



Submission Key Dates

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| D, A, T, and E papers | Deadline: 9 September 2018 |
| Monday Tutorial proposals | Deadline: 9 September 2018 |
| Friday Workshop proposals | Deadline: 9 September 2018 |
| Special Session proposals | Deadline: 16 September 2018 |
| PhD Forum | Deadline: 14 October 2018 |
| European Projects | Deadline: 14 October 2018 |
| Exhibition Theatre | Deadline: 26 October 2018 |
| Notification of acceptance | Deadline: 8 November 2018 |
| Camera-ready paper due date | Deadline: 29 November 2018 |
| University Booth proposals | Deadline: 13 January 2019 |

Conference Organization

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Special Sessions

Special Sessions can take the form of (1) Panels, discussing visionary and controversial issues, (2) Hot-Topic Sessions, focusing on the introduction and discussion of new R&D problems, and (3) Embedded Tutorial Sessions, addressing trends in the technical domains that are of interest to the conference participants. Additional considerations will be given to Special Session proposals matching the DATE 2019 technical programme, Special Days, and Exhibition Campus focus areas: model-driven design of intelligent and autonomous systems, high performance computing in embedded systems and vice versa, future and emerging technologies including More-Than-Moore and beyond CMOS technologies, new memories and computing architectures, CAD for the life sciences, Industry 4.0, and novel applications, accelerators, architectures for AI and machine learning with special attention to availability, reliability, safety, and security requirements.

Special Session proposals must consist of an extended summary of up to 1,500 words in a PDF file, describing the topic, the authors/speakers, plus the format and must be submitted via the DATE website by **16 September 2018**.

The submitter of a Special Session proposal will be notified of acceptance or rejection of his/her proposal by **8 November 2018**. In case of acceptance, contributors of accepted Special 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 **29 November 2018**. Panel sessions are entitled to one (1) page per panellists 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; Embedded Tutorials are allocated 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 and Embedded Tutorial Sessions.

For all accepted special sessions, it is the responsibility of the Special Session organizer(s) to ensure that the **29 November 2018** deadline is met, and all the camera-ready manuscripts from their respective Special Sessions are technically sound, and meet the editorial standards of the DATE Proceedings. The Special Session Co-Chairs may decline the publication of the final manuscripts in the DATE Proceedings if the above responsibility is not fulfilled. For more information, please contact:

Andreas Herkersdorf and **Tulika Mitra**, specialsessions@date-conference.com

Monday Tutorials

The tutorials for DATE 2019 are designed to provide audiences with introductions to important topics in the DATE technical areas as well as hands-on tutorials on important tools. Early career professionals (e.g., PhD and MS students or early-stage professionals) will benefit from rounding out their knowledge of important topics and/or tools. Mid-career professionals can use the tutorials to extend their horizons. We welcome proposals for tutorial presentations in the DATE technical areas. Proposals should be submitted before **9 September 2018**, via the DATE submission website. For more information, please contact:

Marco Platzner, monday-tutorials@date-conference.com

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 complete 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 state-of-the-art in system design and design automation. Proposals can be submitted via the DATE website by **14 October 2018**. For further information, please contact:

Robert Wille, phd-forum@date-conference.com

University Booth

The University Booth fosters the transfer of academic work to industry. The University Booth is part of the DATE exhibition and is free of charge for presenters and their visitors. Research institutes and universities interested in demonstrating their mature prototypes and pre-commercial results can find the submission details at www.date-conference.com/exhibition/u-booth. Submission deadline is **13 January 2019**. If you have questions, please contact:

Andreas Vörg and **Elena Ioana Vatajelu**, university-booth@date-conference.com

European Projects

DATE will have an entire section of the proceedings dedicated to European Projects. EU Project Coordinators are invited to submit papers (up to six pages) presenting preliminary ideas, work in progress, or lessons learned from the project. The papers will be peer-reviewed and selected based on innovation and originality. In particular, we would like to give visibility to papers addressing DATE topics. European Project papers should be submitted before **14 October 2018** via the DATE website. For more information, please contact:

Martin Schoeberl, european-projects@date-conference.com

Similar to previous editions, DATE offers the opportunity to rent a booth and/or meeting room for presenting project material or demos making DATE an ideal venue to meet your community and fulfil the dissemination and outreach obligations of your project. For booth rental and room reservations, please contact the Conference Organization K.I.T. Group.

Exhibition Theatre

The exhibition theatre, located in the exhibition area close to the booths, provides speaking opportunities to all interested exhibitors. The exhibition theatre programme is a mix of panel discussions and user presentations that give exhibition visitors and conference delegates a dynamic overview of key technical and business issues in electronic and embedded systems design. Submissions are invited from exhibiting companies and projects, industry consortia, technology groups, standards bodies, or any person with opinions on future industry trends.

Panels – discuss future trends, hot-topic technologies and business aspects of the Systems-on-Chip, EDA and IP markets. Panels combine invited industry experts and analysts for a more controversial look at the electronic design marketplace.

Customer Testimonials – allow exhibiting companies the chance to demonstrate their technical expertise and the advantages of their products through the experiences of a customer. More relevant to real-world designers than a regular sales pitch, offering engineers an insight into good working practices and current design methods, customer testimonial papers are a great way to draw a crowd at DATE.

Special Sessions – a selection of sessions (hot topic, tutorial) and invited speakers from the technical conference programme will be presented in the Exhibition Theatre, providing added value to exhibition visitors.

Final deadline for Exhibition Theatre submissions: **26 October 2018**. For more information, please contact:

Jürgen Haase, haase@edacentrum.de

Friday Workshops

Proposals for Friday Workshops on emerging research and application topics are invited. Particularly suitable topics are those not directly covered in the technical programme and which have the potential to impact on future DATE technical areas in design and test of microelectronic systems. For information and detailed descriptions on how to propose a workshop, please refer to the DATE website. Proposals should be submitted before **9 September 2018**, via the DATE website. For more information, please contact:

Franzisco J. Cazorla and **Michael Glaß**, friday-workshops@date-conference.com



Firenze Fiera, Fortezza da Basso, Florence, Italy

Conference 25–29 March · Exhibition 26–28 March



The 22nd DATE conference and exhibition 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, and embedded software.

The five-day event consists of a conference with plenary invited papers, regular papers, panels, hot-topic sessions, tutorials and workshops, two special focus days and a track for executives. The scientific conference is complemented by a commercial exhibition showing the state-of-the-art in design and test tools, methodologies, IP and design services, reconfigurable and other hardware platforms, embedded software, and (industrial) design experiences from different application domains, e.g. automotive, wireless, telecom and multimedia applications. The organisation of user group meetings, fringe meetings, a university booth, a PhD forum, vendor presentations and social events offers a wide variety of extra opportunities to meet and exchange information on relevant issues for the design and test community. Special space will also be allocated for EU-funded projects to show their results.

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 telecom, wireless communications, multimedia, healthcare and automotive systems. Persons involved in innovative industrial designs are particularly encouraged to submit papers to foster the feedback from design to research. Panels, hot-topic sessions and embedded tutorials highlight and inform about emerging topics.

Special Days in the programme will focus on two areas bringing new challenges to the system design community:

Embedded meets Hyperscale and HPC: Heterogeneous computing with multiple, specialized processors and application-specific accelerators is vital for embedded systems to meet performance, latency, and efficiency targets. The same goals of fast, efficient, and cost-effective processing are also gating factors for the evolution of hyperscale data centre (DC) and high-performance computing (HPC) and Moore's law no longer provides the necessary efficiency gains. Hence, we can witness a spread of technologies pioneered in embedded systems to hyperscale DCs and HPC systems, e.g., the use of specialized computing resources, massive parallelism, model-driven and domain-specific programming, task models, co-scheduling, and others. The theme of this special day is to highlight this confluence of methods and technologies to better understand, how heterogeneous computing is shaping the future of hyperscale DCs and HPC.

Model-Based Design of Intelligent Systems: The complexity of today's cyber-physical systems is already enormous, but the rise of intelligent systems will further accelerate the design complexity. Good models and associated design processes are needed to keep the development under control and deliver high-quality systems in time. Model-based design places models at the centre of the development cycle. It has successfully

been used to develop embedded systems, starting from models in well-defined modelling formalisms, that can be analysed and from which software and hardware realizations can be automatically generated. This special day will explore all that is needed to lift model-based design into the era of intelligent systems. The special day will address, among other things, model-based design frameworks for IoT systems, model-based machine learning, and application of model-based design in safety-critical and autonomous systems. The special day will also highlight the upcoming challenges in this domain to invite the DATE community to help to overcome them.

On the first day of the DATE event, half-day in-depth technical tutorials are given by leading experts in their respective fields. The **Monday Tutorials** are well suited for researchers, tool developers and system designers.

Friday Workshops concentrate on specialised and novel topics.

The Exhibition

The vivid accompanying exhibition states a unique networking opportunity for vendors of tools and services for hardware and embedded software for the design, development and test of Systems-on-Chip, IPs, Embedded Systems, ASICs, FPGAs and PCBs. Furthermore, it states the perfect venue for industries to meet university professors to foster their university programme and especially for PhD Students to meet their future employers.

A full programme in the Exhibition Theatre will again combine presentations by exhibiting companies, best-practice reports by industry leaders on their latest design projects and selected conference special sessions.

The full list of participating exhibitors and sponsors including their company profiles can always be found online:

www.date-conference.com/exhibitors-sponsors

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.*

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's 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.

This track is organised in the following topics:

- D1** System Specification and Modeling
- D2** System Design, High-Level Synthesis, and Optimization
- D3** System Simulation and Validation
- D4** Formal Methods and Verification
- DT5** Design and Test for Analogue and Mixed-Signal Circuits and Systems, and MEMS
- DT6** Design and Test of Secure Systems
- D7** Network on Chip
- D8** Architectural and Microarchitectural Design
- D9** Power Modeling, Low-Power Design, and Power-Aware Optimization
- D10** Temperature and Variability-Aware System Design and Optimization
- D11** Reconfigurable Computing
- D12** Logical and Physical Analysis and Design
- D13** Emerging Design Technologies for Future Computing
- D14** 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 designs, 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.

This track is organised in the following topics:

- A1** Power-efficient and Sustainable Computing
- A2** Robotics and 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 Learning Systems
- A7** Applications of Emerging Technologies
- A8** Industrial Experiences Brief Papers

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.

This track is organised in the following topics:

- T1** Modeling and Mitigation of Defects, Faults, Variability, and Reliability
- T2** Test Generation, Test Architectures, Design for Test, and Diagnosis
- T3** Microarchitecture-Level Dependability
- T4** System-Level Dependability
- DT5** Design and Test for Analogue and Mixed-Signal Circuits and Systems, and MEMS
- DT6** Design and Test of Secure Systems

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

This track is organised in the following topics:

- E1** Real-time and Dependable Systems
- E2** Embedded Systems for Deep Learning
- E3** Model-Based Design, Verification and Security for Embedded Systems
- E4** Embedded Software Architecture, Compilers and Tool Chains
- E5** Cyber-Physical Systems Design

Committees

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

Sponsors

The event is sponsored by the European Design and Automation Association, the Electronic System Design Alliance, the IEEE Council on EDA, ECSI, ACM – SIGDA, and RAS.

In cooperation with IEEE Computer Society Test Technology Technical Council (TTTC), IEEE Solid-State Circuits Society (SSCS), International Federation for Information Processing (IFIP).

Submission Instructions

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

The accepted file format is PDF. Any other format and manuscripts received in hard-copy form will not be processed.

Papers can be submitted for either formal oral presentation or interactive presentation. Oral presentations require novel and complete research work supported by experimental results. Interactive presentations are expected to articulate emerging and future design, verification, or test problems including work-in-progress and identify open problems that merit innovative future research. These presentations are delivered on a poster in a face-to-face discussion area.

→ **Submissions should not exceed 6 pages in length for oral-presentation papers and 4 pages in length for interactive-presentation papers. 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: you are not allowed to modify the list of authors after the submission deadline. It is mandatory to include the full list (in the correct order) when submitting the paper online. If your paper is accepted, you will not be able to modify this information later on.**

All papers should be formatted as close as possible to the final format: A4 or letter sheets, double column, single-spaced, Times or equivalent font of minimum 10pt. Paper templates are available on the DATE website for your convenience. To permit blind review, submissions must not include the author names. Any submission that is not in line with the above rules will be discarded.

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 oral-presentation papers to interactive-presentation and vice versa, to obtain the most suitable presentation format.

→ **Submissions simultaneously under review or accepted by another conference, symposium, or journal will be rejected. The DATE conference will work cooperatively with others to check for double submissions.**

Further Instructions for Special Session Submissions

In addition to the above-stated important instructions, e.g. w.r.t. author list and double submissions, please adhere to the following:

→ **Session Chair/Co-Chair:** Every special session submission must name a chair and a co-chair; the chair and the co-chair are responsible for the preparation of the session – e.g. making sure that all presentations are timely uploaded – and for the monitoring of the session; they cannot be selected among the moderators/pañellists, or speakers/presenters.

Registration Rule for all accepted papers

It is mandatory that at least one author of each accepted paper attends the conference to present the work. 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). In case of no attendance/presentation in person on-site, the paper will be deleted from the proceedings afterwards (despite full payment at the speaker rate).