



Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

Research Seminar

Visible Light Communication Networks & The OpenVLC Platform

Domenico Giustiniano
IMDEA Networks, Madrid

12-1pm Friday 8th May 2015

Abstract: Visible Light Communication (VLC) is emerging as a complementary technology to mainstream Radio Frequency (RF) communication. VLC utilizes visible light from Light Emitting Diodes (LEDs) to convey digital information between devices. By connecting devices such as ceiling bulbs, lamps, light emitters embedded into cars and mobile devices and perhaps, in the future, LED TVs, the potential exists to create what might be called the Internet of Light. In this talk, we will introduce OpenVLC, an open source visible light communication platform that is based on a simple hardware design and a flexible software implementation and aims to allow experimentation with novel visible light networking protocols. We show how OpenVLC can be used to design a communication protocol resilient to the directionality of the “optical antenna” of VLC, i.e. the Field Of View (FOV) of LEDs, and introduce and validate a Carrier Sensing Multiple Access/Collision Detection & Hidden Avoidance (CSMA/CD-HA) Medium Access Control protocol that enables in-band intra-frame bidirectional transmission with just one optical antenna. A small demonstration of OpenVLC will be shown at the end of the talk.

Short Bio: Domenico Giustiniano is a Research Assistant Professor at IMDEA Networks and leader of the Pervasive Wireless Systems group. Before joining IMDEA, he was a senior researcher and lecturer in the Communication System Group of ETH Zurich (2012–2013). He was formerly a post-doctoral researcher at Disney Research Zurich (2010–2012) and Telefonica Research Barcelona (2008–2010). He holds a Ph.D. degree in Telecommunication Engineering from the University of Rome Tor Vergata (2008). His research interests are in the system design and implementation of emerging wireless technologies, including Visible Light Communication (VLC) networks.

Venue: Large Conference Room, O’Reilly Institute.

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