

Copyright © 2018 by The Institute of Electrical and Electronics Engineers, Inc.  
All rights reserved.

*Copyright and Reprint Permissions:* Abstracting is permitted with credit to the source. Libraries may photocopy beyond the limits of US copyright law, for private use of patrons, those articles in this volume that carry a code at the bottom of the first page, provided that the per-copy fee indicated in the code is paid through the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

Other copying, reprint, or republication requests should be addressed to: IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, P.O. Box 133, Piscataway, NJ 08855-1331.

*The papers in this book comprise the proceedings of the meeting mentioned on the cover and title page. They reflect the authors' opinions and, in the interests of timely dissemination, are published as presented and without change. Their inclusion in this publication does not necessarily constitute endorsement by the editors, the IEEE Computer Society, or the Institute of Electrical and Electronics Engineers, Inc.*

IEEE Computer Society Order Number E6467  
ISBN-13: 978-1-5386-7445-1  
BMS Part # CFP1820K-ART  
ISSN Number 2473-3636

*Additional copies may be ordered from:*

IEEE Computer Society  
Customer Service Center  
10662 Los Vaqueros Circle  
P.O. Box 3014  
Los Alamitos, CA 90720-1314  
Tel: +1 800 272 6657  
Fax: +1 714 821 4641  
<http://computer.org/cspress>  
[csbooks@computer.org](mailto:csbooks@computer.org)

IEEE Service Center  
445 Hoes Lane  
P.O. Box 1331  
Piscataway, NJ 08855-1331  
Tel: +1 732 981 0060  
Fax: +1 732 981 9667  
[http://shop.ieee.org/store/  
customer-service@ieee.org](http://shop.ieee.org/store/customer-service@ieee.org)

IEEE Computer Society  
Asia/Pacific Office  
Watanabe Bldg., 1-4-2  
Minami-Aoyama  
Minato-ku, Tokyo 107-0062  
JAPAN  
Tel: +81 3 3408 3118  
Fax: +81 3 3408 3553  
[tokyo.ofc@computer.org](mailto:tokyo.ofc@computer.org)

*Individual paper REPRINTS may be ordered at: <[reprints@computer.org](mailto:reprints@computer.org)>*

Editorial production by Juan E. Guerrero  
Cover art production by Annie Jiu



**IEEE Computer Society  
Conference Publishing Services (CPS)**

<http://www.computer.org/cps>