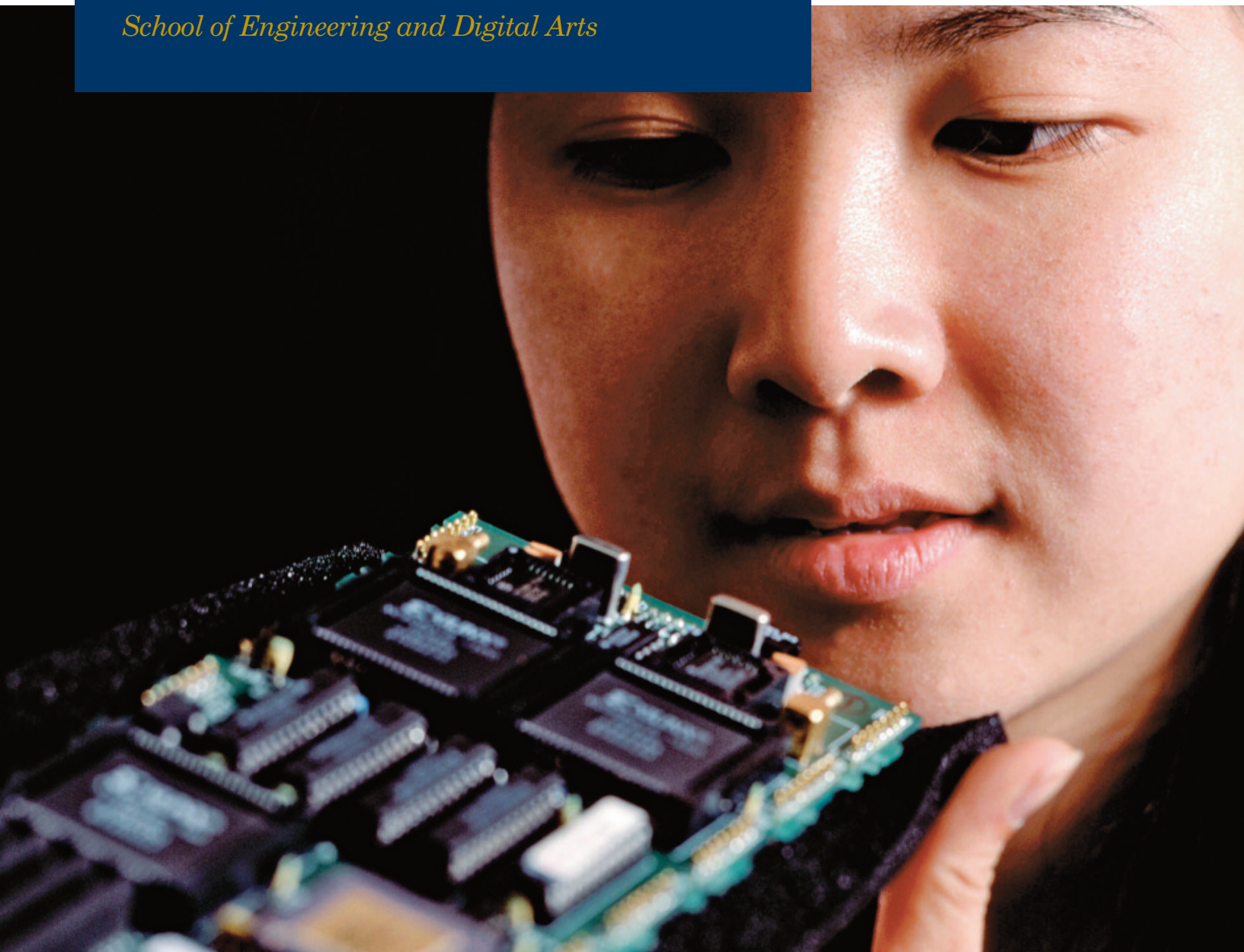


WORKING WITH INDUSTRY

School of Engineering and Digital Arts





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WHAT WE CAN OFFER YOUR BUSINESS

By teaming up with Kent, your business can gain access to all the resources and expertise that a leading university has to offer.

In the School of Engineering and Digital Arts, we successfully combine modern engineering and technology with the exciting field of digital media – a blend of expertise that is particularly well suited to the needs of 21st century business.

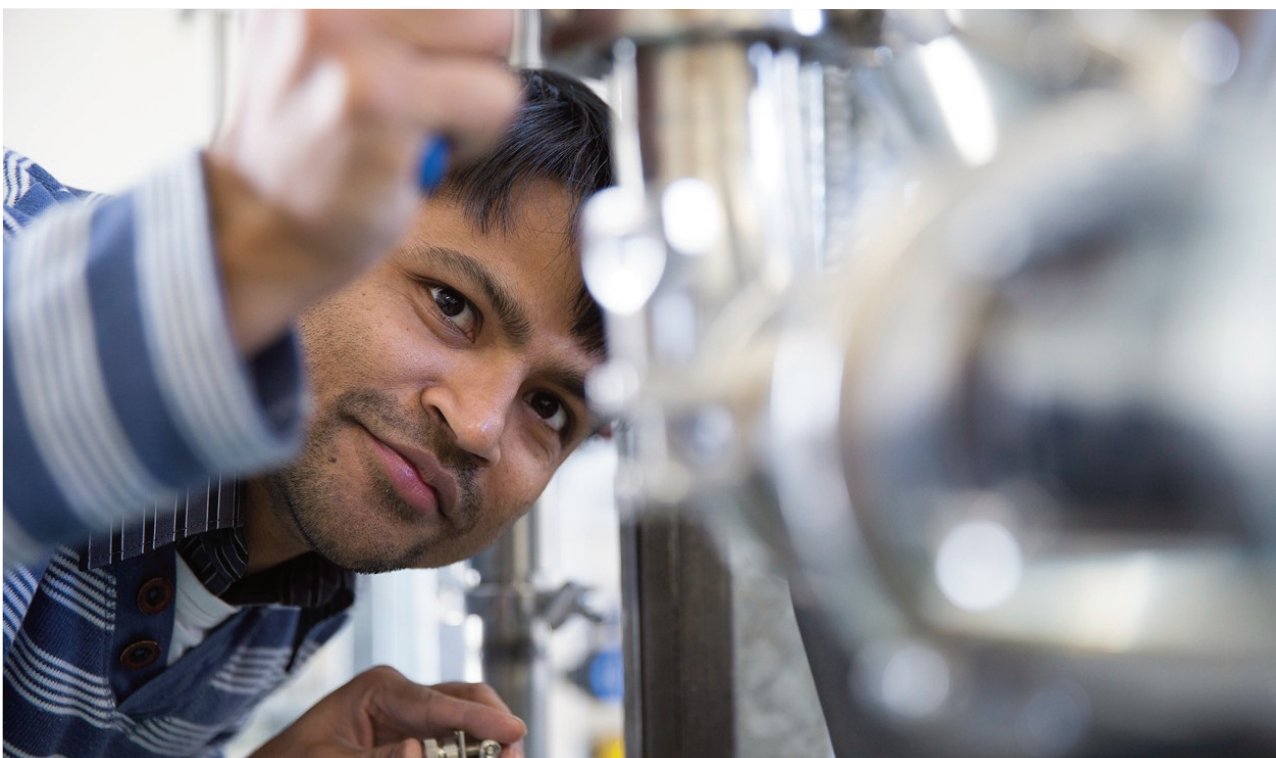
For many years, our interactions with industry have played a central role in guiding what we do at Kent. Our courses reflect the feedback we gain from our business networks; our research expertise is influenced by the

needs of industry, and we have superb technical facilities to put to use within our collaborative projects. This has led to a long history of successful partnerships with business and industry in the UK and around the world.

Here are some of the services we can provide:

- research to help you develop products or services
- guidance on research funding opportunities
- general consultancy
- extensive technical facilities
- the chance to recruit talented students and graduates
- training and development courses to develop new skills within your workforce
- access to an extensive industry network
- the chance to raise your company's profile – locally, nationally and internationally.

Our list of previous and existing partnerships include the following companies and organisations: BAE Systems, Institution of Engineering and Technology, BBC, Thales Group, Cummins, GE Aviation, Three, Docomo, AgustaWestland, Schneider Electric, C.Scope International, Martec Ltd, Double Negative, Express Mail Service (EMS), Prime Focus World, Intel, Buhler Sortex, Eurocontrol, Royal Academy of Engineering, Police Information Technology Organisation, Defence Science and Technology Laboratory (DSTL), National Health Service (NHS), Safran Morpho, Hayes Davidson, Kent County Council, Framstore, and Canterbury Cathedral.



USING OUR CONSULTANCY SERVICES

The School has a large team of experts working in electronic, digital, creative and computing technologies, who are able to provide advice and consultancy.

Consultancy can be provided in various different ways, including targeted research, design reviews, technology briefings and site visits. Work can be charged on a daily basis or for a total work package and arrangements can be tailored to suit customer requirements.

Areas of engineering expertise include:

- antennas
- biomedical engineering
- biometrics and security
- circuits and measurements
- reconfigurable and heterogeneous systems
- embedded systems
- image processing and computer vision
- digital signal processing
- instrumentation
- mobile applications
- optical communications
- optical sensors and components
- phased arrays
- RF, microwave and millimeter-wave circuits and front ends
- mobile and satellite communications
- radar systems.

Digital Media Hub

The School's Digital Media Hub is a specialist centre designed to provide a professional service to suit your requirements and budget. It provides consultancy services including interaction and usability testing for websites or other forms of digital media. Areas of expertise include:

- 3D modelling and animation
- computer usability and accessibility
- digital still and video photography
- digital visual effects
- website design.

The Digital Media Hub is an opportunity to address the needs of companies and organisations. For example, Kent County Council (see right), Turner Contemporary, and charities such as Age UK and the Alzheimer's Society (see right) have used the Hub to gain access to advanced digital technology and creative expertise.

Case studies

Kent County Council

A recent consultancy project in the School examined whether computer-mediated communication was an effective method of conflict resolution for young users. Working in collaboration with Kent Integrated Youth Service and Project Salus, the study was funded by the Transformation Fund and included secondary school students (aged 12-13) from three schools in Kent.

Dr Jim Ang and Ania Bobrowicz found that gesture-based avatar technology appears to be useful as a way to help resolve bullying in schools. When compared to Skype, users of Avatar Kinect produced better quality ideas and its users reported more positive changes in perceptions.

A dissemination event at the University of Kent included student presentations from Borden Grammar School in Sittingbourne and the Archbishop's School in Canterbury.

Age UK, Alzheimer's Society and Avante Care and Support

This consultancy programme within the School involved collaborating with industrial partner Silverfit as well as end-users Age UK, Alzheimer's Society and Avante Care and Support. The project investigated how kinetic user interfaces – which allow users to interact with a computer via body motions – could be of benefit for people with dementia in long-term care.

The project responded to issues of life-engagement by encouraging users to interact with a virtual world. For instance, it looked at how people with dementia could use physical props and a sensor platform to provide commands to a computer. The various simulations produced included a garden simulation where the user could add a plant-pot style object on to the platform and see flowers being planted and growing on the screen.



SETTING UP A RESEARCH PROJECT

The School undertakes high-quality research of significant national and international impact and our range of expertise allows us to respond rapidly to new developments.

The 2014 Research Excellence Framework (REF) is an independent survey of research within UK universities. Based on the REF, engineering at Kent was ranked 21st in the UK for research intensity. An impressive 89% of our research-active staff submitted to the REF and 98% of our research was judged to be of international quality.

Our high rankings in the REF reflect not only the quality of our submission but its impact within the commercial sector. (For examples, see the case studies, right.)

With 32 academic staff, plus over 130 postgraduate students and research staff, we support a high level of research activity. If you are interested in setting up a research project, Kent can provide a wide range of support, from advice on funding applications to research expertise and technical facilities.

The Electronic Systems Design Centre (ESDC) has assisted in the development of over 120 products since it was established in 1995. The centre helps companies to introduce new technologies into products and also helps with product definition and product development.

Our industrial partners already contribute to a number of research projects in the School with EPSRC (Engineering and Physical Sciences Research Council) and European funding.



Case studies

Radio-frequency engineering

Wi-Fi connectivity and mobile phone coverage can be problematic in buildings with signal blockage and interference. Research at Kent has tackled this problem with the design of antennas and frequency selective surfaces (FSS) that can be intimately integrated into buildings.

Kent has also developed antennas for vehicles. Collaboration with Harada Europe led to integrated antennas that take advantage of roof panels, boot lids and bumper mouldings. More recently, work on skin-mounted antennas led to printed transfer tattoos of radio-frequency identification tags. Such tags can be used for security and ticketing, or for hospital patients, to ensure their medical regimes are followed.

Reducing carbon emissions

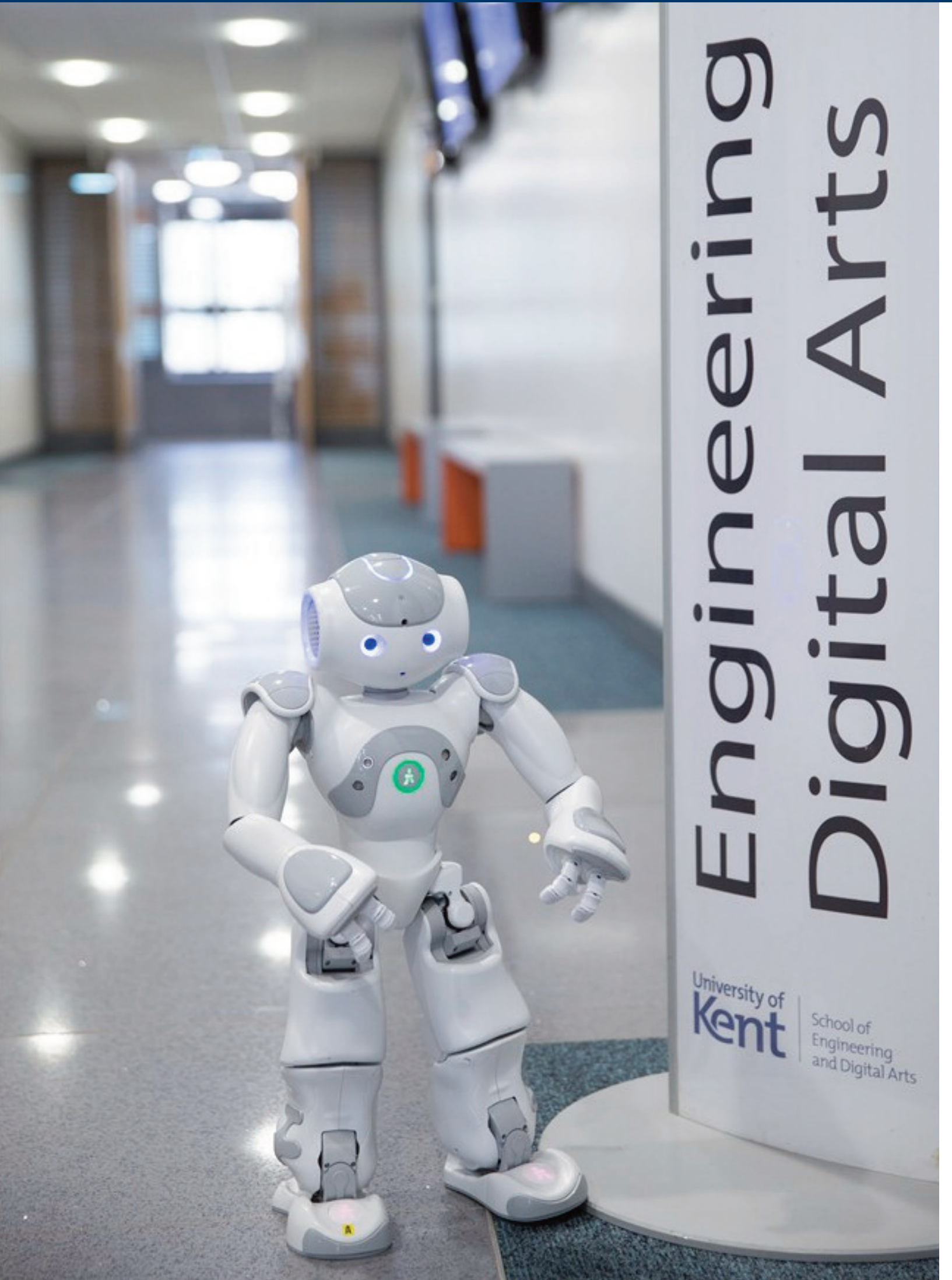
New technology developed at Kent could play a major role in the global challenge of tackling climate change. It was used to help Drax, the largest power station in the UK, move from firing coal to

a combination of biomass and coal, as it sought to halve its carbon footprint within five years.

Based on new instrumentation, the technology allows the engineers to diagnose the combustion process and optimise the operation of coal, biomass and heavy-oil-fired power plants. It has been applied in countries including the UK, France, China and Saudi Arabia, and is likely to have the greatest impact in countries such as China, where up to 70% of energy is generated from coal-fired power plants.

Developments in biometrics

Our research on biometrics – the identification of individuals through their physiological or behavioural characteristics – has led to significant developments within industry. Research at Kent in collaboration with British company Smart Sensors, has developed new ways to improve iris recognition systems (see p7 for more details.) The team has also worked on areas such as handwriting and signature recognition, as well as facial recognition.



OUR RESEARCH GROUPS

The School of Engineering and Digital Arts supports several research groups – all producing research of international quality.

Broadband and Wireless Communications

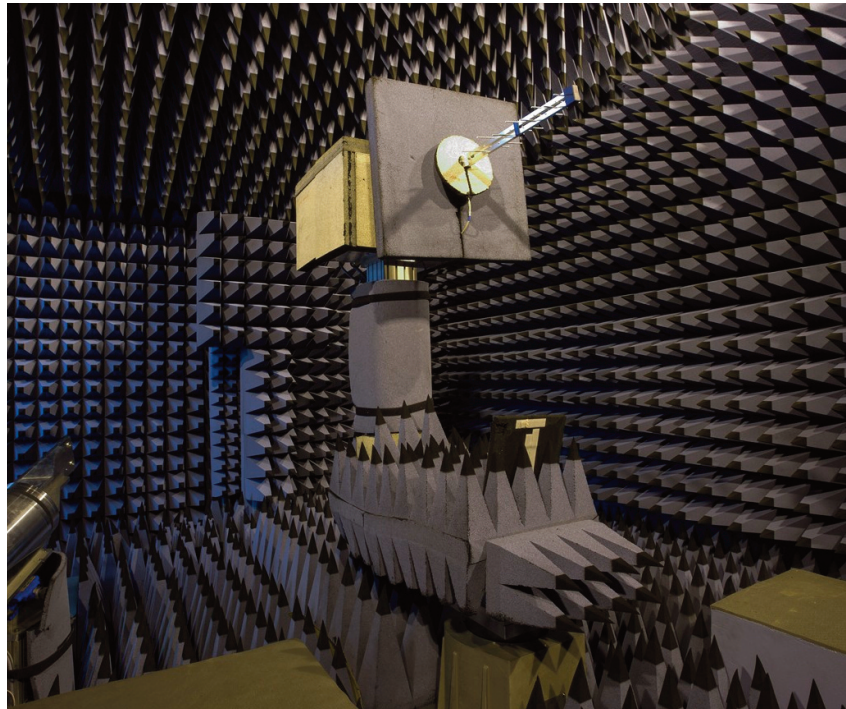
This group's research interests include antennas, microwave and millimetre wave circuits and measurements, and optoelectronics.

The antennas research covers frequency selective surfaces, printed and microstrip antennas and photonic band gap materials. Work covers frequencies ranging from 1MHz to 900GHz and finds applications in vehicle telematics, mobile communication systems and radar and satellite technology. Research into high frequency transmission lines and circuit integration is developing novel guiding and packaging technology. Modelling and simulation tools are widely used in the research, verified by experimental work.

The research carried out in the field of optoelectronics includes work on optical communications systems, optical sensors and imaging and novel optical components and is based in both the School of Engineering and Digital Arts and the School of Physical Sciences. This combination of optoelectronic activities strengthens our research base in terms of knowledge cross-fertilisation and equipment and facilities. It is part of Kent's long-standing strategy of collaboration between physicists and engineers.

Instrumentation, Control and Embedded Systems

This research group has a range of academics working in complementary research themes – instrumentation, control and embedded systems. The group has established a strong reputation in recent years, solving challenging scientific and technological problems across a range of industrial sectors.



The research group has established strong links with many European countries through EU-funded research programmes. The main expertise of the group lies primarily in sensors, instrumentation, condition monitoring, control, image processing, signal processing, neural networks and Systems on Chip (SoC).

The group is also involved in medical instrumentation research in the area of non-invasive physiological measurement; mostly carried out in collaboration with clinicians, who are experts in their field.

Intelligent Interactions

Our team working within the Intelligent Interactions group has interests in developing techniques for image processing, image analysis and pattern recognition, and in applications of these techniques. A principal area of interest is the development of generic techniques for optimal multi-classifier design for pattern recognition applications.

Knowledge Transfer Partnerships (KTP)

KTP is the largest programme in Europe for university-business collaborations. Its purpose is to help companies to access government funding and provide university expertise to deliver projects of strategic importance to business. With over 30 years of proven successes, the average increase in business profits generated by a KTP project is £550,000 per annum.

The Business Development Team at the University of Kent has a good track record of working with companies and organisations to develop bespoke KTP projects and secure grant support. Each project is delivered by a graduate or postgraduate students, overseen by an academic team to ensure that the KTP makes a difference to the business.

OUR RESEARCH GROUPS (CONT)

Handwriting analysis is both an application domain of intrinsic interest, and also as a medium for assessing neurological functioning in clinical environments – the assessment of stroke patients and the analysis of Developmental Coordination Disorder in children are currently important areas of research.

A related strand of work is document processing, with particular emphasis on document security (including document structures to support secure transactions) and distributed electronic documents, digital watermarking and intelligent encryption. Formal specification techniques in artificial neural system design represent an important contribution to work on classifier implementation. Currently, a major research theme is in biometrics and security. Biometrics of particular interest include fingerprint, facial

images, iris patterns, handwriting and personal signature analysis. Additional areas of interest include colour and texture processing, face detection and recognition (2D and 3D), image compression, video annotation, visual guidance and tracking.

Our links with industrial organisations and our wide interaction with other researchers in Europe and worldwide provide excellent opportunities for maintaining state-of-the-art awareness and for broadening horizons.

Another team within the group provides a pathway to world-leading research, academic and industry expertise in digital arts. The group brings together the creativity of the School's expertise and assists businesses with the development of new products and services through contract research.

This group's particular strength is in emerging digital technologies, including 3D virtual worlds, natural user interfaces (including gesture and facial interactions) and cutting-edge interaction paradigms (eg brain-computer interfaces and eye-tracking technology). The group has substantial experience in interaction design (for example usability and accessibility), social computing (such as social networking and computer mediated communication), mobile technology (for instance iPhone, Android, tablet computing) and video games, particularly in serious games.

Apart from these areas, the group's focus also lies in standard technologies, such as web design and development, including e-commerce, e-learning and e-health. In the area of time-based media, the group has substantial interest in digital film capture, editing and manipulation, on to fully animated 3D modelling techniques as used in games and feature films.



Case studies

Developments in biometrics

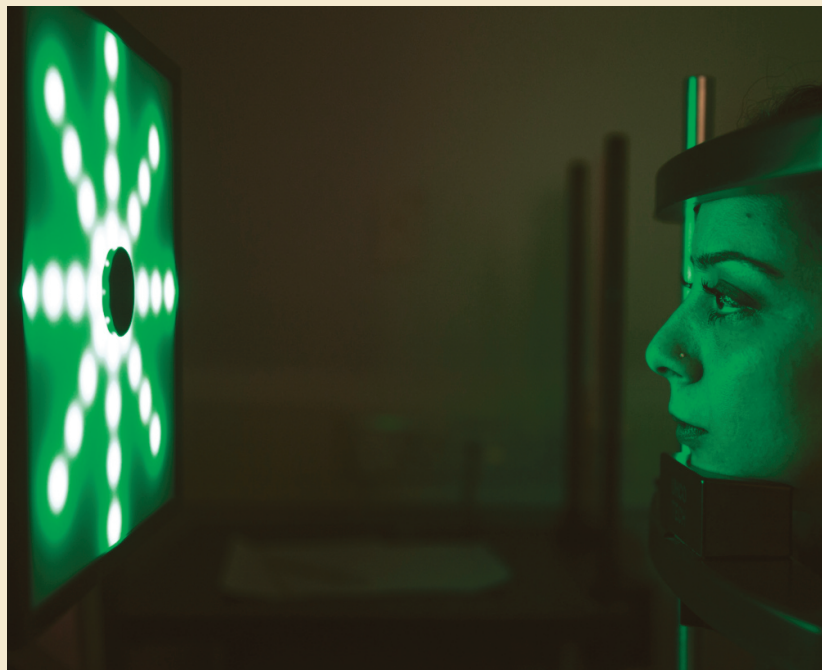
'Many companies, especially SMEs (small and medium-sized enterprises), don't have their own extensive research operations,' explains Mike Fairhurst, Professor of Computer Vision at Kent. 'That means that they are often interested in linking up with universities like ours, where they can benefit from our research capabilities.'

His own research covers the field of biometrics (automatically identifying individuals from their physiological or behavioural characteristics), including the approach of analysing the unique patterning of the human iris. In a traditional iris recognition system, the eye needs to be perfectly aligned with the camera to prevent the captured image from becoming distorted. The challenge of overcoming this restriction underlies a research project in the School sponsored by Smart Sensors Ltd, a British company at the leading edge of commercial iris recognition products.

'Our collaboration with Smart Sensors developed over time,' says Fairhurst. 'Anyone working in research does a lot of networking, and in meeting colleagues from Smart Sensors, we realised that some of the work we were doing at Kent was a natural fit with what they wanted to achieve. From various informal collaborations, Smart Sensors decided to sponsor a larger project via an industrial studentship.'

This has allowed a PhD student at Kent to receive additional financial support from the Engineering and Physical Sciences Research Council (EPSRC). The PhD project undertaken set out to investigate new techniques in iris recognition in partnership with the company.

Fairhurst says: 'We began by discussing a "wish-list" with the company; the things that they really would like to know more about. From that, we formulated a specification that would address as much of this as possible, while retaining the cohesion and overall narrative that's needed for a successful PhD.'



The project has led to the design of a specialist instrument that can capture, in a methodical way, samples of unconstrained iris images from a large number of users. The large database of images has allowed the Kent researchers to develop novel and more robust iris recognition algorithms. The resulting system offers many advantages – for example, the new algorithms allow good recognition performance even when a user's gaze is not optimally aligned with the camera.

The complexity of the project made ongoing collaboration an important factor in its success. 'With any PhD project, when you start doing the research, the findings can change the direction of the project,' says Fairhurst. 'You can hit a dead end with one line of enquiry, while something else comes along that is remarkably promising. Smart Sensors have been very generous with their time in providing feedback and help in prioritising strands of investigation.'

They also needed awareness of the different emphases and priorities within such a collaboration. 'Academics are judged to a large degree by the research they publish,' Fairhurst explains. 'Their natural inclination is to publish their findings as soon as they can. But obviously that's less of a priority for a company, which will instead be more concerned to stay ahead of any competitors. So, it was always important, whenever we did anything involving publicity or publication, to ensure this had the prior approval and backing of the company.'

Smart Sensors found the work with Kent allowed them to explore new ideas that are influencing the development of their state-of-the-art products. As Martin George, CEO, explains: 'Collaboration with researchers is very helpful for an SME like ours. The collection and analysis of new data was especially welcome and, taken with the end-user perspective that we can bring to the research through our market knowledge, is now suggesting some interesting directions for the future.'

USING OUR TECHNICAL FACILITIES

As part of a successful research university, the School of Engineering and Digital Arts has been able to invest in cutting-edge equipment and facilities.

As a School, we have excellent technical resources and these facilities often play a vital role in our consultancy work and our research collaborations. The facilities are also available for independent hire, along with any technical support that is required.

Below is a summary of the main facilities on offer; please contact us for further details or to discuss the cost of hire – see p17 for information on a free consultation.

Digital Media

Facilities available through the Digital Media Hub include:

- photographic studio equipped with backdrops, continuous lighting, studio flash and upload/editing facilities
- production studio – 100 sq metre video studio with comprehensive lighting grid, HD cameras and large green screen facility; static and radio microphones available
- sound studio – 3m x 2m sound booth with studio microphone and mixing/capture/edit facilities
- digital media studios – four, 40-seat training rooms, equipped with high specification multimedia PCs (ideal for CPD training for software packages, such as Photoshop, Maya and Flash)
- VICON Infrared Motion Capture System – full, eight-camera, motion capture facilities for capture and mapping to 3D models, film or animations (pictured right)
- anthroscan 3D laser scanner – an integrated high fidelity facility for scanning humans and creating three-dimensional models
- Usability and Human Computer Interaction – investigation and testing facility, including state-of-the-art multimedia PCs and one-way mirror for observation
- eLearning production facility – complete facility, from video filming and slide design to streaming video and DVD production.



Biometrics

Facilities available include:

- 3dMD 3D imaging scanner – 3D facial and object imaging scanner for general-purpose capture and biometric research
- biometrics research infrastructure and test facilities – testing and demonstration suite of biometric modalities (fingerprint, iris scan, signature, facial recognition etc).

Communications

Facilities available include:

- antenna test facility (see anechoic chamber, right)
- millimetre-wave network analyser – frequencies from 110 to 170GHz; spectrum analyser to 320GHz
- optical/optoelectronic test and measurement equipment – including sampling oscilloscope to >50GHz, optical spectrum analysers, tuneable LASER source, power meter and fibre cleavers/splicer.

Embedded Systems

Facilities available include:

- Design tools for Xilinx, Altera and Actel FPGA technologies
- MATLAB for system modelling
- National Instruments.

Instrumentation and Control

The group has a well-equipped Instrumentation Research Laboratory with a number of flow and combustion test rigs.

Anechoic Chamber

The School has recently refurbished its Anechoic Chamber, which can be used for EMC (pre-compliance testing) and antenna characterisation.

The Anechoic Chamber can allow measurements from 400MHz to 110GHz, with the absorber characterised above 1GHz. Planar, cylindrical and spherical Near Field measurements can be tested up to 40GHz. EMC Radiated Emissions tests to EN61000-6-3:2001 with Class B limit can be performed.

Biomedical Engineering

Facilities available include:

- speech workstation – SNORS+ multiparameter speech workstation, measuring voicing, nasal/oral airflow, tongue/palate contact and speech outcome
- gait analysis system – dynamic, gait analysis system, measuring vertical and shear forces.

Mechanical Workshop

The School also has a well-equipped mechanical workshop, staffed with skilled mechanical engineers and technicians. In contrast to commercial workshops, which require complete sets of mechanical drawings for any parts to be manufactured, our workshop is experienced in developing mechanical components in consultation with the client, providing a much more flexible service.

This fully equipped Workshop undertakes the design and manufacture of prototypes to individual specifications, using a range of materials, including plastics, stainless

steels, aluminium, brass and precious metals. In addition to a full range of machine shop equipment, the Workshop also has its own printed circuit board production facility with surface mount capability.

The Workshop also provides repair and maintenance facilities for many different types of scientific apparatus. Our skilled engineers and technicians are able to design new instruments, interface existing equipment and modernise older kit for new applications.

The workshop possesses SMT inspection and reworking facilities that can be used for removing and replacing surface mount chips and PGAs.

External clients include Ancon Technologies Ltd (see right), Naneum Ltd, Particle Measuring Systems (PMS) and Lab-Tools Ltd. It also provides services for other schools across the University.

The facilities available include those listed below. Please contact us for more details.

Full range of drilling, milling and turning machines:

- lathes
 - 16.5cm Swing x 90cm Centres with Digital Readout
 - 12.5cm Swing x 50cm Centres with Digital Readout
 - 34cm Swing x 200cm Centres
- milling machines
 - turret 100cm x 23cm table
 - turret 80cm x 20cm table
 - 25cm clearance on table with digital readout
 - 30cm clearance on table with digital readout
- drilling machines
 - pedestal capacity 0-13mm x 17cm from column to centre
 - bench 0-13mm x 19cm from column to centre
- welding facilities
 - stick welder 180 amps
 - TIG welder 250 amps
 - MIG welder 240 amps
 - oxy-acetylene welding/cutting
 - plasma cutter, gas brazing and welding

Vacuum forming machine – plastic moulding capability: 50cm x 45cm x 28cm

Sheet metal working machines

- box folding 150cm x 1.5mm mild steel
- guillotine 150cm x 1.5mm mild steel
- rolling 135cm x 1.5mm, 50cm x 0.7mm mild steel
- nibblers 3.5mm mild steel, 1.5mm mild steel

Power blade saw 30cm

PCB Fabrication

- UV light box 35 x 25cm
- etching tank
- PCB drills

Surface mount prototyping, rework and small volume production, using:

- convection reflow oven
- semi-automatic stencil printer
- Ersascope inspection system
- infra-red rework system
- thermosonic wedge bonder.

Case study: Ancon Technologies

Ancon Technologies is a high-tech company offering new molecular detection technology that has the potential to be used in a wide range of applications.

'Currently, we are developing links with a company in the security market; it's interested in our technology for the detection of explosives,' explains Technical Director, Boris Gorbunov. 'At the same time, we'd like to do something for medical science, and decided to investigate its use in detecting cancer in its early stages.'

Funding allowed the company to perform initial research, proving that it is possible to analyse the breath for the early detection of lung cancer. Gorbunov now hopes to take the research to the next stage: 'If lung cancer is caught early on, before symptoms develop, the mortality rate is very low. This technology can save lives; in America, where the main market is, people are getting quite excited.'

As a company with a clear focus on developing new technology, it has benefitted from its close links to Kent's School of Engineering and Digital Arts. 'The University of Kent is up the road and we've always had a lot of interaction with it,' says Gorbunov. 'One great benefit is the proximity of the workshop. Because we spend up to 80% of our resources on research and development, that means we need new gadgets, new kit and new devices on a regular basis.'

The workshop, according to Boris, is an excellent partner, thanks to an unusual level of expertise. 'The workshop is used to doing collaborative work with academics. We've built up a relationship over the years – we know what the workshop can do and it knows what we need. We don't always need an external engineer to make drawings because the workshop manager can work from sketches of a new idea. He does far more than a machinist could; he acts as an engineer and most commercial workshops can't provide that.'

TRAINING FOR YOUR EMPLOYEES

In today's competitive business environment, it is vital to develop the skills of your workforce. With this in mind, we have developed a range of solutions to meet the training needs of your organisation.

The School has a long record of providing bespoke training courses to industry. Some of our courses count towards the continuing training and professional development requirements of professional bodies.

All our courses are delivered by subject specialists and industrial practitioners, and combine the flexibility of part-time learning with a world-class education. We have modern lecture rooms, with multimedia presentation facilities, plus well-equipped laboratories and computer suites for hands-on teaching.

Training can either be delivered at the University campus or at a location convenient to you. The timing and scheduling can usually be adapted to suit your requirements.

We offer a range of CPD courses (see below) and can also develop bespoke training packages to meet specific customer requirements, including workshops and seminars.

Previous training and professional development courses have included:

- Introduction to Programming in C
- Introduction to Digital Signal Processing (DSP)
- Field Programmable Gate Arrays (FPGA) and CPLD
- VHDL for Logic Synthesis
- Surface Mount Technology and Design
- Introduction to Electromagnetic Compatibility (EMC) and Regulatory Compliance
- Advanced EMC and Pre-compliance Testing
- Printed Circuit Board Technology and Design
- Introduction to Microcontrollers
- Local Area Networks

- Wide Area Networks
- Network Performance Analysis
- Broadband Networks
- Mobile, Microwave and Satellite Communications
- Mobile Communications
- Advanced Mobile Communication Networks
- Digital Television
- Digital Communications
- Information Theory and Coding
- Optical Communications
- Introduction to Biometrics
- Advanced Biometrics
- Image Processing

We also deliver a suite of postgraduate programmes that can bring company employees up to date in areas of advanced electronic and communications technologies. We offer MSc courses delivered by members of the School's research groups (see p5) and all courses are research-led.

Our prices depend on the resources we use to deliver a course, the venue, course duration and whether the course is scheduled, flexible or bespoke. For further information or to discuss your requirements, please get in touch. Our contact details are on p17.







“At Kent we had direct contact with industry veterans through either guest lectures or hands-on workshops. This allowed us to focus on what was important to the industry and after graduation, I was employed by TT Games (a Time Warner Company) as a VFX Artist and have since worked on six AAA games, one of which was awarded a BAFTA.”

Tom Litton,
Graduate in BSc Multimedia Technology and Design
and MSc in Digital Visual Effects

EMPLOYING NEW TALENT

Sponsoring one of Kent's students, taking a student on a placement year or getting involved in student projects – all are excellent ways to identify and recruit new talent.

Taking a student on placement (or sponsoring a student) is a highly effective way for any company to recruit new talent. It provides the chance to assess a student's performance and suitability over a long period before they graduate: in effect, it's a low-risk, low-cost route to graduate recruitment.

Our School has gained a particularly strong reputation for its placement year, matching dedicated students with a variety of businesses, including large companies and SMEs in the UK and overseas. Kent's teaching is led by world-class research and our students are well-versed in the areas of technology that are relevant to today's business and industry. Our students are also known for their knowledge, motivation and fresh thinking – all characteristics that could be valuable within your company. They are also adept at picking up new technologies and applications.

Recent projects carried out during placements have included conducting research, designing prototypes, creating websites and facilitating new business development. Some of our students continue to work part-time for their placement company during their final year of study, many completing a final-year project in partnership with their employer.

The success of our scheme is demonstrated by the fact that many employers decide to offer our placement students a permanent job after graduation.



Year in Industry

The Year in Industry is offered to second-year students who are achieving good results in their studies. Typical placements run from summer to summer, starting as early as June or as late as September. During the placement year, the employer pays a salary and the student becomes a member of staff, with the same responsibilities.

We can provide support for employers, including advice on how to advertise job opportunities, the targeted marketing of vacancies, making campus presentations, assistance in arranging interviews, passing feedback to candidates, and how to present any offer of employment.

Employers who are interested in taking a placement student must be able to offer a position with real responsibilities – one that allows the student to put their skills into practice and, ideally, pick up new ones. The student should be able to meet with Kent's Placement Officer at least once on-site and the employer needs to be represented at this meeting.

During the employment period, the student keeps a record of daily activities and, at the end of the placement year, the student writes an assessed report. Employers are also involved in the assessment process and complete a performance evaluation.

See below for details of the skills our placement students can offer your company.

Bioengineering

This cross-disciplinary course is designed for students with a strong interest in engineering and biomedicine and educates engineers that can develop systems in medical practice and research in biology. Students have covered: An Introduction to Biochemistry, Molecular and Cellular Biology, Skills for Bioscientists, Introduction to Electronics, Robotics Project, Digital Technologies, Engineering Mathematics and Engineering Analysis.

CONTINUED OVERLEAF

EMPLOYING NEW TALENT (CONT)

Electronic and Communications Engineering (ECE)

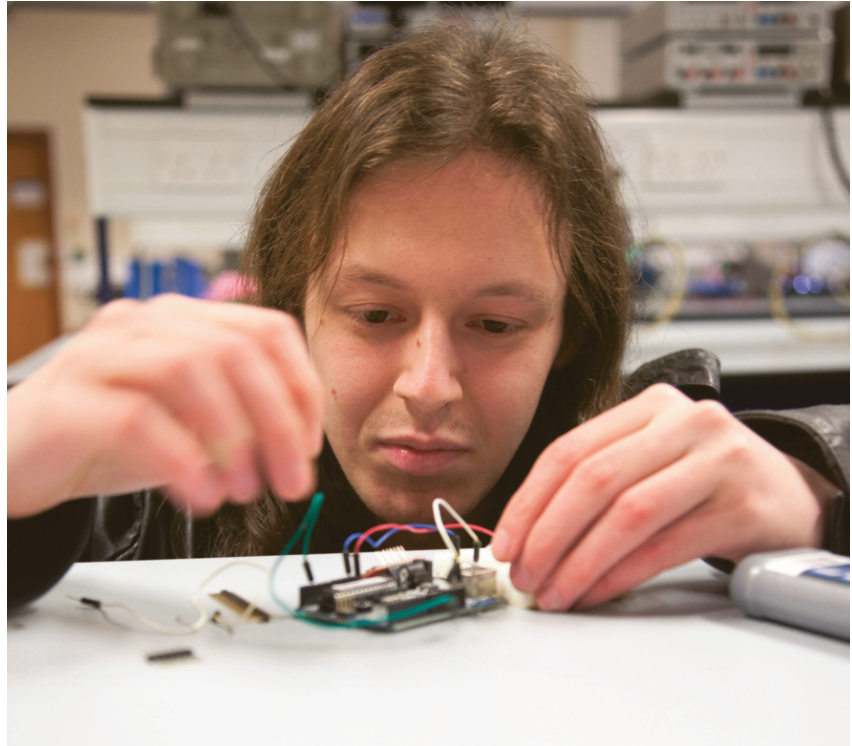
Students have covered: Microcomputer Engineering, FPGAs, Computer Interfacing, Instrumentation, Communication, Electronics, Electronic Circuit Design, Digital Implementation, Digital Signal Processing, Operating Systems and Computer Architecture. They can program in C and they are familiar with Pads, Modelsim, LabVIEW and MATLAB.

Computer Systems Engineering (CSE)

Students have covered: Object Oriented Programming, Microcomputer Engineering, FPGAs, Computer Interfacing, Electronic Instrumentation, Digital Communications, Digital Implementation, Digital Signal Processing, Operating Systems and Computer Architecture. They can program in Java and C, they are familiar with Pads, Modelsim, LabVIEW and MATLAB, and can understand networks and design digital circuitry.

Digital Media

Digital Arts (DA) and Multimedia, Technology and Design (MTD) students will have a portfolio of technical and creative digital



Case study: the undergraduate project

When it comes to collaborative projects that bring together academia and industry, Dean Johnson is something of an expert. During his student days at Kent, Johnson was sponsored by Bon Accord Hearing Aids and found the process an inspiring one. So, when he became Managing Director of Haag-Streit UK, a leading company providing ophthalmic equipment, he wanted to do something similar. He approached Kent about sponsoring a student project and came up with a brief – to take a classic analogue system for a tonometer (a device that measures the eye's internal pressure) and convert it into a digital system. 'Luckily for us, we ended up with Martin Henderson, a very gifted undergraduate student,' says Johnson. 'We realised he had something special and felt sure he'd get something working.'

But, Henderson's solution went well beyond his expectations. 'He used some innovative ideas to build the system into a very tight space. That was the clever bit! His concept meant that we could integrate the system into our existing product. There was no need for any additional tooling.'

The potential was easy to recognise. 'It got us thinking. We could alter the product without much extra expense and it would certainly add value. In a darkened room, a digital version is easier to see, and the technology is usually able to provide more consistent results. There's provision for the future too: a digital product can be wireless, for instance.'

The company went on to patent the solution with Martin Henderson listed as the co-inventor, as Johnson explains. 'It's too early to say whether it will go into production, but it's looking very positive. The next step is to

take it through a clinical evaluation, as well as costing the extra electronics – will the market pay for it?'

Like all the best collaborations, the project was of mutual benefit. 'It's nice for a young man to have his name on a patent,' says Johnson, 'but he also learnt a lot about compliance; the sourcing of components, and how they are assembled into a product. This information is useful – it helps an engineer to see the bigger picture.'

For Johnson, it seems, this is a key part of his motivation. 'Medical engineering is an exciting place to be,' he explains. 'We are dealing with the challenges of an aging population and we need more home-grown engineers coming up through the ranks. We all need to support young talent.'

skills for the creation of content across the new media and broader audio-visual industries.

By the end of the second year, when they become available for placements, they know how to build responsive websites using HTML, CSS and Dreamweaver, program in C, JavaScript, create Java applets and apply special effects using Adobe After Effects, as well as produce a digital portfolio using Flash and ActionScript. In addition, students can apply the design principles they have learnt on the course to the production of 3D computer modelling and animation in 3ds Max, digital video editing using Premiere Pro and Audition as well as Photoshop skills for image manipulation.

Sponsored student scheme

The sponsored student scheme offers additional benefits to the standard placement year. Increasingly, employers are looking at how they can work with universities to attract bright and competent graduates who already have relevant experience in their particular field. One excellent way of doing this is by offering support and work experience throughout a student's degree.

With a typical sponsored undergraduate course, the arrangement is that students work with the company during a vacation period and a one-year work placement, and study at the University of Kent on a course related to their chosen discipline. In this way, the Sponsored Student Scheme provides a sustained, long-term engagement between student and company. The advantage for the company is that it has three years to 'interview' a student and develop those traits that it requires from a potential employee.

Companies who take part in the scheme gain the opportunity to:

- give a presentation to students about the opportunities on offer within the company
- attract bright students into their company for a placement year and perhaps for full-time employment after graduation
- use talented students to undertake project work of interest to the company without needing to commit internal resources
- join the School's industrial panel to help to shape future courses
- set up Sponsored Student Projects with undergraduate and postgraduate students.

Case study: the Year in Industry

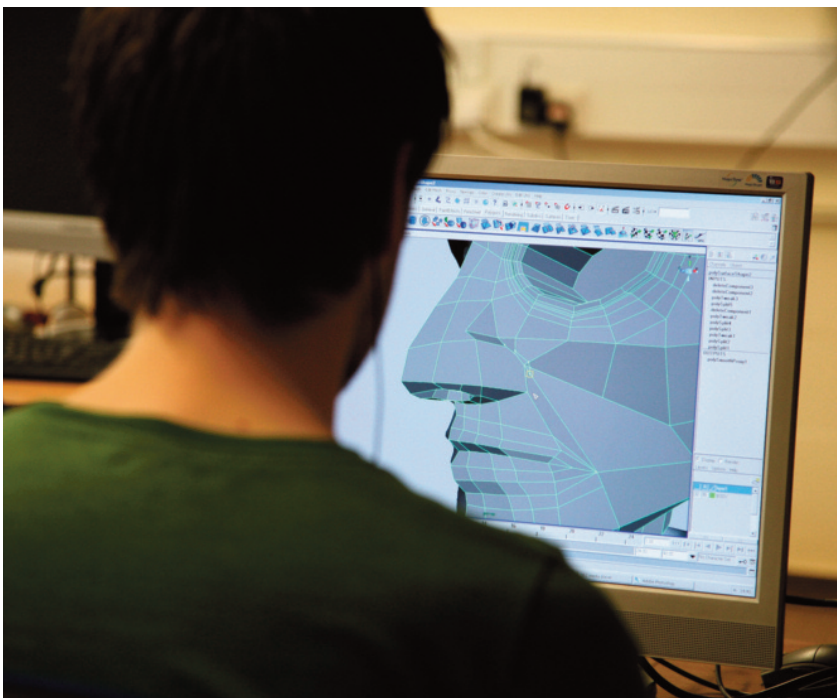
Delphi is a popular choice for placement students taking their year in industry and the company is also involved in the School's industry panel, where its professional knowledge helps to inform the student curriculum.

'We know from prior experience that Kent is one of the few universities that can provide students who are right for our company,' says Danielle Wadhams, Site HR Manager. 'We use Kent a lot. We usually take 20 students a year and around five of them come from Kent. We find that the students have the right knowledge and fit into our teams very well.'

The placements at Delphi are able to provide an excellent level of professional development, as Wadhams explains. 'After three months, the students take on the role of Junior Engineers. In other words, it's a proper job and some teams are heavily reliant on their placement staff.'

For the company, it provides an opportunity to recruit the very best graduates around. 'The placement year gives us time to look at a group of prospective employees. We can make sure that we like them and that they like us.'

Delphi is also taking part in the School's latest sponsorship scheme, offering bursaries to talented students, along with a contract for a year's employment after graduation. 'Within a couple of years, this scheme has really proved itself,' says Wadhams. 'The bursary encourages a strong commitment and we can recruit very high quality students this way.'



RAISING YOUR COMPANY PROFILE



The School network covers a range of national and international contacts within the fields of engineering and digital arts.

By developing a partnership with the University, you can access this range of contacts: a network that includes funding bodies, alumni from the School, researchers in partner universities, as well as key figures in industry.

Becoming part of this industry network can help you to forge new business partnerships, access funding and keep abreast of key developments within the industry. It can also help you to raise your company's profile within your field and among Kent students, who will become the industry figures of the future.

Industrial panel

Input from industry ensures that our teaching and research is relevant to today's needs. The School runs two industrial advisory panels focussed on Engineering and Digital Media. Both panels meet once a year to discuss a range of issues, including proposals for new courses, industry requirements for graduates,

funding and collaboration opportunities, as well as current research projects.

The meetings usually coincide with student project presentation days, giving the panel the opportunity to meet our students.

A number of companies also donate Industrial Prizes to students for outstanding project work or excellent exam marks. Many panel members provide graduate job opportunities that can be advertised within the School.

Companies involved in the engineering panel include BAE Systems, Delphi Diesel, Ocean Signal Limited, Megger, Charis Technology, Procon Engineering, RDDS Avionics, RAF (Royal Air Force), Energy Solutions, Texcel Technology, National Instruments, Imagination Technologies, Axicon Services, Haag-Streit, Rohde & Schwarz, JDSU, Würth Elektronik, Harada Europe R&D Centre, and EE.

Companies involved in the digital arts panel include Cognitive Media, GForces Web Management, Holiday Extras, Red Bullet,

Sagittarius Digital, Speech Link Multimedia, Moving Picture Company, The Foundry (MPC), Deeson Group, and Kent County Council.

Presentations

Every year, the School holds an Employability and Careers Day. At this event, local and national companies give talks to our students. It's an ideal chance to present your business, and any graduate schemes you offer, along with the kind of qualities and skills your company is looking for in a graduate. Companies are also welcome to address students on relevant topics at other times of year.

Sponsor or donate a student prize

Twice a year, the School holds prize-giving ceremonies for categories such as Most Outstanding Project, Best Performance, Best Student and so on. Our industrial prizes are presented by the sponsoring company. Some companies also choose to lend technical equipment for our UCAS and Open Days.

If you are interested in getting involved, please get in touch via the contact details opposite.



WORKING WITH YOUR ORGANISATION

As this booklet demonstrates, the School has partnerships with industry across a wide range of areas. So, in the first instance, we recommend that you meet us for a free consultation.

During this meeting, we can provide specific information relevant to your organisation. You may be interested in partnership activities such as student placements, sponsorship or joining one of our industrial panels. Or you may be interested in services such as consultancy, research and development projects, training, or the use of our technical facilities. For all commercial services, we provide a free project proposal and quotation with the assistance of Kent Innovation and Enterprise (KIE).

KIE is the University's central service for business and industry, helping organisations to enhance their products, services, systems and human resources by working with academic schools and gaining access to the University's expertise. KIE can offer expert advice on the following:

- access to funding, including government schemes such as Knowledge Transfer Partnerships
- opportunities for collaborative research, training and development
- intellectual property, providing opportunities for collaboration and licensing of new technologies
- student placements and sponsorship of student enterprise and employability activities.

For more details on KIE activities, see www.kent.ac.uk/enterprise

To book a meeting with a member of the School, please call or visit our website below.

T: +44 (0) 1227 823251

E: eda-enterprise@kent.ac.uk

www.eda.kent.ac.uk/industry

MORE INFORMATION

To find out more about working with Kent,
please get in touch with the School.

T: +44 (0)1227 823251

F: +44 (0)1227 456084

E: eda-enterprise@kent.ac.uk

www.eda.kent.ac.uk/industry