Conference Report

DATE 2022: Aiming for an Online/ Onsite Format and Finally Moving to Online Only

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Based on the past two years of experience as an online event due to the Covid-19 outbreak, DATE 2022 has been planned to cope with the uncertainty of the situation, having two days onsite, in Antwerp, Belgium, from March 14 to 15, 2022, to be followed by an online program until March 23, 2022. A different organization and format had been adopted to engage the DATE community, with a two-day rich program and numerous talks and panels to gather again, in person. The scientific program online had been completed by live panels and presentations to offer a valuable virtual experience. Unfortunately, for the third year in a row, DATE moved to a completely virtual event, which nevertheless attracted a broad audience.

Event organization

Two years of mainly virtual-only events called for trying to bring together the DATE community in presence, eventually for a shorter event. Therefore, the DATE 2022 edition had been planned in a special format. The first two days (March 14–15, 2022) featured invited live sessions, talks, and panels on emerging topics of interest for the DATE, on top of four keynote talks. Planning for people to meet again after two years, a single track of interesting talks had been organized, with a parallel track for interactive poster presentations for the authors of the scientific D, A, T, and E tracks, complementing the online presentations of their papers. The format of the first two days offered the opportunity to attend both relevant panels and talks on emerging topics, get a preview of the scientific program, and interact with the authors, allowing participants to meet the speakers and network in-between sessions. The rest of the DATE traditional program was planned to be held online, in the following days (March 16–23, 2022), for a week-long of activities scheduled from noon to early evening, to better fit in the busy routines of remote work we have been mastering in these two years of Covid-19. The platform hosting the event opened four weeks in advance, allowing participants to access the papers and view the recorded videos of the accepted papers, at their own pace. During the online conference, authors attended the online sessions to briefly pitch their work and be engaged in Q&A sessions to discuss their solutions and results. Specific sessions have been organized for the accepted interactive presentation, where authors had the opportunity to introduce the main aspects of their work and be engaged in further discussions. To complement the strong scientific program, the following activities took place: the Ph.D. Forum, the University Fair, the Young People Program, the BarCamp, the Multi-Partner Projects, Tutorials and Workshops, and the Diversity in EDA session. On March 17–18, the Special Initiative on Autonomous Systems Design (ASD) also took place, in continuity with DATE 2020 and 2021.

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The conference opened live online on Monday morning, March 16, 2022, at Politecnico di Milano and KU Leuven, for the initial welcome and awards sessions, also remembering, Dr. Thomas W. Williams, a dear DATE colleague, and friend who recently passed away.

Prof. Valeria Bertacco, Thurnau Professor of computer science and engineering at the University of Michigan, gave the opening keynote lecture on "what is beyond AI? societal opportunities electronic design automation."

For the second plenary keynote, Edoardo Charbon, Professor at the École Polytechnique Fédérale de Lausanne (EPFL), engaged a local audience and the online one, with a lecture on the topic "cryo-CMOS quantum control: from a wild idea to working silicon."

On Monday, the lunch keynote: "Batteries: powering up the next generations" was given by Silvia Bodoardo, Professor at Politecnico di Torino, while on Tuesday, the Council on Electronic Design Automation (CEDA) sponsored lunch keynote was given by Georges Gielen, Professor at KU Leuven, on "AI in the edge; the edge of AI." On Thursday, the lunchtime keynote talk was within the "autonomous systems" initiative and presented by Wolfgang Burgard, Professor at TU Nuremberg on "probabilistic and deep learning techniques for robot navigation and automated driving."

The focused sessions planned for the onsite program as well as for the lunchtime and happy hour talks in the online program have been organized along the two main themes: "quantum and neuromorphic computing" and "interpretable AI and nanoelectronics-based designs of edge computing systems in the IoT 2.0 era."

Scientific program

After the submission deadline, 736 valid submissions, starting from 962 submitted abstracts, were received. The papers were reviewed by the Technical Program Committee constituted of 344 members representing 40 different countries. The technical program team consisted of one program chair, supported by four track chairs, one for each track, Lejla Batina for Track D, Theo Theocharides for Track A, Ilia Polian for Track T, and Liliana Cucu for Track E. The team could rely on the experience of Graziano Pravadelli and Marcello Traiola to run the software behind the submission and review system. The track chairs, with the help of 31 couples of topic chairs and cochairs, distributed all these papers over eight A topics, 12 D topics, three DT topics, five E topics, and three T topics, and assigned them to the 344 reviewers. In total, 2,885 reviews were entered, which corresponds to almost four reviews per paper (to be more precisely, 3.92 reviews/paper).

These papers were distributed among the major regions in the world (authors from 26 different countries), which clearly demonstrates the international character and global impact of the conference: 78 papers came from Europe, 80 from North America, 87 from Asia, and three from the rest of the world.

The review process selected 182 papers (25%) for regular presentation and 66 additional ones (cumulatively 34%, including all papers) for an interactive presentation, converted to short presentations to fit the online format of the event, leading to a final program consisting of 39 regular and 22 interactive technical sessions.

The authors worked very hard to provide an excellent program. Each accepted paper appears in the proceedings and is accompanied by a video presentation of 25 minutes. Moreover, interaction with the authors was enabled by live Q&A sessions during the conference days.

Rest of the program

As in the past, DATE hosted papers and IPs contributed by multipartner innovative and/or highly technological research projects addressing the DATE 2022 topics. A panel on "the good, the bad, and the trendy of multipartner research projects in Europe" allowed us to have an overview of funded research present and future opportunities.

As in DATE tradition, 10 workshops took place, covering discussions on automotive reliability, 3-D integration, neuromorphic computing, open-source hardware, cross-layer algorithms, circuit design, data-driven applications, silicon lifecycle management, ferroelectronics, and the sustainability–security interaction.

DATE also hosted six in-depth technical tutorials on the main topics of DATE by leading experts in their respective fields, on the solution for energy-efficient AI, accelerating inferencing on embedded systems, organic printed electronics PDK, modern high-level synthesis, security of quantum computing, and approximate computing.

DATE 2022 continued fostering the Young People Program, an initiative targeting Ph.D. students with the

goal of supporting their career development. A BarCamp and a CareerFair completed this specific program for young attendees. On the other hand, a new activity called the University Fair offered academic attendees the opportunity to advertise their research associated with open positions to the DATE community.

On the last day of the conference, a lunchtime panel was held to discuss "the future of conferences—what will DATE and the others be like?" trying to explore what we can expect from scientific conferences in the years to come and to frame new behavioral models within a sustainability context. Possibly, some of the emerged insights will be seen in DATE 2023.

Overall, the DATE 2022 presented a program full of activities (Figure 1), traditional and new ones, with an innovative format, to better fit the reality of virtual events.

A few considerations on the special format adopted for DATE 2022, based on the experiences of the previous two editions held online.

- No matter how interesting the program is, after two years of remote working and attending virtual events, participants are not willing to attend full-day activities online, having a daily agenda quite full of other important events. Therefore, the online part of the conference has been planned for taking place only in the afternoon. Unfortunately, the timing cannot be ideal for all countries; however, most of the sessions were held at suitable times around the globe.
- The availability of papers and videos in advance with respect to the event allowed participants to asynchronously access the scientific content and effectively use the live Q&A sessions to engage the authors. All sessions were well attended, on average, with several questions/answers and insights discussed. Possibly, in the future, new solutions will be adopted in place of the traditional long presentations for all papers in the program, eventually opting for something more interactive, to better exploit participants' time.
- The opportunity to access the recordings of all talks and sessions reduces the average live attendance, since participants are aware that they will *only* miss the chance to ask their own questions.

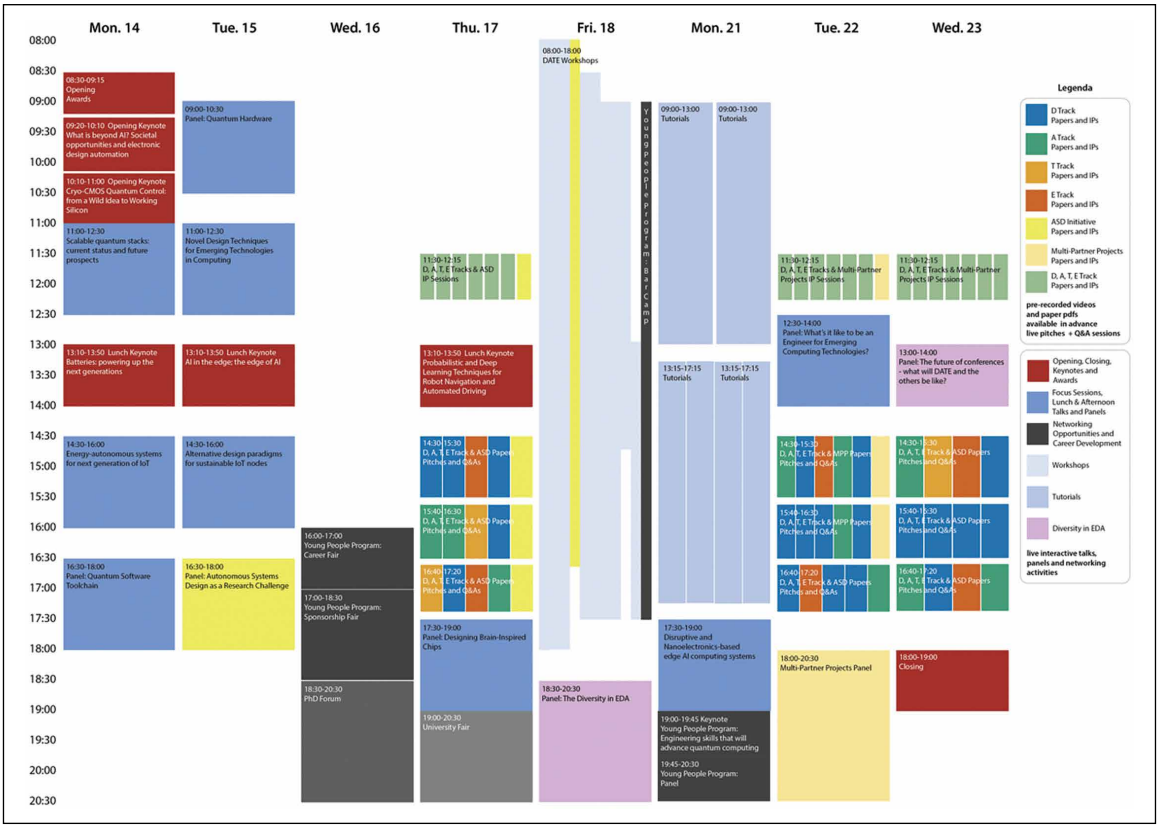

Figure 1. Overview of DATE 2022 program.

While in the past possibly it would have been difficult to reach out to top speakers, today this is not the reality and the added value of attending live virtual events therefore decreases.

The opening ceremony and the keynote talks, with one exception, have been held in "DATE hubs" with local live audiences to join the online participants, creating a warmer atmosphere for the speaker. This worked well considering that all talks were of interest to broad audiences, attracting local participants who do not necessarily belong to the DATE community, thus also enlarging DATE's outreach.

- Panels allow for a more agile and interactive online experience with respect to traditional talks. Several of the focus sessions had been organized in the form of a panel, aiming at inviting more experts in the field for their views on the topic and allowing for a more effective engagement of the participants. When moving to the virtual-only event, the format allowed for a more dynamic experience, involving participants in the discussions.

These considerations emerged while planning DATE 2022, as an experience of the event itself, and during the panel on the future of conferences in our area. Indeed, we may see some of them affect the form of DATE 2023.

We have all missed DATE's unique atmosphere and networking aspect; for these invaluable elements, we mark our calendars for DATE 2023, to be held on April 17–19, in Antwerp, Belgium, yet in a new format. See http:// www.date-conference.com for more details. ■

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