Curriculum Vitae

Professor Dirk Pesch, Dipl.Ing (RWTH Aachen), PhD (Strathclyde), SMIEEE MACM
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CAREER PROFILE

Education

- PhD in Electronic & Electrical Engineering, University of Strathclyde, Glasgow, UK, Jan. 1996 – July 1999, Thesis title: "Distributed Radio Resource Allocation in DQDB MAN Based Microcellular Mobile Networks"
- Dipl. Ing. Elektrotechnik (equiv. to MEng), Electrical & Electronic Engineering, RWTH Aachen University, Aachen, Germany, Oct. 1987 – July 1993

Employment

- February 2019 – to date, Professor of Computer Science, School of Computer Science and IT, University College Cork, Cork, Ireland
- Sept. 2009 – January 2019, founding Head of Centre, Nimbus Research Centre, Cork Institute of Technology, designated Professor in December 2016
- July 2005 – Aug. 2009, Senior Lecturer, Department of Electrical and Electronic Engineering, CIT
- Oct. 2004 – July 2009, Visiting Scientist, Collaborative Research Centre "Autonomous Processes in Logistics", University of Bremen, Germany
- Feb. 1999 – June 2005, Lecturer, Department of Electrical and Electronic Engineering, Coek Institute of Technology, Cork, Ireland
- Jan. 1996 – Dec. 1998, Research Fellow, Department of Electronic and Electrical Engineering, University of Strathclyde, Glasgow, UK
- Nov. 1993 – Dec. 1995, Design Engineer, Mobile Phones Division, Nokia, Bochum Germany (incl. secondment to Nokia, Camberley, UK for 5 months in 1994)

RESEARCH EXPERTISE

My research focuses on the study, design and performance evaluation of communication protocols and system architectures for ad-hoc and wireless sensor networks, Internet of Things and Cyber-Physical Systems and their applications to smart, energy efficient buildings and sustainable cities and assisted living as well as smart manufacturing.

I have a strong track record in securing research funding, having secured as lead PI or co-PI in excess of €15M in funding from Irish and European funding agencies and directly from industry. I am a co-PI in the SFI CONNECT Centre for Future Networks, where my focus is on sustainable IoT and dependable networks. I am also a co-PI in the SFI funded ENABLE research programme on IoT and data analytics for smart cities and communities applications, where my research is focused on IoT applications in smart buildings, cities and assisted living. I am a co-PI in the SFI funded CONFIRM Centre, where I am studying industrial IoT and cyber-physical system applications for smart manufacturing. Most recently, I have become the director of the SFI funded Centre for Research Training in Advanced Networks for Sustainable Societies, a new national initiative to train at least 120 PhD students in future networks and IoT for smart cities and communities.

Over the past nearly 20 years I have made a number of scientific contributions and built applied research capability in the area of embedded wireless networked systems (Internet of Things/Cyber-physical systems) with applications in telecommunications, the built environment, sustainable living, and assistive technologies. I have published widely (over 200 peer reviewed publications), have a h-index of 28 with over 2500 citations.

HISTORY OF MENTORING

I have a significant track record of mentoring/supervision of research Masters/PhD students, postdoctoral researchers, junior academic staff. I supervise/mentor to empower graduate students to become independent researchers, to support postdoctoral researchers and junior academic colleagues to grow into future research leaders and mentors themselves. I have previously supervised/mentored 10 postdoctoral staff who are now either in academic leadership roles themselves or have joined industry. I am in the process of building a group focused on Internet of Things research topics at UCC and am recruiting 5 new PhD students and 4 new research staff.

Masters Students graduated	PhD Students graduated	Masters Students currently supervising	PhD Students currently supervising	Other Staff currently supervising
12	18	1	5	2

COMMERCIALISATION AND KNOWEDGE TRANSFER

I have a strong track record of research commercialisation and knowledge transfer. I am the academic director of the Enterprise Ireland supported Technologies for Embedded Computing (TEC) Gateway, the Nimbus Centre's industry interface, an initiative which aims at exploiting academic research for commercialisation with and knowledge transfer into industry. Most of my past and current research projects involve active collaboration with industry which naturally includes knowledge transfer of our research into those companies. I have filed over 15 invention disclosures with the CIT Technology Transfer Office over the past 10 years. Two of the invention disclosures formed the basis for technology evaluation licenses to Intel Ireland and Honeywell Prague Laboratory. I have been awarded a patent on wireless indoor localisation and tracking technology and recently filed a patent on Internet of Things interoperability for home automation systems in conjunction with a collaborator from Arris. I also have a share in two CIT start-ups, ShowGuider and PCS, where I act as a scientific advisor and support/advise them in seeking Enterprise Ireland and EU funding. I have been collaborating with a large number of Irish SMEs such as Amocom, Benetel, Cylon Controls, ServusNet, EuroTech, EpiSensor, SmartFactory, Firmwave and multinational companies based in Ireland and abroad including Intel, IBM, UTRC, Bilfinger, Nokia Bell Labs, Bord Gais, Schneider Electric, Philips, EMC, Arris, Alstom, Atos, etc. The collaborations are funded by both Irish and EU agencies as well as directly by the industry partner. I also collaborate with Cork City and Cork County Councils and am a steering group member of the Cork Smart Gateway Initiative.

ADDITIONAL ACTIVITIES

I am on the editorial board of Springer Wireless Networks, MDPI Sensors Journal and the International Journal of Distributed Sensor Networks. Previously I was an editorial board member of the IEEE Vehicular Technology Magazine, Elsevier Pervasive and Mobile Computing and Elsevier Ad-hoc Networks.

I am also active in conference organisation as member of the Technical Programme Committee of a large number of leading ACM and IEEE conferences. Most recently, I am co-chair of the Industrial IoT track for the IEEE World-Forum for the IoT in 2019.

SELECTED PUBLICATIONS (*indicates co-publication with industry)

M. O. Farooq, **D. Pesch**, "Reduced Overhead Routing in Short-Range Low-Power and Lossy Wireless Networks", Sensors, vol. 19, no. 5, March 2019

M. Noor-A-Rahim, M. O. Khyam, G. G. Md. Nawas Ali, Z. Liu, **D. Pesch** and P. H. J. Chong, "Reliable State Estimation of an Unmanned Aerial Vehicle Over a Distributed Wireless IoT Network", IEEE Transactions on Reliability, 2019

K. Q. Abdelfadeel, V. Cionca, **D. Pesch**, "Fair Adaptive Data Rate Allocation and Power Control in LoRaWAN", in Proc. of IEEE WoWMoM, Chania, Greece, June 2018

*S. Palipana, D. Rojas, P. Agrawal, **D. Pesch**, "FallDeFi: Ubiquitous Fall Detection using Commodity Wi-Fi Devices", in Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies, vol. 1, no. 4, December 2017

*S. Palipana, P. Agrawal, **D. Pesch**, "CSI-Based Human Presence Detection using Non-linear Dimensionality Reduction Techniques", In Proc. ACM BuildSys 2016, Stanford, CA, USA, Nov. 2016

J. Singh, **D. Pesch**, "Smart error-control strategy for low-power communication in wireless networked control systems", Telecommunication Systems, vol. 55, Issue 2, pp 253-269, February 2014

J. Singh, **D. Pesch**, "Application of energy efficient soft-decision error control in wireless sensor networks", Telecommunication Systems, Springer Verlag, vol. 52, issue 4, pp 2573-2583, April 2013

Widyawan, M. Klepal, **D. Pesch**, "Influence of Predicted and Measured Fingerprint on the Accuracy of RSSI-based Indoor Location Systems", in Proc. of IEEE Workshop on Positioning, Navigation, and Communication, Hannover, Germany, March 2007

R. Katona, V. Cionca, D. O'Shea, **D. Pesch**, "Exploring the economical benefits of Virtualized Wireless Sensor Networks", in Proc. IEEE PIMRC, Montreal, Canada, Oct. 2017

*I. S. A. Dhanapala, R. Marfievici, S. Palipana, P.Agrawal, **D. Pesch**, "Modeling WiFi Traffic for White Space Prediction in Wireless Sensor Networks", in Proc. of IEEE Local Computer Networks Conference (LCN), Singapore, Oct. 2017

S. Palipana, B. Pietropaoli, **D. Pesch**, "Recent Advances in RF-Based Passive Device-Free Localization for Indoor Applications", Ad-Hoc Networks, Volume 64, pp. 80-98, Elsevier, September 2017

*A. Monti, **D. Pesch**, K Ellis, P. Mancarella (ed.), "Energy Positive Neighborhoods and Smart Energy Districts", Academic Press, Sept. 2016

*C. Dandelski, B.-L. Wenning, D. Viramontes Pérez, **D. Pesch**, J.-P. Linnartz, "Scalability of Dense Wireless Lighting Control Networks", IEEE Communications Magazine, January 2015

J. Singh, N. Hassanzadeh, S. Rea, **D. Pesch**, "Semantics-Empowered Middleware Implementation for Home Ecosystem Gateway", in Proc. of MUCS 2014 (IEEE PerCom workshops), Budapest, Hungary, March 2014

G. Ghidini, S. K. Das, **D. Pesch**, "Sensor Network Protocols for Greener Smart Environments", in Design Technologies for Green and Sustainable Computing Systems, P. P. Pande, A. Ganguly, K. Chakrabarty (eds.), Springer Verlag, May 2013

*B. Carballido Villaverde, R. de Paz Alberola, A. J. Jara, S. Fedor, S. K. Das, **D. Pesch**, "Service Discovery Protocols for Constrained Machine-to-Machine Communications", IEEE Communications Surveys and Tutorials, vol. 16, no. 1, pp. 41-60, 2014

*F. Bernier, J. Ploennigs, **D. Pesch**, S. Lesecq, A. A. Basten, M. Bouekeur, T. Denteneer, F. Oltmanns, A. Mc Gibney, S. Rea, F. Bonnard, F. Pacull, C. Guyon-Gardeux, L.-F. Ducreux, S. Thior, M. Hendriks, S. Fedor, M. Lehmann, M. T. Linh, "Architecture for Self-organizing, Cooperative and Robust Building Automation Systems", in Proc. of IEEE IECON, Vienna, Austria, November 2013

A. McGibney, S. Lesecq, C. Guyon-Gardeux, S. R. Thior, D. Pusceddu, L. –F. Ducreux, F. Pacull, **D. Pesch**, "Wireless Sensor Networks for Building Monitoring - Deployment Challenges, Tools and Experience", in Proc. of REALWSN, Lake Como, Italy, Sept. 2013

S. Rea, M. S. Aslam, **D. Pesch**, “Serviceware - A Service Based Management Approach for WSN Cloud Infrastructures”, in Proc. IEEE PerCom 2013 (PerCom workshops), San Diego, CA, USA, March 2013

A. McGibney, D. Pusceddu, S. Rea, **D. Pesch**, M. Geron, M. Keane, “A Methodology for Sensor Modeling and Placement Optimization to Support Temperature Monitoring”, in Proc. ACM BuildSys 2012, Toronto, Canada, November 2012

M. S. Aslam, S. Rea, **D. Pesch**, “Service Provisioning for the WSN Cloud”, IEEE 5th International Conference on Cloud Computing (CLOUD), Hawaii, USA, June 2012

*Widyawan, G. Pirkl, D. Munaretto, C. Fischer, C. Ane, P. Lukowicz, M. Klepal, A. Timm-Giel, J. Widmer, **D. Pesch**, H. Gellersen, “Virtual Lifeline: Multimodal Sensor Data Fusion for Robust Navigation in Unknown Environments”, Pervasive and Mobile Computing, 8(3): 388-401 (2012)

E. Jafer, R. Spinar, P. Stack, C. O’Mathuna, **D. Pesch**, “Design and deployment of a new wireless sensor node platform for building environmental monitoring and control”, ICST Transactions on Ambient Systems 11(10–12): e3, December 2011

K. Menzel, E. Freuder, K. Brown, G. Provan, **D. Pesch**, M. Keane, C. O'Mathuna “A Platform for the Optimisation of Building Operation”, in Proc. ECPPM 2010, Cork, Ireland, September 2010

B.-L. Wenning, **D. Pesch**, A. Timm-Giel, C. Goerg, “Environmental Monitoring Aware Routing: Making Environmental Sensor Networks more Robust”, Telecommunication Systems, vol. 43, no. 1-2, pp. 3-11, February 2010

A. Guinard, A. McGibney, **D. Pesch**, “A Wireless Sensor Network Design Tool to Support Building Energy Management”, in Proc. of 1st ACM BuildSys (in conjunction with ACM SenSys), Berkeley, CA, USA, November 2009

K. Menzel, **D. Pesch**, B. O’Flynn, M. Keane, C. O'Mathuna, “Towards a Wireless Sensor Platform for Energy Efficient Building Operation”, Tsinghua Science and Technology, vol. 13, no S1, pp 381-386, Elsevier Publishers, Oct 2008

Widyawan, M. Klepal, **D. Pesch**, “A Bayesian Approach for RF-Based Indoor Localisation “, in Proc. of IEEE International Conference on Wireless Communication Systems, Trondheim, Norway, October 2007

E. O'Neill, M. Klepal, D. Lewis, T. O'Donnell, D. O'Sullivan, **D. Pesch**, "A Testbed for Evaluating Human Interaction with Ubiquitous Computing Environments", in Proc. IFIP TridentCom, Trento, Italy, Feb 2005