

ADAPT'14 panel introduction

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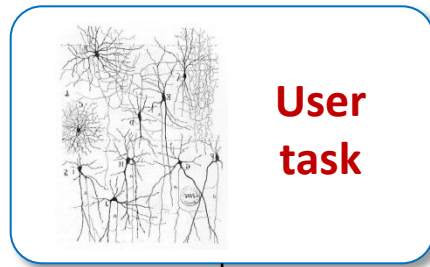
January 2014, HiPEAC 2014
Vienna, Austria

Motivation for systematic and
reproducible research and
experimentation

User requirements:

minimize all costs (characteristics)
(execution time, power consumption,
price, size, faults, etc)

guarantee real-time constraints
(bandwidth, QoS, etc)



**User
task**

Available solution(s)

Algorithm

Application

Compilers

Binary and libraries

State of the system

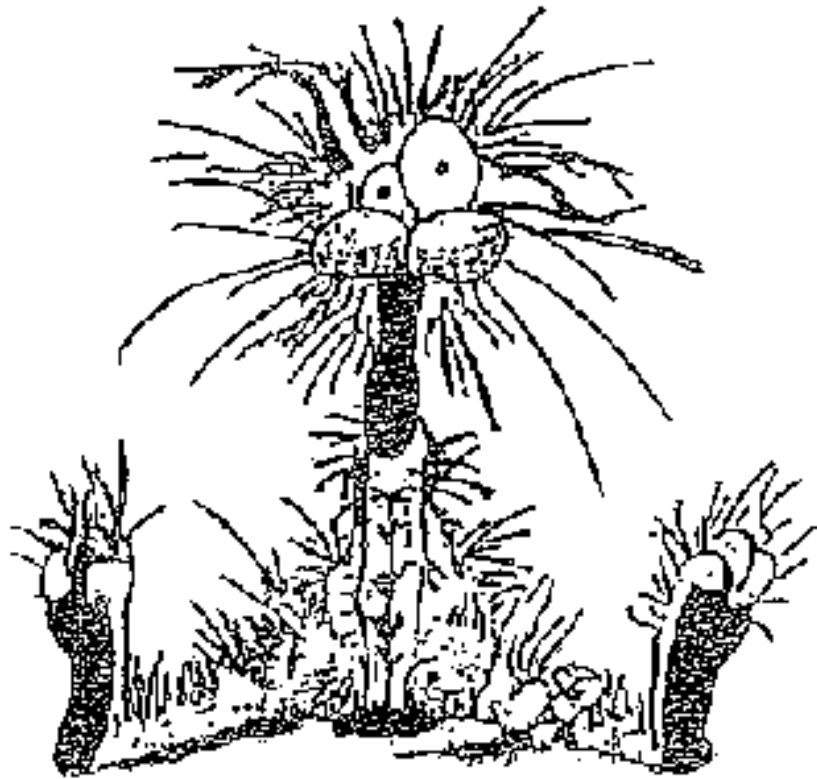
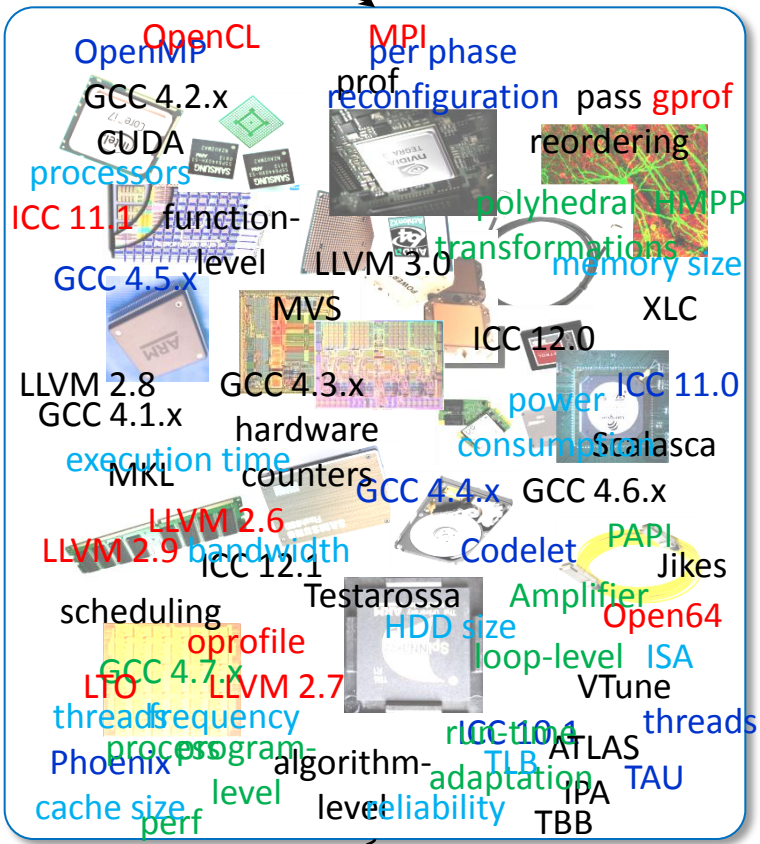
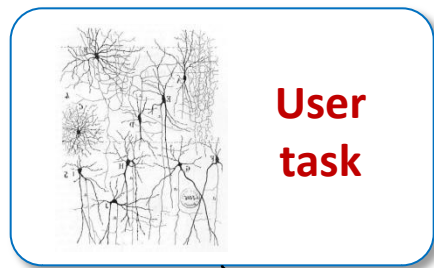
Data set

Run-time environment

Architecture

Result

Research and experimentation particularly on program optimization and architecture design is ad-hoc, tedious, time-consuming, ad-hoc and error prone



Our practical experience during MILEPOST/cTuning.org project (2006-2009)

- Optimization spaces are large and non-linear with many local minima
- Exploration is slow and ad-hoc (random, genetic, some heuristics)
- Only small part of the system is taken into account
(rarely reflect behavior of the whole system)
- No common, large and diverse training sets (benchmarks and data sets)
- No common infrastructure and repositories to share knowledge
- Many statistical pitfalls and wrong usages of machine learning
for compilation and architecture
- Difficult to reproduce, validate and improve past research results

- **By the end of experiments, new tool versions or architectures are often available;**
- **Life span of experiments and ad-hoc frameworks - end of MS or PhD project;**
- **Difficult to reproduce, validate and improve past research results**
- **Computer engineering is considered by students as hacking rather than science**

Panel on Reproducible research methodologies and new publication models

- capture, catalog, systematize, modify, replay and exchange experiments
- validate and verify experimental results
- deal with rising amount of experimental data using statistical analysis, data mining, predictive modeling, etc.
- enable new publication model where results are shared and validated by the community

**Validated
by the community**

Sponsored by



TRUST 2014

1st ACM SIGPLAN Workshop on Reproducible Research
Methodologies and New Publication Models
in Computer Engineering
co-located with **PLDI 2014 (Edinburgh, UK)**

c-mind.org/events/trust2014

Panel participants

[Jack Davidson](#)

University of Virginia

Co-Chair of ACM's Publication Board, USA

[Anton Lokhmotov](#)

ARM, UK

[Lieven Eeckhout](#)

Ghent University, Belgium

[Daniel Mosse, Bruce Childers, Alex K.Jones](#)

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On-line and off-line feedback is very welcome!