

# Curriculum Vitae of Professor Eric Rogers

## Personal Information

**Name:** Eric Rogers

**Date of birth:** 20 September 1956

**Place of Birth:** Magherfelt, County Londonderry, Northern Ireland.

**Citizenship:** United Kingdom

## Professional Address

Department of Electronics and Computer Science

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## Current Post

Professor of Control Systems Theory and Design. (Personal Chair – awarded April 1999)

Teaching Interests: Control systems, signal processing, circuits

## Qualifications and Professional Memberships

- BSc Mechanical Engineering, The Queen's University of Belfast.
- MEng Control Systems, The University of Sheffield. (Postgraduate masters by course and research).
- PhD Control Theory, The University of Sheffield.
- DSc Control Theory, The Queen's University of Belfast.
- Chartered Engineer – Member of the Institution of Engineering and Technology.

## Current Research Interests

- Analysis and control of repetitive processes.
- Iterative learning control – theory and experimental verification.

- Behavioural approaches to the analysis and control of multidimensional and hybrid systems.
- Control of autonomous underwater vehicles.
- Repetitive control of tremor in humans, e.g. those with Parkinsons disease.
- Control of electric motors and drives.
- Control of smart rotors in wind turbines.
- Control of gird sensor networks.
- Robotic-assisted stroke rehabilitation.

### **Prizes and Awards**

- IEEE Control Systems Magazine Award Outstanding Paper Award 2013 for *Iterative Learning Control in Health Care: Electrical Stimulation and Robotic-Assisted Upper-Limb Stroke Rehabilitation* IEEE Control Systems Magazine, Vol. 32, No. 1, pp. 18-43, February 2012.
- Sir Harold Hartley Medal Institute of Measurement and Control for outstanding contribution to the technology of measurement and control, Institute of Measurement and Control, 2011.
- Best paper award IEEE International Conference on Rehabilitation and Control 2009.

### **Professional Service to the Community**

- Editor-in-Chief: International Journal of Control, circa 1200 submissions per year (ongoing).
- Editor-in-Chief: Multidimensional Systems and Signal Processing (ongoing).
- International Programme Chair IEEE Multi-conference on Control 2012.
- Cofounder and joint general chair International Workshop on Multidimensional Systems (NDS) since 1998 - bi-annually with the next one in Zielona Gora, Poland 2017.
- Member of the editorial boards of several other journals.
- Extensive service on international conference organisation/international programme committees.

### **Postgraduate Student Supervision**

PhD students - 22 completed, currently supervising (jointly) 6

### **Membership of Funding Bodies and Government Service**

Extensive service to EPSRC, DTI in the UK. Membership of funding bodies in Ireland, The Netherlands, Germany, Australia. Retained specialist advisor to 2 UK government departments, answering directly to the minister in each case.

## **Publications**

3 research monographs (Springer), one research text (Wiley), one research text in press (Wiley). 200 plus journal papers, 500 plus conference papers and technical reports - a selection is attached with the full list available from <http://www.ecs.soton.ac.uk/people/etar>

## **Research Grant Income**

Career total - approximately 6.5 million UK pounds. Current support: UK research Councils 1.5 million pounds, Industry/Government research stations 1million UK pounds.

## **International Collaboration**

- University of Zielona Gora Poland (20 plus years).
- TU Berlin (Germany).
- University of Rostock (Germany).
- Eindhoven University of Technology (The Netherlands).
- Arzamas Polytechnic Institute of R.E. Alekseev Nizhny Novgorod State Technical University (Russia).
- University of Melbourne (Australia).
- RMIT University (Australia).
- Colorado School of Mines (USA).

## **Zielona Gora Collaboration**

I first met Krzysztof Galkowski at a conference in Germany in 1993. Following this we began a joint research program in the general area of multidimensional systems which has continued since then, supported by many Zielona Gora PhD students, e.g., Wojciech Paszke, Bartek Sulikowski, Lukasz Hładowski and Błażej Cichy. By combining our efforts we spent a considerable period of time solving open questions in control theory for multidimensional systems, resulting in many joint papers in the very best international journals and conferences. Some of this output forms a major part of the research monograph: *E Rogers, K Galkowski and D H Owens, Control systems theory and applications for linear repetitive processes, Vol~349, LNCIS, Springer Verlag, 2007* which is very heavily cited in the control systems literature.

In 2000 I began collaboration with other colleagues in Southampton with expertise in the design and commissioning of experimental testbeds on which we tested our theoretical results and design algorithms. This research has established the multidimensional systems approach to iterative learning control as one of the main

design methods and many of the jointly authored journal papers with the Zielona Gora contributors are heavily cited in the iterative learning control literature and also there has been takeup from other international competitor groups such as Eindhoven and Michigan.

Over the years, this joint research has featured yearly visits by me to Zielona Gora and by Krzysztof and the others to Southampton. Also there is an ongoing Erasmus exchange program which has seen many Zielona Gora undergraduates spend one or two semesters taking undergraduate courses and project work in Southampton. This has greatly helped my research program as two of them have already completed their PhDs in Southampton and another one is currently in progress.

Krzysztof and I proposed and organised the first IEEE International Workshop on Multidimensional Systems (nDS) in 1998. This workshop has been held biannually since the first one with both of us joined as co-chairs by the organiser. The next one will be held in Zielona Gora, in September 2017 with Wojtek Paszke as the main organiser.

Over the years prof. Eric Rogers has regularly given seminars when visiting Zielona Gora, more recent ones include:

- 05.03.2009, Rehabilitation Robotics: Iterative learning control algorithms with clinical trial results.
- 14.06.2012, Model Predictive Control for Autonomous Underwater Vehicle – Modeling, Controller Design and an Experimental Mission.
- 21.02.2013, Iterative Learning Control for Wind turbines.
- 14.11.2013, Iterative Learning and Repetitive Control for Goal Oriented Stroke Rehabilitation and Tremor Suppression.
- 27.02.2014, A Low Complexity Model Predictive Control Scheme for Spacecraft Rendezvous and Docking.
- 19.05.2016, Predictive Iterative Learning Control with Experimental Verification on a Multivariable Testbed.
- 17.11.2016, An Update on Smart Rotor Control for Wind Turbines.

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