

# **2018 IEEE/ACM 5th Workshop on the LLVM Compiler Infrastructure in HPC (LLVM-HPC 2018)**

**Dallas, Texas, USA  
12 November 2018**



**IEEE Catalog Number: CFP18A44-POD  
ISBN: 978-1-7281-0189-7**

**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 are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

***\*\*\* This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP18A44-POD
ISBN (Print-On-Demand):	978-1-7281-0189-7
ISBN (Online):	978-1-7281-0188-0

**Additional Copies of This Publication Are Available From:**

Curran Associates, Inc  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: (845) 758-0400  
Fax: (845) 758-2633  
E-mail: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

CURRAN ASSOCIATES INC.  
**proceedings**  
.com

# 2018 IEEE/ACM 5th Workshop on the LLVM Compiler Infrastructure in HPC (LLVM-HPC) **LLVM-HPC 2018**

## Table of Contents

### Workshop Papers

OpenMP GPU Offload in Flang and LLVM .1.....	
<i>Guray Ozen (NVIDIA Corporation), Simone Atzeni (NVIDIA Corporation), Michael Wolfe (NVIDIA Corporation), Annemarie Southwell (NVIDIA Corporation), and Gary Klimowicz (NVIDIA Corporation)</i>	
Pointers Inside Lambda Closure Objects in OpenMP Target Offload Regions .10.....	
<i>David Truby (University of Warwick, United Kingdom), Carlo Bertoli (IBM Research, USA), Steven A. Wright (University of York, United Kingdom), Gheorghe-Teodor Bercea (IBM Research, USA), Kevin O'Brien (IBM Research, USA), and Stephen A. Jarvis (University of Warwick, United Kingdom)</i>	
Clacc: Translating OpenACC to OpenMP in Clang .18.....	
<i>Joel E. Denny (Oak Ridge National Laboratory, USA), Seyong Lee (Oak Ridge National Laboratory, USA), and Jeffrey S. Vetter (Oak Ridge National Laboratory, USA)</i>	
LLVM and the Automatic Vectorization of Loops Invoking Math Routines: -fsimdmath .30.....	
<i>Francesco Petrogalli (Arm) and Paul Walker (Arm)</i>	
Function/Kernel Vectorization via Loop Vectorizer .39.....	
<i>Matt Masten (Intel Corporation), Evgeniy Tyurin (Intel Corporation), Konstantina Mitropoulou (Intel Corporation), Eric Garcia (Intel Corporation), and Hideki Saito (Intel Corporation)</i>	
User-Directed Loop-Transformations in Clang .49.....	
<i>Michael Kruse (Argonne National Laboratory) and Hal Finkel (Argonne National Laboratory)</i>	
OP2-Clang: A Source-to-Source Translator Using Clang/LLVM LibTooling .59.....	
<i>Gábor Dániel Balogh (Faculty of Information Technology and Bionics, Pázmány Péter Catholic University, Hungary.), Gihan Ravideva Mudalige (Department of Computer Science, University of Warwick), István Zoltán Reguly (Pázmány Péter Catholic University, Hungary), Samuel F. Antao (IBM T.J. Watson Research Center), and Carlo Bertoli (IBM T.J. Watson Research Center)</i>	

PInT: Pattern Instrumentation Tool for Analyzing and Classifying HPC Applications .71.....	
<i>Fabian Schlebusch (RWTH Aachen University, Germany), Yannik Müller</i>	
<i>(RWTH Aachen University, Germany), Sandra Wienke (RWTH Aachen</i>	
<i>University, Germany), Julian Miller (RWTH Aachen University, Germany),</i>	
<i>and Matthias S. Müller (RWTH Aachen University, Germany)</i>	
AIWC: OpenCL-based Architecture-Independent Workload Characterization .81.....	
<i>Beau Johnston (The Australian National University) and Josh Milthorpe</i>	
<i>(The Australian National University)</i>	
<b>Author Index 93</b> .....	