CALL FOR PAPERS

DATE 23

DESIGN, AUTOMATION AND TEST IN EUROPE

THE EUROPEAN EVENT FOR ELECTRONIC SYSTEM DESIGN & TEST

17 – 19 APRIL 2023
ANTWERP, BE

FLANDERS MEETING & CONVENTION CENTER ANTWERP (FMCCA)

DATE 2023

The DATE conference is the main European event bringing together designers and design automation users, researchers and vendors as well as specialists in the hardware and software design, test and manufacturing of electronic circuits and systems. DATE puts a strong emphasis on both technology and systems, covering ICs/SoCs, reconfigurable hardware and embedded systems as well as embedded software.

The three-day event consists of a conference with regular papers, late breaking results papers and extended abstracts, complemented by timely keynotes, special days, focus sessions, embedded tutorials, half-day workshops and multi-partner project sessions. The event will also host the Young People Programme and newly introduced unplugged sessions fostering the networking and the exchange of information on relevant issues, recent research outcomes and career opportunities.

DATE 2023 is the 26th edition of an event that has always been the place for researchers, young professionals and industrial partners to meet, present their research and discuss the current development and next trends, with high emphasis on social interaction.

For its 2023 edition, DATE presents itself in a renewed format: After three years of online editions due to COVID-19, **DATE 2023 focusses on interaction as well as reinforcing and rebuilding links in the community**. Accordingly, we employ some substantial changes to the established format intending for significant added value for in-person participation: Rather than spreading the attendance throughout an entire week, **we condense DATE to three days – and make them count!** Furthermore, the vast majority of regular papers will be presented in a **renewed format of technical sessions focussing on live interactions** (in addition to the common full-length presentations available before, during and after the conference by video). By this, we make sure that the community can actually do what conferences are for: meeting, discussing and exchanging.

THE CONFERENCE

The conference addresses all aspects of research into technologies for electronic and (embedded) systems engineering. It covers the design process, test and tools for design automation of electronic products ranging from integrated circuits to distributed large-scale systems. This includes both hardware and embedded software design issues. The conference scope also includes the elaboration of design requirements and new architectures for challenging application fields such as sustainable computing, Internet of Everything, augmented living, secure systems, healthcare and automotive systems. Engineers, scientists and researchers involved in innovative industrial designs are particularly encouraged to submit papers to foster feedback from design to research.

CONFERENCE ORGANISATION

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SPECIAL DAYS ON EMERGING TOPICS

The scientific research track is complemented by a set of sessions focussing on emerging topics bringing new challenges to the community, with presentations and interactions on interesting and timely issues.

Special Day on Human AI-Interaction
Computing systems are increasingly entangled with the physical world, such that keyboards and screens are no longer the only way to communicate between humans and computers. More "natural" ways to communicate such as voice commands, analysis of the environment and imaging are increasingly widespread thanks to the progress of Artificial Intelligence. To further enhance communication and understanding between humans and machines, the next step for computing systems will be to enable more precise evaluation of all implicit communications, including emotions. In exchange, they should provide more natural, human-like responses, in a trustworthy way. The goal of this special day on Human AI-interaction is to show the latest developments in this field, including "emotional systems" but also to present the corresponding ethical aspects.
Marc Duranton (CEA-LIST, FR)

Special Day on Personalised Medicine
Personalised medicine is a new frontier for healthcare combining genomics, big data analytics and population health. The field aims to improve diagnosis and tailor treatment to the individual patient's biological and clinical profile, as well as supporting individual preventive healthcare decisions to increase quality of life. These profiles are obtained through biomarkers, which are objectively measured indicators of normal and pathogenic biological processes and of pharmacological responses to medical treatments. Biomarkers can be retrieved through intelligent wearable or insideable computing devices, continuously monitoring bio-signals (electrical, temperature, pressure, etc.), behavioural patterns and in-device processing of body fluids (biological samples). Together with biomarkers from genomic data, this can be used to get a much more finely grained picture of the health condition of an individual. The emergent field of personalised medicine covers novel approaches and challenges for designing silicon-based AI-equipped ultra-low power computing but has also given rise to a new field of biological computing, based on the ability to engineer biological circuits to monitor and react on biomarkers.
Jan Madsen (Technical University of Denmark, DK)
Oliver Bringmann (Universität Tübingen, DE)

DATE 2023 will also host a timely Special Initiative on:
Autonomous Systems Design
Fueled by the progress of Artificial Intelligence, autonomous systems are increasingly becoming integral parts of many Internet-of-Things (IoT) and Cyber-Physical Systems (CPS) applications, such as automated driving, robotics, avionics, industrial automation and smart systems in general. Autonomous systems are self-governed and self-adaptive systems that are designed to operate in an open and evolving environment, which is not completely defined at design time. This poses a unique challenge to the design and verification of dependable autonomous systems. The DATE Special Initiative on Autonomous Systems Design will include peer-reviewed papers, special sessions and interactive sessions addressing these challenges.
More details and a specific call for contributions can be found online: *www.date-conference.com/asd*
Selma Saidi (Technische Universität Dortmund, DE)
Rolf Ernst (Technische Universität Braunschweig, DE)

UNPLUGGED SESSIONS

DATE Unplugged Sessions - a kind of mini BarCamp session that creates a shared stream of consciousness uninterrupted by electronics to combine and multiply raw brainpower. In these sessions, you will be able to actively engage with peers in a stimulating exchange to formulate timely challenges as problems and find inspiration for solution approaches.
Pieter Mosterman (Mathworks, US)
Hans Vangheluwe (University of Antwerp, BE)

TOPIC AREAS FOR SUBMISSION

Within the scope of the conference, the main areas of interest are organised in the following tracks. Submissions can be made to any of the track topics. For detailed descriptions of the topics, please refer to the DATE website: *www.date-conference.com*

Track D: Design Methods and Tools addresses design automation, design tools and hardware architectures for electronic and embedded systems. The emphasis is on methods, algorithms and tools related to the use of computers in designing complete systems. The track focus includes significant improvements on existing design methods and tools as well as forward-looking approaches to model and design future system architectures, design flows and environments.
Lukas Sekanina (Brno University of Technology, CZ)

This track is organised in the following topics:
D1 System Specification and Modelling
D2 System-Level Design Methodologies and High-Level-Synthesis
D3 System Simulation and Validation
DT4 Design and Test for Analogue and Mixed-Signal Circuits and Systems, and MEMS
DT5 Design and Test of Hardware Security Primitives
DT6 Design and Test of Secure Systems

D7 Formal Methods and Verification
D8 Network-on-Chip and on-chip communication
D9 Architectural and Microarchitectural Design
D10 Low-power, Energy-efficient and Thermal-aware Design
D11 Approximate Computing
D12 Reconfigurable Systems
D13 Logical and Physical Analysis and Design
D14 Emerging Design Technologies for Future Computing
D15 Emerging Design Technologies for Future Memories

Track A: Application Design is devoted to the presentation and discussion of design experiences with a high degree of industrial relevance, real-world implementations and applications of specific design and test methodologies. Contributions should illustrate innovative or record-breaking design and test methodologies, which will provide viable solutions in tomorrow's silicon, embedded systems and large-scale systems. In topic A8, there is the opportunity to submit 2-page papers that expose industrial research and practice.
Alberto Bosio (University of Lyon, FR)

This track is organised in the following topics:

A1 Power-efficient and Sustainable Computing
A2 Smart Cities, Internet of Everything, Industry 4.0
A3 Automotive Systems and Smart Energy Systems
A4 Augmented Living and Personalized Healthcare
A5 Secure Systems, Circuits, and Architectures
A6 Self-adaptive and Context-aware Systems
A7 Applications of Emerging Technologies
A8 Industrial Experiences Brief Papers

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Track T: Test and Dependability covers all test, design-for-test, reliability and design-for-robustness issues, at system-, chip-, circuit- and device-level for both analogue and digital electronics. Topics of interest also include diagnosis, failure mode analysis, debug and post-silicon validation challenges and test or fault injection methods addressing system security.
Ilia Polian (University of Stuttgart, DE)

This track is organised in the following topics:

T1   Modelling and Mitigation of Defects, Faults, Variability, and Reliability
T2   Test Generation, Test Architectures, Design for Test, and Diagnosis
T3   Dependability and System-Level Test
DT4 Design and Test for Analogue and Mixed-Signal Circuits and Systems, and MEMS
DT5 Design and Test of Hardware Security Primitives
DT6 Design and Test of Secure Systems

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Track E: Embedded Systems Design is devoted to the modelling, analysis, design, verification and deployment of embedded software or embedded/cyber-physical systems. Areas of interest include methods, tools, methodologies and development environments for real-time systems, cyber-physical systems, networked systems and dependable systems. Emphasis is, also, on model-based design and

verification, embedded software platforms, software compilation and integration for these systems.
Liliana Cucu (Inria, FR)

This track is organised in the following topics:

E1 Embedded Software Architecture, Compilers and Tool Chains
E2 Real-time, Dependable and Privacy-Enhanced Systems
E3 Machine Learning Solutions for Embedded and Cyber-Physical Systems
E4 Design Methodologies for Machine Learning Architectures
E5 Design Modelling and Verification for Embedded and Cyber-Physical Systems

LATE BREAKING RESULTS
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New this year, DATE 2023 provides the community with an opportunity to present new and exciting contributions for submission as Late Breaking Results (LBR) papers. LBR papers should cover new research relevant to the DATE topics. Two types of papers can be submitted:

1) breakthrough approaches or novel orthogonal research directions
2) breakthrough results, where sufficient work has been accomplished to indicate the viability of the work

Prospective authors are invited to submit Late Breaking Results papers (2 pages and two-column format) describing original and innovative work. Authors should use the template provided on the DATE website. Accepted LBR submissions will be presented in dedicated technical sessions focussing on live interactions around the submitted work to get feedback and exchange with the DATE community.

Please note that the late breaking results deadline is not an extension of the general paper submission

deadline. It should be noted that accepted Late Breaking Results papers will be published as submitted and are expected to be camera-ready.
Aida Todri-Sanial (LIRMM, FR)

COMMITTEES
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A full list of the executive and programme committee members is available on the DATE website: *www.date-conference.com*

SPONSORS
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The event is sponsored by the European Design and Automation Association, the Electronic System Design Alliance, the IEEE Council on Electronic Design Automation and the ACM Special Interest Group on Design Automation.

In cooperation with IEEE Computer Society Test Technology Technical Council (TTTC), IEEE Solid-State Circuits Society (SSCS) and IEEE Computer Society (IEEE CS).

SUBMISSION INSTRUCTIONS
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All manuscripts for any technical topic of the D, A, T and E tracks must be submitted for review electronically, following the instructions on the conference website: *www.date-conference.com/submission-instructions*

The accepted file format is PDF. Any other format and manuscripts received in hard-copy form will not be processed. All submissions require novel and complete research work supported by experimental results.

Submissions must not exceed 6 pages in length, including references. Submission in topic A8 (Industrial Experiences Brief Papers) cannot exceed 2 pages in length and must be industrial-centric on both the content and the majority of authors' affiliations.

WARNING: It is not possible to modify the list and the order of authors once the paper is submitted and the deadline is expired. If the paper is accepted, this information will be the one used for the final publication.

All submitted papers should be formatted as close as possible to the final format: A4 pages or Letter sheets, double column, single spaced, Times or equivalent font of minimum 10pt, avoid the use of type-3 fonts. Do not use baseline stretch to compress text. Paper templates are available on the DATE website for your convenience. To permit blind review, submissions must not include the author names, however prior work should be referenced in full, in such a way that the reference is available without disclosing that it is from the same authors. Any submission that is not in line with the above rules will be discarded. Accepted papers not complying to the above-mentioned formatting instructions will not be included in the conference proceedings.

All papers will be evaluated with regard to their suitability for the conference, originality and technical soundness. The programme committee reserves the right to reorient a submission to an extended abstract.

Submissions simultaneously under review or accepted by another conference, symposium, or journal will be rejected. Submissions for which pre-prints are available (e.g., on arXiv) are allowed. Note, however, that the authors are expected to follow all reasonable efforts to ensure that the submission is compliant with the double-blind review process.

CAMERA-READY AND PRESENTATION

Authors of accepted papers will prepare the camera-ready version of the paper, adhering to the IEEE proceedings format and will be checked through PDFeXpress. A recorded video presentation of the paper is also required, according to guidelines that will be made available. It should be noted that accepted Late Breaking Results papers will be published as submitted and are expected to be camera-ready.

REGISTRATION RULE FOR ALL ACCEPTED PAPERS

Please note that each paper shall be accompanied by at least one full conference registration at the speaker rate (i.e., two speaker registrations are needed for two accepted papers, e.g., from the main author or a co-author of the paper). It is mandatory that at least one author of each accepted paper attends the session where the paper is discussed and presents the work, otherwise the paper will be deleted from the proceedings afterwards (despite full payment at the speaker rate).

FOCUS SESSIONS

Focus Sessions can take the form of (1) Panels, discussing visionary and controversial issues or (2) Hot-Topic Sessions, focusing on the introduction and discussion of new R&D problems, addressing trends in the technical domains that are of interest to the conference participants.

Focus Session proposals must consist of an extended summary of up to 1,500 words in a PDF file, describing the topic, the authors/speakers and the format, and must be submitted via the DATE website by 2 October 2022. The submitter of a Focus Session proposal will be notified of acceptance or rejection of his/her proposal by 21 November 2022. In case of acceptance, contributors of accepted Focus Sessions will be asked to submit final texts or statements of panellists, as appropriate, for publication in the proceedings as final, camera-ready manuscripts by 27 January 2023. Panel sessions are entitled to one (1) page per panellist in the proceedings; Hot-Topic Sessions are allocated a maximum of six (6) pages

paper per speaker or one single paper for the entire session which should not exceed ten (10) pages. As a rule of thumb, no more than four speakers per session should be planned for Hot-Topic Sessions. For the accepted Focus Sessions, it is the responsibility of the Focus Session organiser to ensure that the 27 January 2023 deadline is met and all the camera-ready manuscripts from their respective Focus Sessions are technically sound and meet the editorial standards of the DATE proceedings. The Focus Session Co-Chairs may decline the publication of the final manuscripts in the DATE proceedings if the above responsibility is not fulfilled.
Olivier Sentieys (IRISA/Inria, FR)
Patrick Haspel (Synopsys, Inc., DE)

Further Focus Sessions will concentrate fully on the industrial perspective and are intended as a platform for DATE conference sponsors to present their work. For more information, please contact:
K.I.T. Group GbmH Dresden, *date@kitdresden.de*

EMBEDDED TUTORIALS

DATE 2023 tutorial sessions are designed to provide audiences with an introduction to important topics in the DATE technical areas as well as hands-on tutorials on design automation tools. Early career professionals as well as graduate students will benefit from the introductory knowledge about these important topics and tools. Mid-career professionals can use the tutorials to extend their horizons. Embedded tutorials will be integrated into the new 3-day schedule of DATE and will replace the "Monday Tutorials" from previous editions. We welcome proposals for tutorial presentations in the DATE technical areas. Proposals should be submitted before 2 October 2022, via the DATE submission website. For more information, please contact:
Francisco Cazorla (Barcelona Supercomputing Center, ES), *tutorials@date-conference.com*

Kindly note that DATE 2023 Tutorials will be held in-person, alongside the main conference activities (Antwerp, 17-19 April 2023) – hands-on content is encouraged.

WORKSHOPS

DATE invites proposals for half-day workshops on emerging research and application topics in design, application, test, and embedded systems. Topics that are not directly covered in the DATE technical programme, but represent new research directions with potential impact on future DATE technical areas are particularly welcome. Workshops will be integrated into the new 3-day schedule of DATE and will replace the "Friday Workshops" from previous editions. For information and detailed descriptions on how to propose a workshop, please refer to the DATE website. Proposals should be submitted electronically by 2 October

2022, via the DATE website. For more information, please contact:
Theo Theocharides (University of Cyprus, CY)
workshops@date-conference.com

Kindly note that DATE 2023 Workshops will be held via physical presence, alongside the main conference activities (Antwerp, 17-19 April 2023).

YOUNG PEOPLE PROGRAMME

The Young People Programme is an initiative targeting Masters/PhD students and early-stage researchers with the goal of increasing their visibility, establishing contacts and encouraging discussion about future perspectives and upcoming research initiatives. The programme includes various events.

All these activities, PhD Forum, Careers Fair – Industry and Student Group Fair as well as Careers Fair - Academia, will be held in-person, to allow a strong participation and interaction, in a format offering networking and connection opportunities.

PHD FORUM

The PhD Forum is a poster session hosted by EDAA, ACM SIGDA and IEEE CEDA for PhD students who have completed their PhD thesis within the last 12 months or who are close to completing their thesis work.

It represents an excellent opportunity for them to get feedback on their research and for the industry to get a glance of the state of the art in system design and design automation. Proposals can be submitted via the DATE website until 21 November 2022. For further information, please contact:
Christian Pilato (Politecnico di Milano, IT)
phd-forum@date-conference.com

CAREERS FAIR – INDUSTRY & STUDENT GROUP FAIR

Careers Fair - Industry: PhD students, master students and early researchers apply to open positions from EDA and micro- electronics industries, leading to interviews arranged during the DATE conference. Sponsoring companies get the opportunity to present themselves, their ongoing activities and their workplace during a dedicated session. Jobseekers can attend a seminar on how to present effectively to HR representatives, that will be held before the conference. The Careers Fair - Industry session includes a panel session where experts with EDA and microelectronics backgrounds talk about their various career paths, including industry and start-ups, self-made entrepreneurs and more unconventional profiles.

Student Group Fair: Student teams participating in international competitions present their activities, success stories and challenges to DATE attendees and to personnel from EDA and microelectronic companies, to receive funding and support for their future activities. Student teams also attend a dedicated workshop.

Workshop on grant acquisition: One session is dedicated to how to attract funding through the new funding programs sponsored by the European Agencies.

Sara Vinco (Politecnico di Torino, IT)
Anton Klotz (Cadence Design Systems, DE)
ypp@date-conference.com

CAREERS FAIR – ACADEMIA & UNIVERSITY FAIR

The University Fair and Careers Fair – Academia are forums for the academic sector to interact with DATE participants. We facilitate this interaction by providing two channels:

University Fair: is a channel to foster the transfer of mature academic work to a large audience. Interested research academics are invited to submit a 1-page abstract description of their pre-commercial research results and prototypes. Accepted submissions will have the opportunity to present their work (posting facilities for posters will be provided) and demonstrate their prototype live during demonstration sessions.

Careers Fair - Academia: is a channel to advertise new and upcoming research initiatives with academic open positions to a large audience. Interested research academics are invited to submit a 1-page abstract description of their new research plans and the respective open position(s). Accepted submissions will have the opportunity to present their research openings (approx. 5 mins) in the Careers Fair - Academia session, which will also feature a panel on academic career paths in different countries. They are also invited to post a flyer of their opening(s) on the "Jobs Wall".

Submission deadline is 21 November 2022.
For more information, please contact:
Nele Mentens (KU Leuven, BE / Leiden University, NL)
Nima Tahernijad (TU Vienna, AT)
university-fair@date-conference.com

MULTI-PARTNER PROJECTS

The DATE 2023 programme will include sessions dedicated to multi-partner innovative and/or highly-technological research projects addressing the DATE 2023 topics. This includes projects funded by EU schemes (Horizon Europe, EIC, H2020, ECSEL, PENTA, MSCA, COST, CleanSky, …), nationally- and regionally-funded projects, projects funded by the European Space Agency and collaborative research projects funded by industry. The session is an excellent opportunity to present projects' contributions to the DATE community and increase the impact of dissemination and outreach activities.

Project coordinators are invited to submit their contribution presenting the concepts, work in progress, or lessons learned from the project, either in the form of a full paper or a one-page abstract. Submissions will be (not blind) peer-reviewed and must be submitted before 21 November 2022 via the DATE website. Accepted contributions will be published in the DATE 2023 proceedings.

For more information, please contact:
Maksim Jenihhin (Tallinn University of Technology, EE)
multipartner-projects@date-conference.com

Projects can also showcase their vision, activities and outcomes benefitting from DATE's high visibility and networking assets, by exploiting further project dissemination options; for more information please contact:
Kathleen Schäfer, *date@kitdresden.de*

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