

# 2019 USENIX Annual Technical Conference

July 10–12, 2019, Renton, WA, USA



Sponsored by USENIX, the Advanced Computing Systems Association

The 2019 USENIX Annual Technical Conference will take place on July 10–12, 2019, at the Hyatt Regency Lake Washington in Renton, WA, USA.

## Important Dates

- Submission deadline: **Thursday, January 10, 2019, 3:00 pm PST** (note: no abstract registration)
- Beginning of authors' response period: **Tuesday, March 26, 2019**
- Authors' response due: **Thursday, March 28, 2019, 11:59 pm PDT**
- Notification to authors: **Tuesday, April 16, 2019, 11:59 pm PDT**
- Camera-ready papers due: **Thursday, May 30, 2019**

## Conference Organizers

### Program Co-Chairs

Dahlia Malkhi, *VMware Research*

Dan Tsafir, *Technion—Israel Institute of Technology*

### Program Committee

Nitin Agrawal, *Samsung Research*

Irfan Ahmad, *CachePhysics*

Deniz Altinbukan, *Google*

Nadav Amit, *VMware Research Group*

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Randal Burns, *Johns Hopkins University*

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Eyal de Lara, *University of Toronto*

Christina Delimitrou, *Cornell University*

Angela Demke Brown, *University of Toronto*

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Ashvin Goel, *University of Toronto*

Boris Grot, *University of Edinburgh*

Steven Hand, *Google*

Liting Hu, *Florida International University*

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Jian Huang, *University of Illinois at Urbana–Champaign*

Bill Jannen, *Williams College*

Sudarsun Kannan, *Rutgers University*

Manos Kapritsos, *University of Michigan*

Kimberly Keeton, *Hewlett Packard Labs*

Samira Khan, *University of Virginia*

Taesoo Kim, *Georgia Institute of Technology*

Sam King, *University of California, Davis*

Aasheesh Kolli, *The Pennsylvania State University*

Dejan Kostic, *KTH Royal Institute of Technology*

Geoff Kuenning, *Harvey Mudd College*

Patrick P.C. Lee, *The Chinese University of Hong Kong*

Xing Lin, *NetApp*

Ethan Miller, *University of California, Santa Cruz, and Pure Storage*

Changwoo Min, *Virginia Polytechnic Institute and State University*

Adam Morrison, *Tel Aviv University*

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David Nellans, *NVIDIA*

Ed Nightingale, *Microsoft Research*

Sam H. Noh, *UNIST (Ulsan National Institute of Science and Technology)*

Aurojit Panda, *New York University*

Peter Pietzuch, *Imperial College London*

Don Porter, *The University of North Carolina at Chapel Hill*



Michael Reiter, *The University of North Carolina at Chapel Hill*  
Scott Rixner, *Rice University*  
Timothy Roscoe, *ETH Zurich*  
Chris Rossbach, *The University of Texas at Austin and VMware Research*  
Leonid Ryzhyk, *VMware Research*  
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Steve Swanson, *University of California, San Diego*  
Michael Swift, *University of Wisconsin–Madison*  
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Chia-Che Tsai, *Texas A&M University*  
Joseph Tucek, *Amazon*  
Haris Volos, *Google*  
Marko Vukolic, *IBM Research Zurich*  
Carl Waldspurger, *Carl Waldspurger Consulting*  
Ric Wheeler, *Red Hat*  
Dan Williams, *IBM T.J. Watson Research Center*  
Youjip Won, *Hanyang University*  
Gala Yadgar, *Technion—Israel Institute of Technology*  
Yuval Yarom, *University of Adelaide and Data61*  
Erez Zadok, *Stony Brook University*  
Zheng Zhang, *Rutgers University*

#### **Extended Review Committee**

TBA

### **Overview**

The 2019 USENIX Annual Technical Conference (USENIX ATC '19) 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: 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/power management; 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 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: [www.cse.unsw.edu.au/~gernot/benchmarking-crimes.html](http://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), and they are encouraged to do so.

Papers must be submitted via the USENIX ATC '19 submission site linked from the Call for Papers web page, in PDF format, before the aforementioned submission deadline. No extensions will be given. There is no separate deadline for abstracts registration. Submissions must strictly adhere to the policies specified below. By submitting, you agree that at least one of the authors will attend the conference to present the paper, if accepted. 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 paper—it presents a complete idea, which 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 rarely decide to accept a full submission on the condition that it is cut down to fit in the short paper page limit. 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, on the recommendation of a program chair, take action against authors who have committed them; see the USENIX Conference Submissions Policy at [www.usenix.org/conferences/author-resources/submissions-policy](http://www.usenix.org/conferences/author-resources/submissions-policy) for additional details.

#### **Anonymizing**

USENIX ATC '19 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. Papers that are not properly anonymized may be rejected without review.

#### **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 Conflicts

When registering a submission, all its co-authors must provide information about conflicts with the USENIX ATC '19 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 (2016 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 (2016 or later); or (4) you have spouse or first-degree relative relations.

Do not declare a conflict if you discussed your submission with a PC/ERC member before the USENIX ATC '19 PC/ERC lists were publicized. (And refrain from discussing it after.) Do not declare a conflict merely because you wish to avoid a review from a specific committee member; such unethical behaviour might result in immediate rejection. All conflicts will be reviewed to ensure the integrity of the reviewing process.

## 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. 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.

**New in 2019:** Use A4 or 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. Note that the text block size has changed this year to be more consistent with formatting rules of other systems conferences.

Use 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.

2019 LaTeX/Word template and style files are available on the USENIX templates page at [www.usenix.org/conferences/author-resources/paper-templates](http://www.usenix.org/conferences/author-resources/paper-templates).

## Authors Response Period

USENIX ATC '19 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/data or describe additional work completed since submission. Rebuttals are optional. There is no explicit limit to a rebuttal, but authors are strongly encouraged to keep it under 500 words. Reviewers are neither required nor expected to read excessively long rebuttals.

## Confidentiality

All submissions will be treated as confidential prior to publication on the USENIX ATC '19 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 papers will be allowed an additional page in the proceedings. One author of each accepted paper will present the work at the conference in a dedicated 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 email [production@usenix.org](mailto:production@usenix.org) before the camera-ready date. 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](mailto: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](mailto:conference@usenix.org) as soon as possible. (Visa applications can take at least 30 working days to process.) Please identify yourself as a presenter and include your mailing address in your email.

## Poster Session

The program will include poster sessions. Details about poster submissions will be available soon.

## Lightning Session

In addition to the regular presentations, authors of all accepted papers will present their work in 120-second "lightning talks" during the lightning session(s). A corresponding lightning video should be submitted to appear on the conference site in advance of the conference.

## Best of the Rest Track

The USENIX Annual Technical Conference is the senior USENIX forum covering the full range of technical research in systems software. Over the past two decades, USENIX has added a range of more specialized conferences. USENIX ATC is proud of the content being published by its sibling USENIX conferences and will be bringing a track of encore presentations to USENIX ATC '19. This "Best of the Rest" track will allow attendees to sample the full range of systems software research in one forum, offering both novel USENIX ATC presentations and encore presentations from recent offerings of USENIX ATC's sibling conferences.

## Best Paper Award

Cash prizes will be given for the best paper(s) at the conference. Both full and short papers will be considered. Please see USENIX's Best Papers page at [www.usenix.org/conferences/best-papers](http://www.usenix.org/conferences/best-papers) to see the winners from previous years.

## Program and Registration

Complete program and registration information will be available in May 2019 on the conference website.

## Questions?

Please direct any questions to the program co-chairs at [atc19chairs@usenix.org](mailto:atc19chairs@usenix.org) or to the USENIX office at [submissionspolicy@usenix.org](mailto:submissionspolicy@usenix.org).