



CERC 2020

Collaborative European Research Conference

Belfast, UK

10 - 11 September 2020

<https://www.cerc-conference.eu>

Proceedings

Editors (in alphabetical order) :

Haithem Afli

Udo Bleimann

Dirk Burkhard

Robert Loew

Stefanie Regier

Ingo Stengel

Haiying Wang

Huiru (Jane) Zheng

Version of 25 Dezember 2020 @ 18:55

Preface

In today's world, which has recently seen fractures and isolation forming among states, international and interdisciplinary collaboration is an increasingly important source of progress. Collaboration is a rich source of innovation and growth. It is the goal of the Collaborative European Research Conference (CERC2020) to foster collaboration among friends and colleagues across disciplines and nations within Europe. CERC emerged from long-standing cooperation between the Cork Institute of Technology, Ireland and Hochschule Darmstadt - University of Applied Sciences, Germany. CERC has grown to include more well-established partners in Germany, the United Kingdom, Greece, Spain, Italy, and many more.

CERC is truly interdisciplinary, bringing together new and experienced researchers from science, engineering, business, humanities, and the arts. At CERC researchers not only present their findings as published in their research papers. They are also challenged to collaboratively work out joint aspects of their research during conference sessions and informal social events and gatherings.

Organizing such an event involves the hard work of many people. COVID-19 pandemic has impacted our daily life and research. It has been a significant change to CERC2020 and this is the first time the conference was held virtually online. The conference has received submissions from worldwide, not just European countries. Thanks go to the international program committee and my fellow program chairs, particularly to Prof Udo Bleimann for invaluable support throughout the conference. Prof Ingo Stengel, Dr. Haiying Wang, Dr. Ali Haithem, and Dr. Stefanie Regier for supporting me in the review process. Dirk Burkhardt and Dr. Robert Loew put a great effort into setting up the website and conference management system and preparing the conference programme and proceedings. Thank my colleagues from Ulster University, Hochschule Karlsruhe and Hochschule Darmstadt, and the Cork Institute of Technology, Ireland for providing invaluable support to the conference. CERC2020 has received supports from Ulster University, VISit Belfast, and Belfast City Council.

Professor Huiru (Jane) Zheng

Conference and Program Chair, CERC 2020
Belfast, UK, September 2020

Conference Chairs

Prof. Huiru (Jane) Zheng, Ulster University, UK
Dr. Haithem Afli, Cork Institute of Technology, Ireland
Prof. Dr Udo Bleimann, Darmstadt University of Applied Sciences, Germany
Prof. Dr. Bernhard Humm, Darmstadt University of Applied Sciences, Germany
Dr. Robert Loew, Darmstadt University of Applied Sciences, Germany & DIPF | Leibniz Institute for Research and Information in Education, Germany
Prof. Dr. Stefanie Regier, University of Applied Sciences Karlsruhe, Germany
Prof. Dr. Ingo Stengel, University of Applied Sciences Karlsruhe, Germany
Dr. Haiying Wang, Ulster University, UK

International Scientific Committee

Jens-Peter Akelbein, Darmstadt University of Applied Sciences, Germany
Tatjana Archipov, University of Applied Sciences Karlsruhe, Germany
Lu Bai, Ulster University, United Kingdom
Raymond Bond, Ulster University, United Kingdom
Fiona Brown, Datatics Ltd, United Kingdom
Dirk Burkhardt, Darmstadt University of Applied Sciences, Germany
Zoraida Callejas Carrión, Granada University, Spain
En-Chi Chang, AMG Digital Marketing & Design Company, Taiwan
Zhibin Chen, Durham University, United Kingdom
Simone Dogu, DB Systel GmbH, Germany
Markus Döhring, Darmstadt University of Applied Sciences, Germany
Lei Duan, Sichuan University, China
Klaus-Peter Fischer-Hellmann, Digamma GmbH, Germany
Marius Faßbender, Daimler AG, Germany
Matthias Feiner, University of Applied Sciences Karlsruhe, Germany
Orla Flynn, Galway-Mayo Institute of Technology, Ireland
Steven Furnell, Plymouth University, United Kingdom
Jianliang Gao, Imperial College, United Kingdom
Gunter Grieser, Darmstadt University of Applied Sciences, Germany
Vic Grout, Glyndwr University, United Kingdom
Markus Haid, Darmstadt University of Applied Sciences, Germany
Joe Harrington, Cork Institute of Technology, Ireland
Andreas Heberle, University of Applied Sciences Karlsruhe, Germany
Andreas Heinemann, Darmstadt University of Applied Sciences, Germany
Peter Henning, University of Applied Sciences Karlsruhe, Germany
Melina Hillenbrand, University of Applied Sciences Karlsruhe, Germany
Reimar Hofmann, University of Applied Sciences Karlsruhe, Germany
Martin Knahl, University of Applied Sciences Furtwangen, Germany
Thorsten Leize, University of Applied Sciences Karlsruhe, Germany
Habin Lee, Brunel University, United Kingdom
Olive Lennon, University College Dublin, Ireland
Margot Mieskes, Darmstadt University of Applied Sciences, Germany
Kawa Nazemi, Darmstadt University of Applied Sciences, Germany
Rainer Neumann, University of Applied Sciences Karlsruhe, Germany
Thomas Pleil, Darmstadt University of Applied Sciences, Germany
Nacim Ramdani, Université of Orléans, France
Erwin Rauch, Free University of Bozen-Bolzano, Italy
Sven Rogalski, Darmstadt University of Applied Sciences, Germany
Pablo Mesejo Santiago, Granada University, Spain
Christian Schalles, DHBW Mosbach, Germany
Jan Schikofsky, LaunchMarkets Institute, Germany
Bryan Scotney, Ulster University, United Kingdom

Helen O' Shea, Cork Institute of Technology, Ireland
Melanie Siegel, Darmstadt University of Applied Sciences, Germany
Roy Sleator, Cork Institute of Technology, Ireland
Lina Stankovic, Strathclyde University, United Kingdom
Vladimir Stankovic, University of Strathclyde, United Kingdom
Uta Störl, Darmstadt University of Applied Sciences, Germany
Jan Stöß, University of Applied Sciences Karlsruhe, Germany
Bernhard Thull, Darmstadt University of Applied Sciences, Germany
Ulrich Trick, University of Applied Sciences Frankfurt, Germany
Hui Wang, Ulster University, United Kingdom
Christoph Wentzel, Darmstadt University of Applied Sciences, Germany
Andrea Wirth, University of Applied Sciences Karlsruhe, Germany
Matthias Wölfel, University of Applied Sciences Karlsruhe, Germany
Angela Wright, Cork Institute of Technology, Ireland
Tuba Yilmaz Abdolsaheb, Istanbul Technical University, Turkey