

## Information

[www.date-conference.com](http://www.date-conference.com)



### Submission Key Dates

D, A, T, and E papers	Deadline: 8 September 2019
Monday Tutorial proposals	Deadline: 8 September 2019
Friday Workshop proposals	Deadline: 8 September 2019
Special Session proposals	Deadline: 15 September 2019
European Projects	Deadline: 13 October 2019
Exhibition Theatre	Deadline: 27 October 2019
Notification of acceptance	Deadline: 7 November 2019
PhD Forum	Deadline: 14 November 2019
Camera-ready paper due date	Deadline: 28 November 2019
University Booth proposals	Deadline: 12 January 2020

### Conference Organization

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## Call for Papers

### 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 2020 technical programme, Special Days, and Exhibition Campus focus areas: embedded artificial intelligence, silicon photonics, model-driven design of intelligent and autonomous systems, high performance computing in embedded systems, future and emerging technologies including More-Than-Moore and beyond CMOS technologies, new memories and computing architectures, 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 **15 September 2019**.

The submitter of a Special Session proposal will be notified of acceptance or rejection of his/her proposal by **7 November 2019**. 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 **28 November 2019**. 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 Tutorial Sessions 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 **28 November 2019** 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:

**Giovanni De Micheli** and **Marco Casale-Rossi**, [specialsessions@date-conference.com](mailto:specialsessions@date-conference.com)

### Monday Tutorials

The tutorials for DATE 2020 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 **8 September 2019**, via the DATE submission website. For more information, please contact:

**Mehdi Tahoori**, [monday-tutorials@date-conference.com](mailto: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 the state of the art in system design and design automation. Proposals can be submitted via the DATE website until **14 November 2019**. For further information, please contact:

**Robert Wille**, [phd-forum@date-conference.com](mailto: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](http://www.date-conference.com/exhibition/u-booth). Submission deadline is **12 January 2020**. For more information, please contact:

**Frédéric Pétrot** and **Andreas Vörg**, [university-booth@date-conference.com](mailto:university-booth@date-conference.com)

### European Projects

DATE will have an entire section of the proceedings dedicated to European Projects, including but not limited to EU H2020 Projects and projects funded by the European Space Agency. 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 **13 October 2019** via the DATE website. For more information, please contact:

**Francisco Cazorla**, [european-projects@date-conference.com](mailto: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. DATE conference is also an excellent opportunity to hold internal project (fringe) meetings between project partners. For booth rental and room reservations, please contact:

**K. I. T. Group GmbH Dresden**, [date@kitdresden.de](mailto:date@kitdresden.de)

### 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 and test. 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 and test 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: **27 October 2019**.

For more information, please contact:

**Jürgen Haase**, [haase@edacentrum.de](mailto:haase@edacentrum.de)

### Friday Workshops

DATE invites proposals for Friday Workshops on emerging research and application topics in design and test of microelectronic systems. Topics that are not directly covered in the DATE technical programme and represent new research directions with potential impact on future DATE technical areas are particularly welcome. For information and detailed descriptions on how to propose a workshop, please refer to the DATE website. Proposals should be submitted electronically by **8 September 2019**, via the DATE website. For more information, please contact:

**Michael Glaß** and **Eli Bozorgzadeh**, [friday-workshops@date-conference.com](mailto:friday-workshops@date-conference.com)

## Call for Papers

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Alpexpo · Grenoble, France

Conference 9–13 March · Exhibition 10–12 March



# Call for Papers



The 23rd 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, IoT, 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 Artificial Intelligence:** Nowadays there are many cognitive applications (e.g. speech recognition) working on portable mobile devices, which however perform most of their intensive computations on the cloud. This implies power hungry servers spread all over the world, plus an important continuous communication overhead between the edge devices, the internet and the servers, drastically increasing the power consumption of world-wide internet. If internet power consumption keeps increasing with the present trend, it is estimated that by 2030 one fifth of the world-wide electricity consumption would be just to keep internet and their servers running. By moving cognitive computation intense tasks locally on embedded edge devices, not only world-wide internet power consumption growth trend will be reduced, but also users will recover their right to keep their personal data privacy. In this Special Day on Embedded AI, sessions will be organized to discuss new trends in cognitive algorithms, hardware architectures, software designs, emerging device technologies as well as the application space for deploying AI into edge devices. The topics will include technical areas to enable the realization of embedded artificial intelligence on specialized chips, such as bio-inspired chips, with and without self-learning capabilities, special low power accelerator chips for aiding in vector/matrix-based computations, convolution and deep-net chips, etc for possible machine learning, cognitive, and perception applications in health, automotive, robotics, or smart cities applications.

**Silicon Photonics** has emerged as a promising solution in the area of high performance computing. This emerging technology opens new multi-disciplinary research questions including low-loss CMOS compatible components, as well as software CAD and design tools to explore the design space of the resulting complex devices and systems. The DATE special day on silicon photonics will focus on data communication via photonics for both data center/high-performance computing and optical networks on chip applications. Industrial and academic experts will highlight recent advances on devices and integrated circuits. The sessions will also feature talks on design automation and link-level simulations. Other applications of silicon photonics such as sensing and optical compute will also be discussed.

DATE 2020 will have a timely Special Initiative **“Autonomous Systems Design - Automated Vehicles and beyond”** on Thursday and Friday which will include reviewed and invited papers as well as working sessions. There will be a separate call for papers.

## 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](http://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: [www.date-conference.com](http://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’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 Modelling
  - D2** System-Level Design Methodologies and High-Level-Synthesis
  - 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 and Communication-Centric Design
  - D8** Architectural and Microarchitectural Design
  - D9** Low-power, Energy-efficient and Thermal-aware Design
  - D10** Approximate Computing
  - D11** Reconfigurable Systems
  - 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** Modelling and Mitigation of Defects, Faults, Variability, and Reliability
- T2** Test Generation, Test Architectures, Design for Test, and Diagnosis
- T3** Microarchitecture-Level Test and Dependability
- T4** System-Level Test and 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 Machine 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](http://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 Electronic Design Automation, the European Electronic Chips & Systems Design Initiative, the ACM Special Interest Group on Design Automation, and the Russian Academy of Sciences.

**In cooperation with** IEEE Computer Society Test Technology Technical Council (TTTC), IEEE Solid-State Circuits Society (SSCS) and 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/submission-instructions](http://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.

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 submitted papers should be formatted as close as possible to the final format: 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, however prior work should be referenced in full, in a way that the reference is available without disclosing 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 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. Submitted manuscripts must not present material that has been previously published in other indexed research databases (e.g. arXiv), not to compromise the blind review process.

## 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/panellists, 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).