Klaus McDonald-Maier--deleted

Subjects: Computer Science, Artificial Intelligence
Contributor: Klaus McDonald-Maier

Klaus McDonald-Maier is a Professor in the School of Computer Science and Electronic Engineering (CSEE) at the University of Essex where he leads the Embedded and Intelligent Systems (EIS) Research Laboratory, heads the Intelligent Embedded Systems and Environments Research Group and is Director of Impact. He is also the co-founder and the Chief Scientist of UltraSoC Technologies Ltd (a Venture Capital backed semiconductor startup company), the co-founder and CEO of Metrarc Limited (a startup company commercialising cybersecurity research outcomes) and director of technical consultancy company M8C Ltd.

Keywords: Embedded Systems ; Robotics ; System On Chip ; SoC

---

1. Education and Professional Experience

Klaus McDonald-Maier studied Electronic Engineering at the University of Ulm (Germany), Cardiff University (Wales), and the École Supérieur de Chimie Physique Électronique de Lyon (CPE-Lyon, France). He completed his doctorate at the Friedrich-Schiller-University Jena (Germany) in 1999, in the area of high performance parallel Neural Network computer architectures and neural networks based control of legged robots.

Following this he worked on Systems-on-Chip (SoC) at Infineon Technologies AG (formerly Siemens Semiconductors), Munich (Germany), where he was a Systems Architect for SoC platform based reusable microprocessor cores and peripheral modules as well as debug support for industrial control SoC platforms, used as the standard controller core in many automotive industrial and embedded SoCs.

In 2001 he returned to academia and led significant research endeavours in the area of embedded systems, computer architecture, Systems-on-Chip and their application in robotics and intelligent systems. Initially he joined the University of Kent as Lecturer in Digital Systems, then moved to the University of Essex, as Reader in 2005, and was promoted to Professor of Embedded and Intelligent Systems in 2008. He has held visiting Professor positions at INRIA Nord and ESIGELEC. Since 2013 he is a Visiting Research Affiliate at the Advanced Robotics Group of the NASA Jet Propulsion Laboratory (JPL), California Institute of Technology (Caltech) and a Visiting Professor at the University of Kent.

2. Research

He has authored / co-authored over 250 scientific publications (with invited contributions and keynotes at the IEEE Design and Test in Europe (DATE) Conference, Cool Chips, the International Conference on Recent Advances in Soft Computing (RASC) and the IEEE NASA/ESA Conference on Adaptive Hardware and Systems (AHS, best paper award), and 20 patents. He has a proven ability to secure highly competitive individual and collaborative research funding and has held nine EPRSC grants with substantial contributions from industry (including the currently active EPSRC National Centre for Nuclear Robotics (NCNR) EP/R02572X/1 £11.4M, EPSRC CDT IGGI EP/L015846/1, EPSRC EP/P016006/1 SPIRIT £190k and EP/P017487/1 £1.4M), ESRC (ESRC HRBDT ES/M010236/1 £4.7M and ESRC BLG DRC ES/L011859/1 £5M), Innovate UK, EU grants and Proof of Concept funding with a total value in excess of £66M.

Currently, his core research interests are in embedded Systems and System-on-Chip (SoC) design, development support /debug and technology to increase security, performance and reliability as well as advanced embedded processor architectures targeted for automotive/industrial robotics, image processing, IoT/sensor network nodes, cybersecurity and other real-time critical applications, in particular big data analytics and the use of image and video processing techniques to understand scene context, place recognition and situation behavior.

Klaus McDonald-Maier studied Electronic Engineering at the University of Ulm (Germany), Cardiff University (Wales), and the École Supérieur de Chimie Physique Électronique de Lyon (CPE-Lyon, France). He completed his doctorate at the Friedrich-Schiller-University Jena (Germany) in 1999, in the area of high performance parallel Neural Network computer architectures and neural networks based control of legged robots.

Following this he worked on Systems-on-Chip (SoC) at Infineon Technologies AG (formerly Siemens Semiconductors), Munich (Germany), where he was a Systems Architect for SoC platform based reusable microprocessor cores and peripheral modules as well as debug support for industrial control SoC platforms, used as the standard controller core in many automotive industrial and embedded SoCs.

In 2001 he returned to academia and led significant research endeavours in the area of embedded systems, computer architecture, Systems-on-Chip and their application in robotics and intelligent systems. Initially he joined the University of Kent as Lecturer in Digital Systems, then moved to the University of Essex, as Reader in 2005, and was promoted to Professor of Embedded and Intelligent Systems in 2008. He has held visiting Professor positions at INRIA Nord and ESIGELEC. Since 2013 he is a Visiting Research Affiliate at the Advanced Robotics Group of the NASA Jet Propulsion Laboratory (JPL), California Institute of Technology (Caltech) and a Visiting Professor at the University of Kent.

He has authored / co-authored over 250 scientific publications (with invited contributions and keynotes at the IEEE Design and Test in Europe (DATE) Conference, Cool Chips, the International Conference on Recent Advances in Soft Computing (RASC) and the IEEE NASA/ESA Conference on Adaptive Hardware and Systems (AHS, best paper award), and 20 patents. He has a proven ability to secure highly competitive individual and collaborative research funding and has held nine EPRSC grants with substantial contributions from industry (including the currently active EPSRC National Centre for Nuclear Robotics (NCNR) EP/R02572X/1 £11.4M, EPSRC CDT IGGI EP/L015846/1, EPSRC EP/P016006/1 SPIRIT £190k and EP/P017487/1 £1.4M), ESRC (ESRC HRBDT ES/M010236/1 £4.7M and ESRC BLG DRC ES/L011859/1 £5M), Innovate UK, EU grants and Proof of Concept funding with a total value in excess of £66M.

Currently, his core research interests are in embedded Systems and System-on-Chip (SoC) design, development support /debug and technology to increase security, performance and reliability as well as advanced embedded processor architectures targeted for automotive/industrial robotics, image processing, IoT/sensor network nodes, cybersecurity and other real-time critical applications, in particular big data analytics and the use of image and video processing techniques to understand scene context, place recognition and situation behavior.

In addition to Prof McDonald-Maier's role in directing large collaborative research programmes, he has also delivered impact through commercializing the outcomes of relevant research grants. He has relevant expertise as co-founder, founding CTO and Chief Scientist from start-up UltraSoC Technologies Ltd, commercialising the outcome of EPSRC grants, a revolutionary debug supporting intellectual property, where he shaped early technology commercialisation and jointly raised to date $25M+ in Venture Capital funds growing the team to 35+ staff and significant product licenses to tier one semiconductor vendors such as PMC Sierra, Microsemi, Western Digital, Intel and HiSilicon (Huawei). Prof McDonald-Maier also leads a second startup, Metrarc Ltd, that has so far raised $2M, with highly novel and promising patent protected technology for deriving secure encryption keys from the properties of digital systems, invented via EPRSC research projects, which is currently being developed in partnership with DSTL and BT, and has demonstrated great potential for securing corporate, government and personal data and information.