

Maire O'Neill

Teitl Swydd: Cymrawd Ymchwil / Darlithydd, Sefydliad Electroneg, Cyfathrebiadau a Thechnoleg Gwybodaeth (ECIT), Prifysgol Queen's, Belfast

Cymwysterau: MEng mewn Peirianeg Drydanol ac Electroneg, PhD mewn Prosesu a Thelegyfathrebu Signalau Digidol, Tystysgrif Ôl-Radd mewn Dysgu Addysg Uwch

Rwyf yn arwain ymchwil

Cryptograffeg. Mae ein hymchwil yn edrych ar dechnegau amgryptio data er mwyn sicrhau y gellir ei anfon a'i dderbyn yn ddiogel mewn cymwysiadau fel e-bost, siopa a bancio ar-lein, bocsys pen-setiau, a chyfathrebiadau lloeren. Mae pob techneg diogelwch wedi ei seilio ar egwyddorion mathemategol ac felly mae dealltwriaeth drwyadl o fathemateg sylfaenol yn hanfodol i'm gwaith ymchwil.

Fel nifer o swyddi academaidd, yn ogystal â gwneud ymchwil, rhaid i mi hefyd sicrhau cyllid i gefnogi'r maes ymchwil, cyhoeddi papurau ar fy ngwaith a meithrin cysylltiadau cenedlaethol a rhyngwladol. Rwyf yn darlithio yn yr Ysgol Electroneg, Peirianeg Drydanol a Gwyddoniaeth

Gyfrifiadurol yn Queen's ac rwyf yn goruchwyllo prosiectau myfyrwyr israddedig ac ôl-raddedig.

Deuthum yn ymwybodol o beirianeg electronig gyntaf pan oeddwn yn dal i fod yn blentyn bach. Penderfynodd fy nhad adeiladu cynllun hydro-electrig ar yr afon ger ein tŷ ni. Yn yr ysgol uwchradd, roeddwn yn mwynhau mathemateg, ffiseg a thechnoleg, a gyda dau frawd hŷn mewn peirianeg, penderfynais mai dyma oedd yr yrfa i mi hefyd.

Yn ystod fy nghwrs gradd peirianeg, cymerais y cyfan o'r modiwlau mathemateg. Yn y flwyddyn olaf, cefais fy nodd gan gwmni electroneg lleol i gynnal prosiect ymchwil ar ddiogelwch data. Mwynheais yn fawr iawn medru ymchwilio syniadau a dyluniadau



"Mwynheais yn fawr iawn medru ymchwilio syniadau a dyluniadau newydd gan ddefnyddio technolegau oedd ar flaen y gad"

newydd gan ddefnyddio technolegau oedd ar flaen y gad, ac arweiniodd hyn fi at fy ngyrfa fel ymchwilydd academaidd mewn amgryptio data.

Maire O'Neill

Job Title: Research Fellow / Lecturer, ECIT, Queen's University Belfast

Qualifications: MEng Electrical and Electronic Engineering, PhD Digital Signal Processing and Telecommunications, PGCHET

I lead the cryptography research team at the ECIT Institute, Queen's University Belfast. Our research looks at techniques for encrypting data to ensure it can be sent and received securely in applications such as email, online shopping and banking, set-top boxes and satellite communications.

All security techniques are based on mathematical principles and so a thorough understanding of these mathematical principles is vital for my research work.

Like many academic jobs, as well as carrying out research, I also have to secure funding to support the research area, publish papers on my work and cultivate national and international links. I lecture in the School of Electronics, Electrical Engineering and Computer Science at Queen's



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and I supervise undergraduate and postgraduate student projects.

I first became aware of electronic engineering when I was still a small child. My father decided to build a hydroelectric scheme on the river running by our house. At secondary school, I enjoyed mathematics, physics and technology and, with two older brothers in engineering, I decided that it was also the career for me.

During my engineering degree course I took all of the mathematics modules. In the final year, I was sponsored by a local electronics company to carry out a research project on data security. I thoroughly enjoyed being able to research new ideas and designs using cutting-edge technologies, and this led me to my career as an academic researcher in data encryption.