Research Unit: School of Electronic Engineering
Research Lab: Photonics Systems and Sensing Lab. (PSSL)
Post title: Postdoctoral Researcher, Level 1 – iLife Project
Post Duration: Up to 24 Month (potential for a further 12 month extension)

Fixed Term Contract

Research Career Framework
As part of this role the researcher will be required to participate in the DCU Research Career Framework (http://www.dcu.ie/hr/ResearchersFramework/index.shtml). This framework is designed to provide significant professional development opportunities to Researchers and offer the best opportunities in terms of a wider career path.

Background
Dublin City University (DCU) is one of the largest universities in Ireland. Its student population is approximately 13,000, including 500 research postgraduates, over 1,800 taught postgraduate students and around 3,000 distance education students. DCU is a research-led university, which has developed its own research specializations and established internationally recognized centres of excellence that have substantive collaborative links with leading universities and industrial partners.

DCU has a strong track record in attracting both Irish and European Union research funding under Horizon 2020 (and all previous Framework Programs), Marie Curie Actions and Erasmus. We offer a dynamic and internationally-focused environment, in which to advance your academic career.

The Photonics Systems and Sensing Lab. (PSSL) at DCU is a research group that focuses on the simulation and demonstration of novel technologies for future broadband photonic communication systems. The research carried out in this laboratory encompasses a wide array of domains, including optical communications systems, a wide array of high-speed semiconductor devices, optical transmitters and receivers, optical pulse and frequency comb sources, high speed detection, photonic sensing as well as optical and digital signal processing. The group has strong linkages with academic and industrial partners in Ireland and abroad and work on a mix of fundamental and applied research topics in the domains of radio and optical systems.

The Project
This research project is in the area of multicarrier transmitters that have been proposed to meet the network capacity and dynamicity challenges. The iLife project is funded by the Department of Business, Enterprise, and Innovation (DBEI) and comprises Pilot Photonics (lead), Dublin City University (DCU) and Trinity College Dublin (TCD). During the course of the work, the successful candidate will have the opportunity to collaborate with the mentioned partners.

Optical communication networks are being put under huge strain by the rise in mobile video, video-on-demand, cloud and other bandwidth intensive services. New disruptive innovations are needed to avoid the impending 'capacity crunch' that has the potential to affect the growth
of the Internet, with knock-on adverse effects for global economies. Optical frequency comb (OFC) sources are a new type of laser that enable operators to pack more data into existing fiber infrastructure. The team have a suite of intellectual property around OFCs that enable them to be used in network equipment for the first time. The iLife team’s solution offers the disruptive value proposition of reduced cost, footprint and power consumption, with simultaneous increase in performance. It has the potential to disrupt the market and displace the single mode lasers that have been used in long haul optical transport equipment for two decades.

The Postdoctoral Researcher (PDR) will specifically work on build test-beds for detailed static and dynamic characterisation of the PICs to enhance the design lifecycle at chip, packaged and module level. The PDR develop an efficient device calibration procedure and software that can be used in the high-volume production. Finally, evaluating the performance of the OFC in various advanced modulation format test-beds will be a key requirement.

Principal Duties and Responsibilities
The primary focus of the Postdoctoral Researcher (PDR) will be to perform research on the DBEI funded project iLife as described above. However, the PDR’s activity will be broader and the PDR is also expected to:

- Conduct a specified programme of research under the supervision and direction of the Principal Investigator
- Engage in the dissemination of the results of the research in which they are engaged, as directed by, with the support of and under the supervision of the Principal Investigator. (Actively publish research findings in high impact journals and at key conferences as part of the research group effort to disseminate research outputs).
- Engage in the wider research and scholarly activities of the research group, School or University
- Interact closely with postgraduate research students associated with the same research group and possibly have an agreed role in supporting these students in their day to day research in conjunction with an academic supervisor
- Take leadership and contribute to generation of papers, reports and other funding proposals
- Carry out administrative work to support the program of research where required, including regular funding agency reports and internal reports etc.
- Carry out additional duties as may reasonably be required within the general scope and level of the post
- Contribute to the financial management of a research project
- Support collaboration with industry in areas relevant to the research group
- Liaise with different DCU units such as STEP, RIS and Finance in aspects related to the research activities performed
- Engage in appropriate training and professional development opportunities as required by the Principal Investigator, School or University, in order to develop research skills and competencies.
- Gain experience and contribute to grant writing with the support of and under the supervision of the Principal Investigator
- Acquire generic and transferable skills (including project management, business skills and postgraduate mentoring/supervision)
- Contribute to broader outreach and engagement activities such as organising technical meetings, outreach to schools and other interested parties etc.

Mandatory Training
The post holder will be required to undertake the following mandatory compliance training: Orientation, Health and Safety and Intellectual Property and Data Protection training. Other
training may need to be undertaken when required.

**Criteria**

- PhD qualification normally required, preferably in an Electronic Engineering or Physics related discipline (preferably with a few months of postdoctoral experience)
- Appropriate technical competence and research experience in areas related to Photonics, such as:
  - Multi-carrier (optical frequency comb) generation, characterisation and optimization
  - Efficient de-multiplexing of multi-carrier transmitters
  - Spectrally efficient modulation schemes
  - Digital signal processing
  - PIC calibration procedures for high-volume production
- Excellent experimental skills with optical components and test and measurement equipment
- Evidence of accomplishment in research and development in the area of optical communications
- A capability of working within a project team to achieve group-oriented results, in parallel to individual productivity and top quality publications
- Good communication, organisation and interpersonal skills
- Experience in presentations to international conferences are preferable
- A commitment to gaining practical experience working on a research project

**Salary:** *€37,874 - €42,559*

*Appointments will be commensurate with qualifications and experience, and will be made on the appropriate point of the salary scales, in line with current Government pay policy*

**Closing Date:** 15th November 2019

Candidates will be assessed on the following competencies:

- **Discipline knowledge and Research skills** – Demonstrates knowledge of a research discipline and the ability to conduct a specific programme of research within that discipline
- **Understanding the Research Environment** – Demonstrates an awareness of the research environment (for example funding bodies) and the ability to contribute to grant applications
- **Communicating Research** – Demonstrates the ability to communicate their research with their peers and the wider research community (for example presenting at conferences and publishing research in relevant journals) and the potential to teach and tutor students
- **Managing & Leadership skills** - Demonstrates the potential to manage a research project including the supervision of undergraduate students

**Application Procedure**

**Informal enquiries to:**
Dr. Prince Anandarajah, School of Electronic Engineering, Dublin City University, Dublin 9, Ireland.
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*Please do not send applications to this email address, instead apply as described below*

Application forms are available from the DCU Current Vacancies (open Competitions) website at http://www.dcu.ie/vacancies/current.shtml and also from the Human Resources Department,
Applications should be submitted with a full CV and Cover Letter by email to hr.applications@dcu.ie or by Fax: +353 (0)1 7005500 or by post to the Human Resources Department, Dublin City University, Dublin 9.

Dublin City University is an equal opportunities employer and is committed to promoting gender equality reflected in its attainment of the Athena SWAN Bronze Award. Information on a range of university policies aimed at creating a supportive and flexible work environment are available at www4.dcu.ie/policies/policy-starter-packs.shtml