability and Dyslexia Service for advice on: +44 (0)20 7882 2756.

Taxis
Black cabs use a meter to calculate your fare and you can hail one in the street. They are safe to use, but can be expensive. Mini-cabs are normal cars and charge a fixed price. Only use registered mini-cab firms.

Trains
London is very well-served by train stations, all within easy reach of QMUL’s campuses. The closest is Liverpool Street, just two stops from Mile End on the Underground (Central line). Trains from Liverpool Street run to Stansted Airport, as well as other destinations. King’s Cross and St Pancras International (for Eurostar services to mainland Europe) are both a short journey from Mile End on the Underground’s Hammersmith and City line. London Bridge and Fenchurch Street are also close by.

Airports
The closest airport is London City Airport – just five miles away – which offers regular flights to UK and other European cities.

Heathrow, Gatwick, Luton, Stansted and Southend are within easy reach of QMUL, and all can be reached in anything from one to two hours by train or Underground.

Student travel in London
For more information about discounted travel, safety information and how to use the travel planning tools on the TfL website, visit: tfl.gov.uk/campaign/student-guide-to-travel-in-london
On our Mile End campus, it’s easy to forget that you’re in the middle of a bustling capital city.
For more detailed campus information, see: qmul.ac.uk/about/howtofindus
QMUL has made reasonable efforts to ensure that the information provided in this prospectus is both helpful and accurate at the time of going to press. However, this information is subject to change over time. For this reason, it is important that you check the website for the most up-to-date information (qmul.ac.uk) or contact us using the details contained within the document.

Some circumstances (such as staff changes, resource limitations and other factors over which QMUL has no control, such as industrial action, a change in the law or the level of demand for a particular programme or module) may result in QMUL having to withdraw or change aspects of the programmes, modules and/or student services detailed in this prospectus. This could include, but not necessarily be limited to: programme content, staffing, where and how the programme is taught, and the facilities provided to deliver or support the programme.

In the unlikely event that QMUL does discontinue a programme of study, or changes it significantly before it begins, we will inform relevant individuals (including applicants holding an offer of a place) at the earliest possible opportunity. In the case of other changes, we will ensure that these are reflected on our website (qmul.ac.uk) as soon as possible.

Contact
Queen Mary University of London, Mile End Road, London E1 4NS qmul.ac.uk

We would like to thank the students who took part in these photographs. Student and departmental photography by Jorge Estevao (jdestevao.com), Jonathan Cole (JonathanColePhotography.com) and Layton Thompson (LaytonThompson.com)

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Any section of this publication is available in large print upon request. If you require this publication in a different accessible format, we will endeavour to provide this where possible. For further information and assistance, please contact: hr-equality@qmul.ac.uk; +44 (0)20 7882 5585.