

2021 USENIX Annual Technical Conference

JULY 14–16, 2021, Santa Clara, CA, USA

Sponsored by USENIX, the Advanced Computing Systems Association



The 2021 USENIX Annual Technical Conference will take place on July 14–16, 2021, at the Hyatt Regency Santa Clara in Santa Clara, CA, USA.

Important Dates

- Submissions due: **Tuesday, January 12, 2021, 11:59 pm UTC** (Note: no abstract registration)
- Beginning of authors' response period: **Tuesday, April 6, 2021**
- Authors' response due: **Thursday, April 8, 2021**
- Notification to authors: **Monday, April 26, 2021**
- Final paper files due: **Thursday, June 3, 2021**

Conference Organizers

Program Co-Chairs

Irina Calciu, *VMware Research*
Geoff Kuenning, Lastname, *Harvey Mudd College*

Program Committee

Sangeetha Abdu Jyothi, *University of California, Irvine, and VMware Research*
Reto Achermann, *University of British Columbia*
Nitin Agrawal, *ThoughtSpot*
Amogh Akshintala
George Amvrosiadis, *Carnegie Mellon University*
Raja Appuswamy, *EURECOM, Sophia Antipolis*
Anirudh Badam, *Microsoft Research*
Antonio Barbalace, *Stevens Institute of Technology*
Frank Bellosa, *Karlsruhe Institute of Technology*
Daniel S. Berger, *Microsoft Research*
Annette Bieniusa, *TU Kaiserslautern*
Laurent Bindschaedler, *Massachusetts Institute of Technology*
Eleanor Birrell, *Pomona College*
William J. Bolosky, *Microsoft Research*
James Bottomley, *IBM Research*
Sara Bouchenak, *INSA Lyon*

Nathan Bronson, *Rockset*
Mihai Budiu, *VMware Research*
Anton Burtsev, *University of California, Irvine*
Kevin Butler, *University of Florida*
Marco Canini, *KAUST*
Lydia Chen, *TU Delft*
Young-ri Choi, *UNIST (Ulsan National Institute of Science and Technology)*
Byung-Gon Chun, *Seoul National University*
David Cock, *ETH Zurich*
Jon Crowcroft, *University of Cambridge*
Heming Cui, *The University of Hong Kong (HKU)*
Dilma da Silva, *Texas A&M University*
Alex Daglis, *Georgia Institute of Technology*
Tudor David, *Oracle Labs Zurich*
Dave Dice, *Oracle Labs*
Aleksandar Dragojevic, *Microsoft Research Cambridge*
Abhinav Duggal, *Dell-EMC*
Alexandra Fedorova, *University of British Columbia*
Pascal Felber, *University of Neuchatel*
Anja Feldmann, *Max Planck Institute for Software Systems (MPI-SWS)*
Pedro Fonseca, *Purdue University*
Jessie Frazelle, *Oxide Computer*
Jana Giceva, *TU Munich*
Ionel Gog, *University of California, Berkeley*
Justin Gottschlich, *Intel Labs and University of Pennsylvania*
Sam H. Noh, *UNIST (Ulsan National Institute of Science and Technology)*
Tim Harris, *Microsoft*
Michio Honda, *University of Edinburgh*
Yu Hua, *Huazhong University of Science and Technology*
Zsolt Istvan, *IMDEA*
Bill Jannen, *Williams College*
Vasiliki Kalavri, *Boston University*
Anuj Kalia, *Microsoft*
Sanidhya Kashyap, *EPFL*



Aasheesh Kolli, *Google and The Pennsylvania State University*
Michael Kozuch, *Intel Labs*
John Kubiawicz, *University of California, Berkeley*
Youngjin Kwon, *Korea Advanced Institute of Science and Technology (KAIST)*
Baptiste Lepers, *University of Sydney*
Heiner Litz, *University of California, Santa Cruz*
Brandon Lucia, *Carnegie Mellon University*
Xiaosong Ma, *Qatar Computing Research Institute*
Jonathan Mace, *Max Planck Institute for Software Systems (MPI-SWS)*
Carlos Maltzahn, *University of California, Santa Cruz*
Virendra Marathe, *Oracle Labs*
Marcelo Martins, *Apple*
Ali Jose Mashtizadeh, *University of Waterloo*
Alexander Merritt, *Intel*
Michael Mesnier, *Intel*
Ethan Miller, *University of California, Santa Cruz, and Pure Storage*
Changwoo Min, *Virginia Tech*
Adam Morrison, *Tel Aviv University*
Gilles Muller, *INRIA*
Kiran-Kumar Muniswamy-Reddy, *Oracle*
Amy Murphy, *Bruno Kessler Foundation*
Madan Musuvathi, *Microsoft Research*
Onur Mutlu, *ETH Zurich*
Dalit Naor, *IBM Research - Haifa*
Khanh Nguyen, *Texas A&M University*
Cristina Nita-Rotaru, *Northeastern University*
Amy Ousterhout, *University of California, Berkeley*
Roberto Palmieri, *Lehigh University*
Mangpo Phothilimthana, *Google*
Peter Pietzuch, *Imperial College London*
Dan Ports, *Microsoft Research*
Costin Raiciu, *Politehnica Bucharest*
Michael Reiter, *Duke University*
Larry Rudolph, *Two Sigma*
Leonid Ryzhyk, *VMware Research*
Mahadev Satyanarayanan, *Carnegie Mellon University*
Jiri Schindler, *Tranquil Data*
Eric Schkfuza, *Amazon*
Russell Sears, *Apple*
Sangeetha Seshadri, *IBM Almaden Research Center*
Liuba Shriru, *Brandeis University*
Mark Silberstein, *Technion—Israel Institute of Technology*
Ankit Singla, *ETH Zurich*
Michael Spear, *Lehigh University*
Scott Stoller, *Stony Brook University*
Patrick Stuedi, *LinkedIn*
Ryan Stutsman, *University of Utah*
Swaminathan Sundararaman, *Fusion IO*
Steve Swanson, *University of California, San Diego*
Michael Swift, *University of Wisconsin—Madison*
Adriana Szekeres, *VMware Research*
Amy Tai, *VMware Research*
Vasily Tarasov, *IBM Research - Almaden*
Eno Thereska, *Amazon*
Vasileios Trigonakis, *Oracle Labs Zurich*
Dan Tsafir, *Technion—Israel Institute of Technology*
Ymir Vigfusson, *Emory University*
Nandita Vijaykumar, *University of Toronto*

Haris Volos, *University of Cyprus*
Keval Vora, *Simon Fraser University*
Roger Wattenhofer, *ETH Zurich*
Hakim Weatherspoon, *Cornell University*
Ric Wheeler, *Facebook*
Avani Wildani, *Emory University*
John Wilkes, *Google*
Youjip Won, *Korea Advanced Institute of Science and Technology (KAIST)*
Gerd Zellweger, *VMware Research*
Lin Zhong, *Yale University*

Overview

The 2021 USENIX Annual Technical Conference (USENIX ATC '21) seeks original, high-quality submissions that improve and further the knowledge of computing systems, with an emphasis on implementations and experimental results. We are interested in systems of all scales, from small embedded mobile devices to data centers and clouds. The scope of USENIX ATC covers all practical aspects related to systems software, including but not limited to: operating systems; runtime systems; parallel and distributed systems; storage; networking; security and privacy; virtualization; software-hardware interactions; performance evaluation and workload characterization; reliability, availability, and scalability; energy and power management; and bug-finding, tracing, analyzing, and troubleshooting.

We welcome “experience” submissions that clearly articulate lessons learned, as well as submissions that refute prior published results. We value submissions more highly if they are accompanied by clearly defined artifacts not previously available, including traces, original data, source code, or tools developed as part of the submitted work. We particularly encourage new ideas and approaches.

Submitting

A good submission will typically: motivate a significant problem; propose a practical solution or approach that makes sense; demonstrate the pros and cons of the latter using sound experimental and statistical evaluation methods; disclose what has, and has not been implemented; articulate the new contributions beyond previous work; and refrain from over-claiming, focusing the abstract and introduction sections primarily on the *difference* between the new proposal and what is already available. Submissions will be judged on relevance, novelty, technical merit, and clarity.

Submissions are expected to avoid committing benchmarking crimes. Example: <https://www.cse.unsw.edu.au/~gernot/benchmarking-crimes.html>

Authors of resubmitted work will be given the opportunity to describe in a separate note the changes since the previous submission(s). While this is optional, authors are encouraged to do so, as it helps reviewers who may have reviewed a previous draft of the work to appreciate any improvements to currently submitted work.

Papers must be submitted before the aforementioned submission deadline via the USENIX ATC '21 submission site linked from the Call for Papers web page. Submissions must be in PDF format. No extensions will be given. There is no separate deadline for abstract registration. Submissions must strictly adhere to the policies specified below. By submitting, you agree that if the paper is accepted, at least one of the authors will attend the conference. Virtual presence can be acceptable if conditions prevent in-person attendance. Submissions accompanied by nondisclosure agreement forms will not be considered.

Submission Type: Full vs. Short

USENIX ATC accepts both full and short submissions. Short submissions are limited to roughly half the space of full-length submissions. Both types are reviewed to the same standards and differ primarily in scope. A short paper is not like a workshop “position” paper—it presents a complete idea that does not require full length to be appreciated. The idea should be concisely formulated and evaluated, and conclusions should be drawn from it, just like in a full-length paper. The program committee may, in rare cases, decide to accept a full submission on the condition that it is cut down to fewer pages. Short papers will be included in the proceedings and presented at the conference like full papers during a slightly shorter time slot.

Originality

Submissions must contain original unpublished material that is not under review at any other forum, including journals, conferences, and workshops with proceedings. Submissions that extend your own previous work—in a significant way—are welcome, but you must explain the differences between your current USENIX ATC submission and your prior work. You should also relate your current USENIX ATC submission to relevant submissions of your own that are simultaneously under review for this or other venues. The next section discusses how to do so while maintaining anonymity.

Simultaneous submission of the same work to multiple venues, submission of previously published work, or other violations of the above policies constitute plagiarism, dishonesty, or fraud. USENIX prohibits these practices and may take action against authors who have committed them; see the USENIX Conference Submissions Policy at www.usenix.org/conferences/author-resources/submissions-policy for additional details.

Anonymizing

USENIX ATC '21 will employ double-blind reviewing, keeping author identities concealed from reviewers. You must therefore make a good-faith attempt to anonymize your submissions by avoiding identifying yourself or your institution, either explicitly or by implication, e.g., through references, acknowledgments, online repositories that are part of the submission, or direct interaction with committee members. Do not say “reference removed for blind review.” When it is necessary to cite your own studies, there are only two possibilities: cite them (1) as written by a third party (preferable), or (2) as uploaded anonymized supplemental material (see below). This guideline applies in particular to any of your workshop papers that are being extended by your current USENIX ATC submission. Related submissions of your own that are simultaneously under review or awaiting publication at other venues should typically opt for the second option. Publication as a technical report or in an online repository does not constitute a violation of this policy because those works are not peer-reviewed. Papers that are not properly anonymized may be rejected without review.

Public disclosure of excerpts from submitted papers and/or reviews (e.g., those received during the rebuttal process) prior to the announcement of official decisions constitutes a violation of the anonymity policy. All questions or comments about the reviews should be sent exclusively to atc21chairs@usenix.org.

Anonymized Supplemental Material

Supplemental material may be submitted as a single-but-separate anonymized file without page limit. Note that the reviewers are not required to read such material or consider it in making their decision. Any material that should be considered to properly judge the paper for acceptance or rejection is not supplemental and will apply to the page limit.

Declaring and Avoiding Conflicts

When registering a submission, all its co-authors must provide information about conflicts with the USENIX ATC '21 program committee (PC) members and extended review committee (ERC) members. You are conflicted with a member if: (1) you are currently employed at the same institution, have been previously employed at the same institution within the past two years (2019 or later), or are going to begin employment at the same institution; (2) you have a past or present association as thesis advisor or advisee (no time limit); (3) you have collaborated on a project, publication, grant proposal, or editorship within the past two years (2019 or later); or (4) you have spousal or first-degree relative relations.

Do not declare a conflict if you discussed your submission with a PC or ERC member before the USENIX ATC '21 PC and ERC lists were publicized. Do not declare a conflict merely because you wish to avoid a review from a specific committee member; **such unethical behavior may result in immediate rejection.** All conflicts will be reviewed to ensure the integrity of the reviewing process.

Authors and others are prohibited from directly or indirectly communicating with any ATC '21 PC or ERC member about any potentially submitted paper. All inquiries should be made exclusively to atc21chairs@usenix.org. Violations of these guidelines may incur remedies as stipulated in the USENIX Conference Submissions Policy available at www.usenix.org/conferences/author-resources/submissions-policy.

Formatting

Full submissions must not exceed 11 pages, and short submissions must not exceed 5 pages, including all text, figures, tables, footnotes, appendices, etc. Bibliographic references, however, are not included in the page limit. The reviewers will value conciseness, so if you can describe your work with fewer pages than the limit, please do so. Because references do not count against the page limit, they should not be formatted using a smaller font, and the names of all co-authors should be specified. **Papers not meeting this requirement may be rejected without a review.**

Use US letter paper size, with all text and figures fitting inside a 7" x 9" (178 mm x 229 mm) block centered on the page, using two columns separated by 0.33" (8 mm) of whitespace.

Use a 10-point font (typeface Times Roman, Linux Libertine, etc.) on 12-point (single-spaced) leading. Graphs and figures can use colors but should be readable when printed in monochrome, without magnification. All pages should be numbered, and references within the paper should be hyperlinked. Labels, captions, and other text in figures, graphs, and tables must use reasonable font sizes that, as printed, do not require extra magnification to be legible. Submissions that violate any of these restrictions will not be reviewed. No extensions will be given for reformatting.

USENIX's LaTeX style files and Word templates are available on the USENIX templates page at www.usenix.org/conferences/author-resources/paper-templates.

Early Rejection Notifications

USENIX ATC '21 will conduct its reviews in multiple rounds. Papers that pass a given round are assigned additional reviewers to help make a sound decision for each paper. However, some papers may be rejected in an early round. USENIX ATC '21 will send early rejection notifications to such authors at least a month ahead of the date that all remaining notifications are sent (acceptances and additional rejections). These decisions are final and authors of early rejected papers will not be asked to provide a rebuttal (see below). Authors who receive an early rejection notification will not receive another notification later on. Authors of rejected papers at this early stage are therefore free to read their paper's reviews and use the extra time to consider revising and resubmitting the work to a future conference.

Authors' Response Period

USENIX ATC '21 will provide an opportunity for authors to respond to reviews prior to final consideration of the submissions at the program committee meeting according to the schedule detailed above. Authors must limit their response rebuttal to: (1) correcting factual errors in the reviews; and (2) directly addressing questions posed by reviewers. Rebuttals should be limited to clarifying the submitted work. In particular, rebuttals must not include new experiments or data, nor describe additional work completed since submission, nor make promises of additional work to be performed. Rebuttals are optional. Rebuttals are limited to no more than 500 words; excessively long rebuttals might result in the paper's rejection.

Confidentiality

All submissions will be treated as confidential prior to publication on the USENIX ATC '21 website. Rejected submissions will be permanently treated as confidential.

Accepted Papers

Submissions selected by the program committee will be conditionally accepted, subject to revision and approval by a program committee member acting as a shepherd. Accepted (long and short) papers will be allowed one additional page in the proceedings. One author of each accepted paper will present the work at the conference in a designated time slot.

By default, all accepted papers will be made available online to registered attendees before the conference. If your accepted paper should not be published prior to the event, please notify production@usenix.org before the final paper deadline. Accepted papers, however, will be made available online to everyone beginning on the first day of the conference.

If the conference registration fee will pose a hardship for the presenter of the accepted paper, please contact the Conference Department at conference@usenix.org. If your paper is accepted and you need an invitation letter to apply for a visa to attend the conference, please email conference@usenix.org as soon as possible. (Visa applications can take at least 30 working days to process; recently, visas have often taken significantly longer.) Please identify yourself as a presenter and include your mailing address in your email.

Questions?

Please direct any questions to the program co-chairs at atc21chairs@usenix.org or to the USENIX office at submissions-policy@usenix.org.