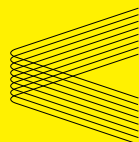


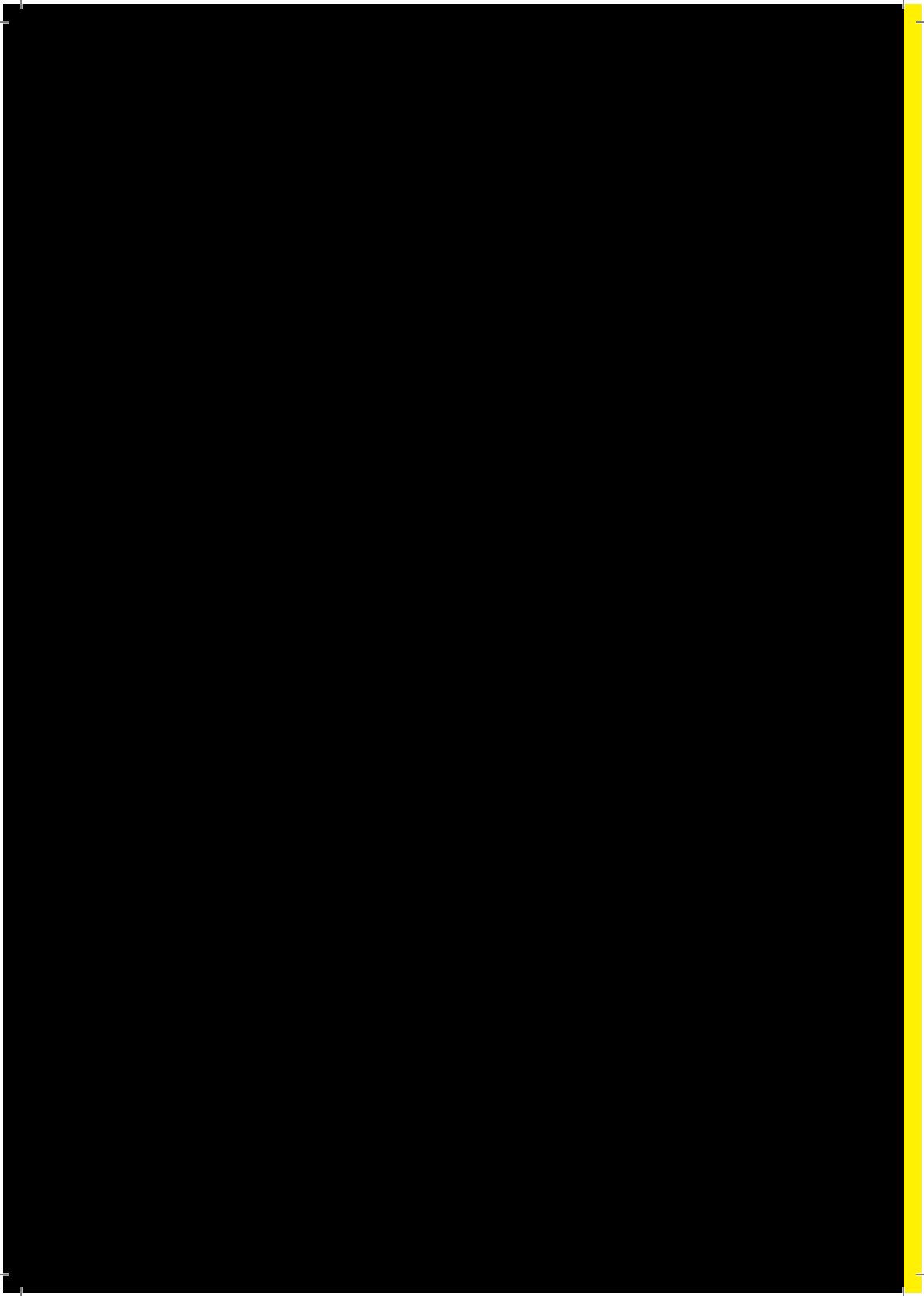
SCIENCE GALLERY



CRANN

COOL JOBS

**MEET PEOPLE WITH
THE JOBS YOU WANT**



WELCOME

COOL JOBS aims to stimulate interest and excitement around STEM (Science, Technology, Engineering and Maths) careers.

The CRANN Institute and Science Gallery work with a diverse mix of scientists and technologists every day. Their work spans a range of environments, from academia, to industry to the arts; they all have different stories to tell about how they got to where they are now.

This booklet is designed for second-level students, their parents and teachers. We hope it will give students an idea of the interesting and exciting opportunities in STEM, as well as the wide range of careers available to them.

The booklet features a series of COOL JOB profiles that highlight some of the opportunities that are out there for people with STEM qualifications and the diversity of careers that are available to them. You will also get a sense of the different paths people have taken to get to their current COOL JOB, as well as the mix of skills and personality traits that help them every day in their career.

Each year Science Gallery and the CRANN Institute work together to organise a COOL JOBS event in Science Gallery, Trinity College Dublin for Transition Year students, providing an opportunity for them to meet potential future employers and attend talks. Find out more at www.crann.tcd.ie/Education-Outreach.aspx and www.dublin.sciencegallery.com/education

Cool Jobs is being run in association with Science Foundation Ireland's Smart Futures Campaign (www.SmartFutures.ie).



SINÉAD CULLEN

Scientific Researcher

I WORK AT...

Biomedical Diagnostics Institute (BDI) at DCU and CRANN at TCD both are research institutes. At CRANN we work with materials on the nanoscale, that are tens of thousands of times smaller than the width of one human hair! In BDI we are focused on developing novel medical devices that people could use in their own homes.

I AM...

a PhD student- which means I do scientific research. To be more specific, I test the performance of new small scale medical equipment.

MY TYPICAL DAY INVOLVES...

Every day is different which is what I love about it. Some days you can be preparing samples for an experiment which you will carry out the next day. I am coming up to an exam now so some days involve a lot of writing and reading scientific papers. Other days can involve helping out with education and outreach, such as showcasing our work with BT Young Scientist Exhibition.

MY FAVOURITE PART OF THE JOB IS...

learning new skills. I work in a multidisciplinary lab with physicists, material scientists and nano-scientists so it is essential that we all trade information in our area of expertise. This enables us to have a better overall view of different aspects of the research – it also makes for interesting conversation over coffee!

THE HARDEST PART OF MY JOB IS...

that there are constantly new things to learn. Also I need to ensure that I am up to date with all the research going on around the world related to my field.

THE SKILLS I USE MOSTLY IN MY JOB ARE...

determination and conscientiousness. I also need to be able to work on your own initiative and work well as part of a team. I also need to manage my time well as it can be very hectic. Good communication skills are also a must for a PhD student.

MY QUALIFICATIONS ARE...

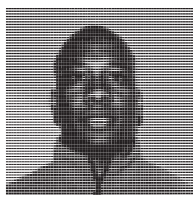
a degree and masters in Neuroscience in University College Cork.

MY TRAINING DURING THESE HELPED ME TO...

have excellent scientific skills as a biologist which I implement every day in work. It has also helped me to work well as part of a team and improve my communication skills.

IF I HAD A DAY OFF...

I would be out running, in the gym, at a music gig or reading a book. I love music and go to as many gigs as I can. My favourite one this year had to be the The XX. I am also really enjoying J.K Rowlings book, "The Cuckoos Calling" at the moment.



FRANKLYN BURKE

Research Engineer

I WORK AT...

Micron Technology Inc. (Idaho, USA), who are best known for producing many types of semiconductor devices, including different types of memory and chips for a range of products.

I AM...

a research and development yield enhancement engineer which means I research and develop the next generation of memory products. Currently we are trying to increase the number of circuits and memory arrays on chips.

MY TYPICAL DAY INVOLVES...

meeting my team and discussing the major challenges related to our research. We also perform tests using a range of experimental techniques. We then combine, compare and assess the data we have gathered. Based on this, we design future experiments that we need to perform.

MY FAVOURITE PART OF THE JOB IS...

accurately identifying the root cause of problems that have affected the performance of our products.

THE HARDEST PART OF MY JOB IS...

collecting clear and conclusive information from experiments; this can be difficult as there are lots of variables.

THE SKILLS I USE MOSTLY IN MY JOB ARE...

good analytical and experimentation skills. Teamwork and good communication skills are very important too. My thorough knowledge of semiconductor device physics also helps.

MY QUALIFICATIONS ARE...

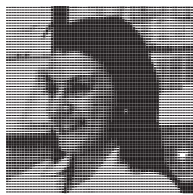
a degree and masters in Electrical Engineering and a PhD in Physics

MY TRAINING DURING THESE HELPED ME TO...

successfully identify the main problems that can affect the performance of our products.

IF I HAD A DAY OFF...

I would spend it listening to reggae music and trying new cuisines at some local restaurants.



KAREN YOUNG

Teacher

I WORK AT...

a girls' school in London.

I AM...

a Physics and Chemistry Teacher.

MY TYPICAL DAY INVOLVES...

arriving to school at 7.45am in order to prepare the classroom for lessons that day. I teach Physics to girls between the ages of 11 and 17 at both GCSE and A Level and I also teach Chemistry up to GCSE level. I organise and run the Junior Science club once a week where we do exciting experiments beyond the scope of the syllabus. After school, I prepare for the next day, mark students' work and I usually leave at around 6pm.

MY FAVOURITE PART OF THE JOB IS...

seeing a student improve as the year progresses. As a teacher, I strive to motivate students to discover and develop their strengths and abilities and to use these to their full potential. I also love creating an interesting and interactive environment where everyone can learn.

THE HARDEST PART OF MY JOB IS...

a heavy workload of marking to do each week. There are also a large number of reports to prepare at various stages throughout the year.

THE SKILLS I USE MOSTLY IN MY JOB IS...

communication. This is key to being a successful teacher. All students have different learning styles, therefore teachers must have varied methods of communication. I also believe that being organised is vital.

MY QUALIFICATIONS ARE...

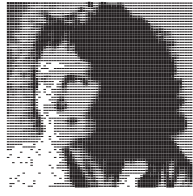
a degree in Experimental Physics and a PhD in Physics, after the PhD I did a professional Diploma in Education.

MY TRAINING DURING THESE HELPED ME TO...

develop an in-depth knowledge of Physics and feel confident answering questions that students may have beyond the syllabus. While completing my PhD, I also had the opportunity to develop my communication skills by presenting my research at international conferences. Teacher training was also invaluable as I had the opportunity to teach in fantastic schools and learn essential skills and techniques from the experienced teachers there.

IF I HAD A DAY OFF...

I would do many things as I have a range of hobbies from going to the theatre to attending fitness classes. I also love catching up with friends and spending time with my family.



LAETITIA WEST

Process Engineer

I WORK AT...

Intel Ireland.

I AM...

a Process Integration Engineer, which means I look after a large chunk of the microchip manufacturing process.

MY TYPICAL DAY INVOLVES...

inspecting charts that measure the health of the silicon product as it progresses through the factory. I first examine these charts to see if they look 'normal'. If something is not normal I have to try to figure out what is wrong. It is a bit like being a detective; you use your knowledge of the technology, your basic science knowledge, and data analysis tools to help you solve the problem.

MY FAVOURITE PART OF THE JOB IS...

when I find the cause of a problem and fix it, (or get someone else to fix it!).

THE HARDEST PART OF MY JOB IS...

trying to fit everything in. You have to learn to prioritise. What must be done today, versus what can be safely left until tomorrow or the next day.

THE SKILLS I USE MOSTLY IN MY JOB ARE...

my ability to listen to and influence other people, my knowledge of Science and Technology and teamwork.

MY QUALIFICATIONS ARE...

a degree in Chemistry and Physics. I was not sure what job I wanted to work in after I

graduated so I got a job with a semi-conductor company in Limerick. I really didn't know much about the micro-chip industry back then, but I soon learned. Over the years, as semi-conductor technologies got more and more complex, I felt I needed more technical depth, so I recently did a Masters in Physics, sponsored by Intel.

MY TRAINING DURING THESE HELPED ME TO...

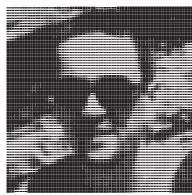
gain a lot of scientific and technical knowledge. Once you start in your job you learn a lot of additional skills, like teamwork, good communication, influencing others, problem solving. These are sometimes called 'soft skills', but they are just as important as your hard technical knowledge. It is these 'soft skills' that help you to be really effective in your job, and that help you to apply your technical knowledge to real problems in the workplace.

IF I HAD A DAY OFF...

I'd like to spend it singing with my choir. There is a group of 70 or 80 of us. It is a mixed choir of men and women of all ages from teenagers upwards, and we sing in venues like the National Concert Hall and St. Patrick's Cathedral.

IF YOU WERE NOT WORKING IN YOUR FIELD WHAT WOULD YOU BE?

I think I might be an actress! In my teens and 20's I did a lot of acting, as my sister managed a theatre and produced and directed a lot of plays. I really enjoyed that!



DENIS MCCARTHY

Marketing Analyst

I WORK AT...

Jesta Digital in Berlin, Germany. Jesta are a company that sell mobile phone related products such as apps, games, ringtones and screensavers.

I AM...

a marketing analyst which means that I analyse all the information about sales of our products. Every transaction is logged onto our system and I use this information to see how the company is performing.

MY TYPICAL DAY INVOLVES...

for me there are no real standard days – I am always working on new projects. My main work involves assembling the sales data and then building models that can explain it better. From this we try to determine the importance of certain variables, like where are our customers from, what is our most popular app etc...

MY FAVOURITE PART OF THE JOB IS...

the challenge of continuously solving new problems and learning about new systems, while expanding my analytical skills. I always enjoyed the analytical part of research, but now I do not have to go to a lab to get the data – which has advantages and disadvantages. The projects I work on are continuously changing and I get to see the impact of my work immediately.

THE HARDEST PART OF MY JOB IS...

understanding how the data is determined and what it represents. Other challenges include ensuring you have found the best model to fit the data and the best calculation to fully understand the data.

THE SKILL I USE MOSTLY IN MY JOB IS...

my analytical ability. My analytical skills allow me to deal with lots of data, recognise different problems and build appropriate mathematical models to understand the data. I also think computer skills are very important. I work with a lot of software which needs to be updated constantly. I feel my strong mathematical background helps sometimes but this is not a necessity.

MY QUALIFICATIONS ARE...

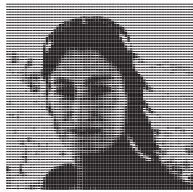
a degree in Experimental Physics and a Ph.D. Physics.

MY TRAINING DURING THESE HELPED ME TO...

make the transition to analytics in a company, as it is not very dissimilar to analytics in research. I use most of the mathematical, analytical and computer skills that I learned in my physics education on a daily basis.

IF I HAD A DAY OFF...

I would go trekking. I also enjoy making dinner for my wife.



IRATXE MIJANGOS

Process Engineer

I WORK AT...

Intel Ireland.

I AM...

a dry etch process engineer at Intel.

MY TYPICAL DAY INVOLVES...

reviewing data from the previous night to ensure the equipment used to make the microchips is performing well. I then make plans for that day, attend meetings and do a lot of problem solving

MY FAVOURITE PART OF THE JOB IS...

how diverse and complex it is.

THE HARDEST PARTS OF MY JOB ARE...

making the right decisions constantly without compromising the quality or the cost.

THE SKILLS I USE MOSTLY IN MY JOB ARE...

good communication and technical knowledge.

MY QUALIFICATIONS ARE...

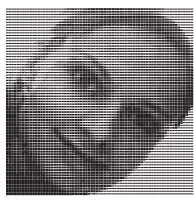
a degree in Mechanical Engineering, a masters in Innovation and Technology Management and a PhD from the Department of Engineering at Trinity College Dublin.

MY TRAINING DURING THESE HELPED ME TO...

learn new things quickly as I didn't have any experience in the Semiconductor Industry prior to this job, but the skills that I learned throughout my education prepared me to learn quickly.

IF I HAD A DAY OFF...

I would go hiking.



ZORYANA TISCHENKO

Software Test Engineer

I WORK AT...

IBM Ireland

I AM...

a Software Test Engineer, which means my main activity is to test product functionality to make sure it works as designed.

MY TYPICAL DAY INVOLVES...

having fun, as test teams are the only teams at IBM who are actually encouraged and rewarded for attempting to break the product in the most sophisticated and sometimes brutal ways. Of course, the intent of these, somewhat "pirate-like" activities is to assure the quality and integrity of IBM's software products. To achieve my objectives, I use the latest technologies developed by IBM for software developers all around the world—sometimes even before these technologies reach the market.

MY FAVOURITE PART OF THE JOB IS...

centred around the fact that Ireland is home to one of twelve IBM research centres. These are where the magic happens. The latest technologies that shape the world of tomorrow are being invented and developed today, right here. IBM has over 100 years history of inventing and shaping IT as we know it today – to be at the centre of such innovation, brings momentum and excitement to my life – it inspires and motivates me to learn, to experiment, to grow. I feel privileged to work and to socialise with the brightest talents in the industry and to learn from them through

various seminars and conferences organised within the company, throughout my workday and through mentoring programs provided by IBM. All of this means an awful lot to me.

THE HARDEST PART OF MY JOB IS...

that there are lots of challenges – they are part of learning. Sometimes I do not find them particularly difficult to handle, however it can be difficult to choose what to focus on. Another good thing about in IBM is that we have mentor programs available for us, so when in doubt, we can learn from more experienced IBMers.

THE SKILLS I USE MOSTLY IN MY JOB ARE...

problem solving and team work.

MY QUALIFICATIONS ARE...

a degree in Information Technology and Information Systems at DIT. This degree was broad and it helped me to understand what parts of the software could cause problems.

IF I HAD A DAY OFF...

I would spend time planning my next career move or spend time with my daughter. Also, I am mentoring at CoderDojo.



ALAN BELL

Microscopist

I WORK AT...

the Advanced Microscopy Laboratory (AML) in CRANN, Trinity College Dublin. The AML is a world class facility where scientists come and take pictures of their samples.

I AM...

a microscopy expert for the Helium Ion Microscope (HIM). It is a very powerful microscope with extremely specialised capabilities and there are only a handful of them around the world.

MY TYPICAL DAY INVOLVES...

maintaining the Helium Ion Microscope. Inside the microscope there is a column through which a beam of Helium ions need to travel down the centre. I ensure they are travelling correctly and I also ensure the ion beam is as small as possible so we obtain the highest resolution. I also work with other scientists to help them use the microscope.

MY FAVOURITE PART OF THE JOB IS...

imaging biological samples. There are never straight lines in the bio world. Collagen fibres and skin cells look really cool when imaging with a HIM.

THE HARDEST PART OF MY JOB IS...

ensuring that the microscope is running and performing well. This can be tricky because the first Helium ion microscope was sold in 2007, meaning that these microscopes are very new and they can breakdown a lot.

THE SKILLS I USE MOSTLY IN MY JOB ARE...

being personable. You need to interact with a very wide range of people looking to use the microscope and coordinate when the machine is available. We have people using the HIM from universities and from industry.

MY QUALIFICATIONS ARE...

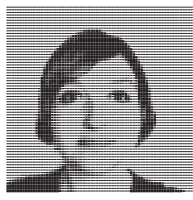
an undergraduate degree called N-PCAM (Nanoscience, Physics and Chemistry of advanced materials) and a PhD in Chemistry.

MY TRAINING DURING THESE HELPED ME TO...

have a good fundamental knowledge of science. I also learned to think critically and assess the feasibility of any experiment. I got to visit the factory where they make these microscopes and do super user training. This was very cool.

IF I HAD A DAY OFF...

I would play hockey and golf every weekend. I'm also a keen stamp collector and train spotter. (Last sentence might be a lie!)



DOROTHÉE O'TOOLE

Process Engineer

I WORK AT...

Globalfoundries, a semiconductor fabrication company in Dresden, Germany. This company specialises in making the chips that are at the heart of the iPhone.

I AM...

a process engineer. I work in a cleanroom where chips are made 24/7.

MY TYPICAL DAY INVOLVES...

investigating how the production of the chips has performed throughout the night. If something has gone wrong somewhere, it's up to me to find out what has happened and get it fixed. There are many steps involved in making a chip for a phone so there are many possible places where things can go wrong.

MY FAVOURITE PART OF THE JOB IS...

the amount of variety in my work. I need to deal with a lot of different people all the time, because of this I need to work well in teams, which I like.

THE HARDEST PART OF MY JOB IS...

that we usually have tight timelines so I need to work a lot under pressure. Also, it can be difficult prioritising work when there is always so much to do.

THE SKILLS I USE MOSTLY IN MY JOB ARE...

an ability to multi-task and good knowledge of the semiconductor process. Strong communication skills and being able to work well in teams are also important.

MY QUALIFICATIONS ARE...

a degree in Chemistry, a Masters in Chemistry and a PhD in Chemistry/Nanoscience.

MY TRAINING DURING THESE HELPED ME TO...

make an easy transition into the working world as my research was directly related to the main processes involved in making chips, but at a much smaller scale. Also another thing that greatly helped me was the way scientific research teaches you to be systematic.

IF I HAD A DAY OFF...

I would go hiking or to the cinema. I am also recently a new mum so that keeps me very busy.



ALIAKSANDRA RAKOVICH

Scientific Researcher

I AM...

a scientific researcher at the Physics department, Imperial College London.

MY TYPICAL DAY INVOLVES...

lab work or data analysis (or both), one or more meetings, and discussions with colleagues about future directions of our research and collaboration possibilities. Occasionally, there are seminars and group meetings where we present our research and have open discussions on the progress, challenges and solutions to problems within the group.

MY FAVOURITE PART OF THE JOB IS...

how interactive my job is. You get to meet a lot of people from all over the world who have different cultures.

THE HARDEST PART OF MY JOB IS...

the uncertainty related to the future of my position. Research evolves very quickly and sometimes you just need to be in the right place at the right time. Funding opportunities can sometimes be out of your control. Also, your success relies heavily on your motivation.

THE SKILLS I USE MOSTLY IN MY JOB ARE...

communication, interpersonal relations, mathematical ability and skills specific to the type of research required, for example, I need to know how to use certain laboratory equipment.

MY QUALIFICATIONS ARE...

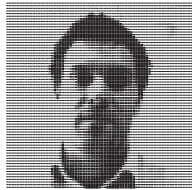
a degree in Physics and Chemistry of Advanced Materials and a PhD in nanoscience. Both were done in Trinity College Dublin, Ireland.

MY TRAINING DURING THESE HELPED ME TO...

develop a great background in physics, chemistry and science in general. These have proved to be invaluable, as modern research is rarely limited to just one discipline and sometimes requires all three. Another advantage of studying in Ireland was the fact that courses are taught in English, which is the international language of science. This, combined with a communication course during my undergraduate degree has allowed me to communicate freely in a non-native language.

IF I HAD A DAY OFF...

I would play the piano. I also love sport and take part in athletics and squash.



AARON HURLEY

Forensic Data Analyst

I WORK AT...

Ernst and Young, Dublin. They are global leaders in assurance, tax and financial advisory services.

I AM...

a forensic data analyst which means I use programming and statistics to understand vast sums of data and to investigate financial fraud. I have lots of clients ranging from small business owners to multinational companies and airlines.

MY TYPICAL DAY INVOLVES...

taking large amounts of data that describe a client's accounts and cleaning it. I then find mathematical ways to investigate fraud. I also make visual outputs like graphs, to represent the data.

MY FAVOURITE PART OF THE JOB IS...

that every project brings its own separate problems, nothing is automatic and you are constantly encouraged to come up with new ideas.

THE HARDEST PART OF MY JOB IS...

working with large amounts of data and converting it so that software can recognise it. It can also be difficult to continuously come up with new solutions in the fast growing field of data.

THE SKILLS I USE MOSTLY IN MY JOB ARE...

good numerical and programming skills. Also clear communication, knowledge of the trade and the capability to learn and work out new things quickly are essential.

MY QUALIFICATIONS ARE...

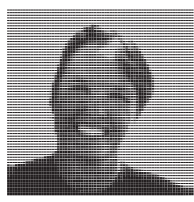
a degree and PhD in Theoretical Physics. I have no background in Accounting or Finance.

MY TRAINING DURING THESE HELPED ME TO...

learn independently and quickly assess what key information is required for a task. I also developed strong mathematical and programming skills which allow me to approach problems with a keen critical eye.

IF I HAD A DAY OFF...

I would be playing Gaelic football. Football is a great outlet and helps release the tensions of a busy day in the office.



MARTINA NOLAN

Product Development Engineer

I WORK AT...

Intel Ireland.

I AM...

a product development engineer which means that I work with teams of people developing new products.

MY TYPICAL DAY INVOLVES...

reviewing data related to our products and following up on any items that need my attention. I meet with teams in Ireland, Asia and the US to discuss product health, both for new and existing Intel products.

MY FAVOURITE PART OF THE JOB IS...

the variety of the work (no day is the same!), and the large number of people who I work with across several different groups and geographies in Intel. I also enjoy knowing that I am working on the latest world class semiconductor technology.

THE SKILLS I USE MOSTLY IN MY JOB ARE...

having good attention to detail, communication skills, data analysis and problem solving skills.

MY QUALIFICATIONS ARE...

I studied Physics, Chemistry and Maths for my Leaving Certificate, and really enjoyed the Semiconductor module in Physics. I then completed a degree in the Science of Materials at Trinity College, Dublin. When I completed my degree I received a scholarship from Intel Ireland and did a PhD. in Microelectronics in Trinity College, Dublin. I then joined Intel when I finished my PhD. Since joining Intel I have held several positions in Process and Yield Engineering, both in Ireland and in the US.

MY TRAINING DURING THESE THOUGHT ME TO...

have the ability to work with multiple, diverse teams. This has taught me how to collaborate with people and get a job done quickly and effectively.

IF I HAD A DAY OFF...

I would go scuba diving. I also love hiking, skiing and travelling.

IF YOU WERE NOT WORKING IN YOUR FIELD

WHAT WOULD YOU BE?

Maybe own a scuba diving and adventure centre on a tropical island!

ABOUT CRANN

CRANN is the largest research institute within Trinity College Dublin. It has significant infrastructure, and brings together over 300 researchers from across the Schools of Physics, Chemistry, Engineering, Medicine and Pharmacology.

CRANN is focused on delivering world leading research and innovation – through extensive proactive collaborations with industry, the commercialisation of intellectual property and the education of next generation researchers.

The Institute is a co-host to a new centre, AMBER (Advanced Materials and BioEngineering Research). AMBER is a Science Foundation Ireland funded centre, launched in October 2013, which provides a partnership between leading researchers in material science and industry to develop new materials and devices for a range of sectors, particularly the ICT, medical devices and industrial technology sectors. The centre is jointly hosted in Trinity College Dublin by CRANN and the Trinity Centre for Bioengineering, working in collaboration with University College Cork and the Royal College of Surgeons in Ireland.

www.crann.tcd.ie

www.ambercentre.ie

ABOUT SCIENCE GALLERY

Science Gallery at Trinity College Dublin is a world first, a space that ignites creativity and discovery where science and art collide. Since the opening in early 2008, over 1 million visitors to Science Gallery have experienced more than 25 exhibitions ranging from light to love, from sustainability to infection.

Science Gallery is an initiative of Ireland's leading research university, Trinity College Dublin and is kindly supported by the Wellcome Trust as founding partner, and by 'Science Circle' supporters Deloitte, Google, ICON, NTR Foundation and Pfizer. Science Gallery also receives government support from the department of Jobs, Enterprise and Innovation, Department of Arts, Heritage and Gaeltacht and Science Foundation Ireland. For more information visit dublin.sciencegallery.com

ABOUT SMART FUTURES

Smart Futures is a collaboration between government, industry and education to raise awareness about the different career areas in science, technology, engineering and maths (STEM) among second-level students in Ireland.

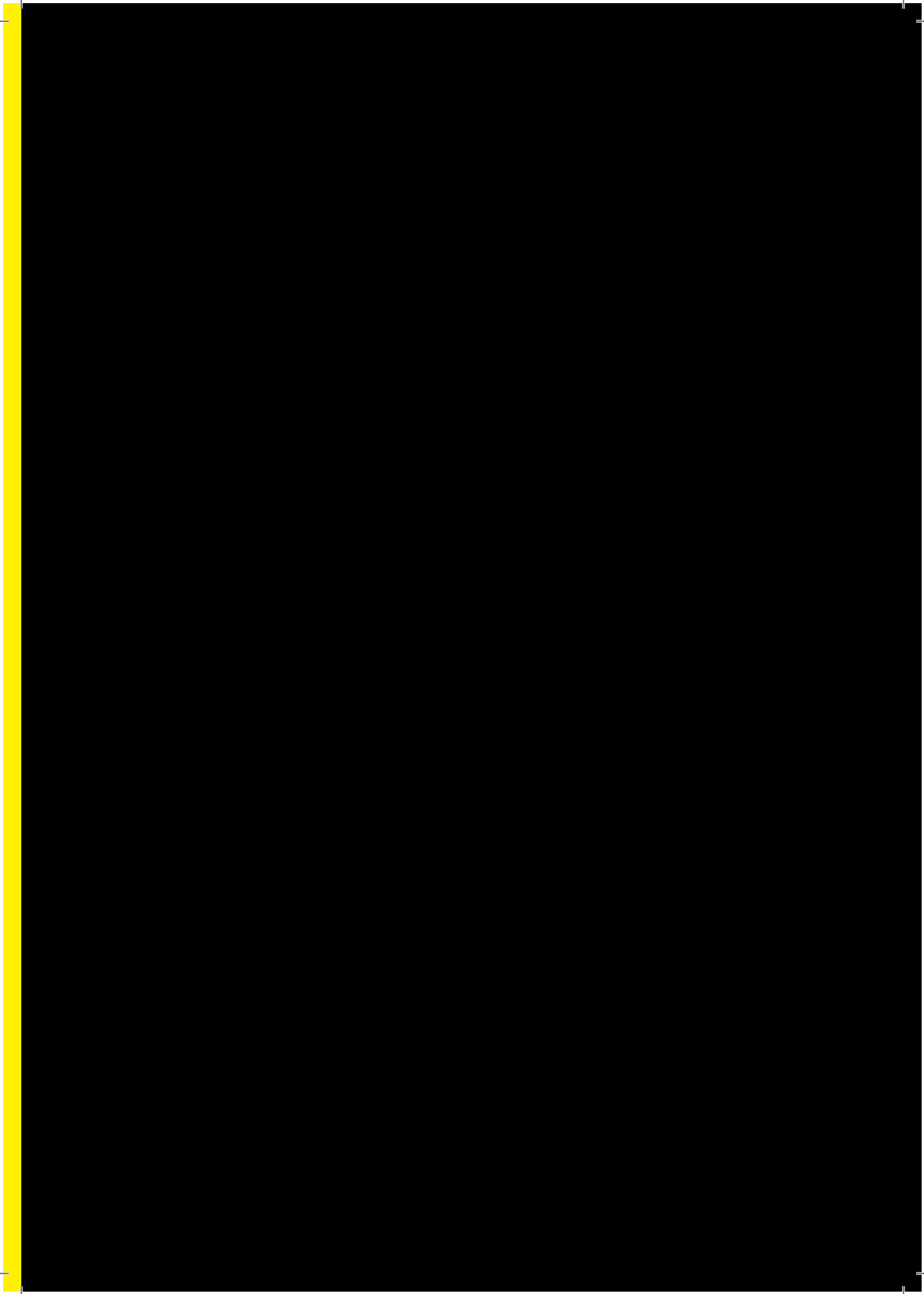
Check out www.SmartFutures.ie for career videos, blog posts, competitions and to request a STEM volunteer visit for your school.



ACKNOWLEDGEMENTS

We would like to thank all the STEM graduates and the organisations they work for including INTEL Ireland, IBM Ireland, CRANN, BDI, Jesta Digital, Globalfoundries, Micron Technology Inc., Imperial College London, and Ernst and Young Dublin, for generously giving their time and expertise in sharing their biographies for the preparation of this booklet.

COOL JOBS is a collaboration between Science Gallery and the CRANN Institute, Trinity College Dublin and is supported by the Science Foundation Ireland Discover programme and an EC FP7 project, KiiCS. It is run in association with Smart Futures.



www.crann.tcd.ie/Education-Outreach.aspx
www.dublin.sciencegallery.com/education



ucc
Coláiste na hOileáine Corcaigh, Éire
University College Cork, Ireland

