

Message from the Conference Chairs

ASAP 2020

We welcome you to the 31st IEEE International Conference on Application-specific Systems, Architectures and Processors (ASAP 2020). This year's event was supposed to take place in Manchester, United Kingdom, a major city in the northwest of England with a rich industrial heritage. Manchester has transformed the modern world through a boom in textile manufacturing during the industrial revolution in Victorian England. In the 1880s, 80% of the world cotton production went through Manchester for trade and manufacturing, making Manchester the first industrialized city in the world. To master the enormous logistics, the 58 km Manchester Ship Canal connected Manchester with the Irish Sea in 1894, and the world's first steam-powered, inter-urban railway for transporting both passengers and goods was completed between Manchester and Liverpool in 1830. Its Manchester terminus is now part of the Science and Industry Museum where we planed the ASAP 2020 banquet.

ASAP 2020 is hosted by the Department of Computer Science at The University of Manchester, which is one of the oldest in the UK. The University of Manchester played an important role in the development of computing. This includes the development of the first electronically stored program computer, the first floating-point machine, and the Atlas computer, which was once the world's most powerful computer and the first machine to use paged virtual memory. The school and department of Computer Science was home to Alan Turing and Tom Kilburn; and in November 2018, the 1 million processor SpiNNaker neuromorphic supercomputer went into service under the supervision of Steve Furber.

On its journey to the Online World, the conference has been held in many places around the globe including Oxford (1986), San Diego (1988), Killarney (1989), Princeton (1990), Barcelona (1991), Berkeley (1992), Venice (1993), San Francisco (1994), Strasbourg (1995), Chicago (1996), Zürich (1997), Boston (2000), San Jose (2002), The Hague (2003), Galveston (2004), Samos (2005), Steamboat Springs (2006), Montréal (2007), Leuven (2008), Boston (2009), Rennes (2010), Santa Monica (2011), Delft (2012), Washington D.C. (2013), Zurich (2014), Toronto (2015), London (2016), Seattle (2017), Milan (2018), and New York (2019).

We are delighted to introduce the ASAP 2020 program in its 31st issue, which again includes an exciting collection of contributions. In response to the call for papers, we received 118 abstract submissions with affiliations to 26 countries, and 87 papers went to the review process. Each submission was subjected to the rigorous review from, on average, four Program Committee members. After having intensely scrutinized the reviews, we are pleased to present a high-quality technical program that includes a total of 21 long papers and 12 short papers at the online conference. The selected papers are divided into thematic areas (six sessions), highlighting the current focus of research endeavours within application-specific systems, architectures, and processors. The sessions cover topics on heterogeneous computing, reconfigurable accelerators, machine learning and acceleration of neural networks, cloud computing, emerging technologies, neuromorphic computing, edge computing, approximate computing, and computer arithmetic. The strong technical program is complemented by two keynote talks on: "An Overview of High Performance computing and Using Mixed Precision in Numerical Computations to Speedup Linear Algebra Solvers" by Jack Dongarra, University of Tennessee and Oak Ridge National Laboratory, USA; and "Extracting Formally Verified Correct Low Level Circuits from Formal Models" by Satnam Singh, Google Research, USA.

We would like to thank the many individuals who contributed to the success of the conference, in particular the authors who responded to our call for papers, the members of the Technical Program Committee and the additional external reviewers who, with their opinion and expertise, ensured a program of the highest quality. We also thank the Academic Support Office (ACSO) and in particular Ruth Maddocks, who did such a fantastic job in organizing major parts of ASAP 2020 when we were all still planning for a conventional conference. Thank you all.

We hope that the proceedings will serve as a useful reference of the state-of-the-art in application-specific systems research.

Dirk Koch, Frank Hannig, and Javier Navaridas
ASAP 2020 General Chair and Program Co-Chairs