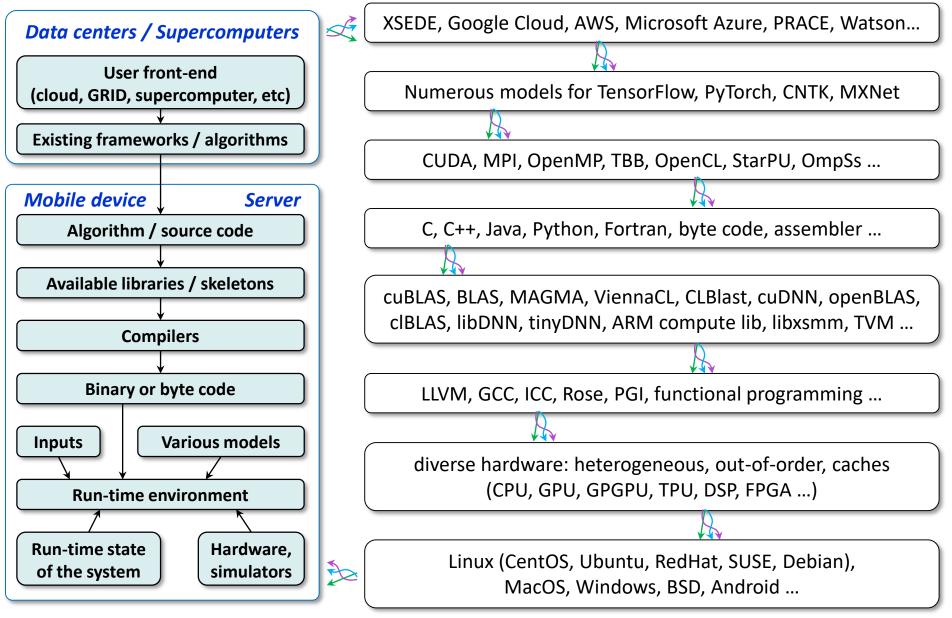
Introducing

Rescue-HPC

The 1st Workshop on Reproducible, Customizable and Portable Workflows for HPC



Co-designing efficient SW/HW stacks for HPC is becoming increasingly complex!



Continuously changing software and hardware; software package mess; lack of common experimental frameworks; no common artifact formats; Docker is not enough; little artifact reuse from papers ...

Rescue-HPC

The 1st Workshop on Reproducible, Customizable and Portable Workflows for HPC

Our aim is to bring together HPC researchers and practitioners who are interested in developing reproducible, portable and customizable experimental workflows for HPC.

We are particularly interested in contributions that describe state-of-the-art, pitfalls, comparisons and improvements to existing frameworks, benchmarks and datasets that can be used to run HPC workloads across multiple software versions and hardware architectures. Another aim of the workshop is to gather all this information in order to propose methodologies for reusing prior artifacts, automating artifact evaluation, and accelerating the development of the next generation of HPC software and hardware.

Organizers

- Grigori Fursin (dividiti, cTuning foundation)
 Author of the Collective Knowledge framework;
 SC19 reproducibility vice-chair;
- Todd Gamblin (LLNL)

 Author of the Spack package manager;

 SC18 program co-chair
- Michela Taufer (University of Tennessee, Knoxville)

 SC19 general chair;

 Reproducibility champion

Program Committee

- Lorena A Barba (George Washington University)
- Bruce Childers (University of Pittsburgh)
- Robert Clay (Sandia National Laboratories)
- Michael R. Crusoe (Common Workflow Language project)
- Kenneth Hoste (Ghent University)
- Ivo Jimenez (UC Santa Cruz)
- Daniel S Katz (NCSA)
- Arnaud Legrand (INRIA / CNRS)
- Bernd Mohr (Jülich Supercomputing Centre)
- David Richards (LLNL)
- Victoria Stodden (Stanford University)
- Flavio Vella (Free University of Bozen-Bolzano)

rescue-hpc.org

Decays LDC 2010 program

Keynote "Making Reproducibility Indispensable: Changing the Incentives that Drive

Michael A. Heroux, Sandia National Laboratories (SC18 reproducibility chair)

Assessing Reproducibility: An Astrophysical Example of Computational Uncertainty

Considering the Development Workflow to Achieve Reproducibility with Variation

Spotting Black Swans With Ease: The Case for a Practical Reproducibility Platform

Andrew Youngdahl, Zhihao Yuan, Dai-Hai Ton-That, Tanu Malik, Ivo Jimenez

Michela Taufer, Michael A. Heroux, Todd Gamblin, Stephen Harrell, Grigori Fursin

Open panel: automation, reproducibility and reusability of HPC research

Use the following tags for twitting: @supercomputing #SC18 #RescueHPC rescue-hpc.org

Ask questions for papers: sc18.supercomputing.org/experience/sc-schedule and select a paper

	Rescue-nPC 2016 program
9:00 - 9:10	Workshop introduction

Victoria Stodden and Matthew S. Krafczyk

Ivo Jimenez and Carlos Maltzahn

11:15 – 11:30 | Supporting Thorough Artifact Evaluation with Occam

Michael Mercier, Adrien Faure, Olivier Richard

Luís Oliveira, David Wilkinson, Daniel Mossé, Bruce Childers

Semantically Organized Containers for Reproducible Research

Computational Science"

in the HPC Context

9:10 - 10:00

10:30 - 10:45

10:45 - 11:00

11:00 - 11:15

11:30 - 11:45

11:45 – 12:30

10:00 - 10:30 Coffee break

Rescue-HPC 2018 keynote

Making Reproducibility Indispensable: Changing the Incentives that Drive Computational Science

Michael A. Heroux, Sandia National Laboratories (SC18 reproducibility chair)

Reproducibility is essential for scientific progress and engineering advances. Even so, many published computational results lack sufficient capture and description of companion information that would enable subsequent confirmation and extension of the results. Certainly, most scientists intend to publish correct results, but without sufficient rigor in computational processes and practices, risk is unnecessarily high that results will occasionally be wrong and will always be costly to confirm and extend.

The reasons for inadequate reproducibility are fundamentally matters of incentives and costs. In recent years, because of the availability of improved software platforms from GitHub, GitLab, Atlassian and others, and container environments such as Docker, the cost of capturing and describing the computing environment used to produce scientific results has dramatically decreased. Furthermore, new workflows and skill-building opportunities are available for those who are interested in improving their practice. What needs further attention is our incentive system.

In this presentation, we discuss efforts to improve computational reproducibility by fostering and promoting changes to our incentive systems. We talk about efforts to increase reproducibility expectations by publishers, funding agencies, employers and the broader computational scientific community. By improving incentives to produce reproducible results, providing recognition for those who lead the community and providing conduits for effective exchange of best practices, we can expect and make reproducibility indispensable.

Rescue-HPC 2018 panel

Open panel: automation, reproducibility and reusability of HPC research

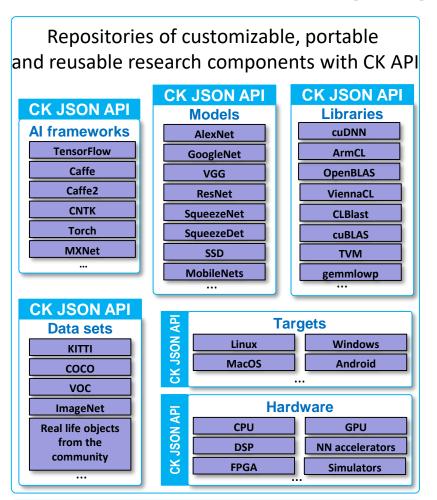
- Stephen Harrell, Purdue University SCC Deputy Chair & SC16 SCC Chair; SCC Emeritus
- Michael A. Heroux, Sandia National Laboratories SC18 reproducibility chair
- Michela Taufer, University of Tennessee, Knoxville SC19 general chair
- Todd Gamblin, LLNL
 author of the Spack package manager; SC18 program co-chair
- Grigori Fursin, dividiti/cTuning foundation
 architect of the cKnowledge.org framework; SC19 reproducibility vice-chair

Three topics

- 1) major scientific and engineering challenges to reproduce results at SC and SCC;
- 2) possible engineering solutions (automated workflows, package managers, common formats and APIs for code and data sharing);
- 3) how to incentivize authors to consider reproducibility of their results and improve reusability of their code, data, models and results.

Check beta CK workflow for SCC18 (automation, reuse): https://github.com/ctuning/ck-scc18

cKnowledge.org; github.com/ctuning/ck



Customizable CK workflows
for real-world user tasks

Assemble scenarios such as image classification as LEGO™

CK JSON API

Models
Software
Data sets
Hardware

Share complete workflows along with published papers to automate artifact evaluation and help the community build upon prior work

Crowdsource experiments with the help of volunteers across diverse models, data sets and platforms









Present best results, workflows and components on a live scoreboard for fair comparison and reuse **cKnowledge.org/repo**

Help students learn multidisciplinary techniques, quickly prototype new ones, validate them in practice with companies, and even contribute back new research components

Help companies select the most appropriate workflows, save R&D costs, accelerate adoption of new techniques!