2015 gem5 user workshop

Welcome!

- Thanks for attending and speaking
- Thanks for your interest in and support of gem5
- We hope you get good technical information, but more importantly, we hope to build a sense of community
  - Get to know other contributors in person
  - Help steer the future of the project

Organizing Committee

- Ali Saidi, ARM
- Andreas Hansson, ARM
- Nilay Vaish, Univ. of Wisconsin
- Tony Gutierrez, Univ. of Michigan / AMD
- Steve Reinhardt, AMD

Agenda (1/2)

Topic	Time	Presenter	Affiliation
Introduction & Overview	9:00 AM	Steve Reinhardt	AMD
Classic Memory System Re-visited	9:30 AM	Andreas Hansson	ARM
AMD's gem5 APU Simulator	10:00 AM	Steve Reinhardt	AMD
NoMali: Understanding the Impact of Software Rendering Using a Stub GPU	10:15 AM	Andreas Sandberg	ARM
Cycle-Accurate STT-MRAM model in gem5	10:30 AM	Cong Ma	University of Minnesota
An Accurate and Detailed Prefetching Simulation Framework for gem5	10:45 AM	Martí Torrents	UPC
Break	11:00 AM		
Supporting Native PThreads in SE Mode	11:30 AM	Brandon Potter	AMD
Dynamically Linked Executables in SE Mode	11:45 AM	Brandon Potter	AMD
Coupling gem5 with SystemC TLM 2.0 Virtual Platforms	12:00 PM	Matthias Jung	University of Kaiserslautern
SST/gem5 Integration	12:15 PM	Simon Hammond	Sandia
Lunch	12:30 PM		

Agenda (2/2)

Topic	Time	Presenter	Affiliation
Full-System Simulation at Near Native Speed	1:30 PM	Trevor Carlson	Uppsala Univ.
Enabling x86 KVM-Based CPU Model in Syscall Emulation Mode	1:45 PM	Alexandru Dutu	AMD
Parallel gem5 Simulation of Many-Core Systems with SW-Programmable Memories	2:00 PM	Bryan Donyanavard	UC Irvine
Infrastructure for AVF Modeling	2:15 PM	Mark Wilkening	AMD
gem5-Aladdin Integration for Heterogeneous SoC Modeling	2:30 PM	Y. Sophia Shao	Harvard University
Experiences Implementing Tinuso in gem5	2:45 PM	Maxwell Walter	T. U. Denmark
Experiences with gem5	3:00 PM	Miquel Moretó	BSC/UPC
Little Shop of gem5 Horrors	3:15pm	Jason Power	U. Wisconsin
Break	3:30 PM		
Breakout Sessions	4:00 PM	Breakout Groups	
Wrap-Up	5:00 PM	Everyone	
Conclusions	5:30 PM	Ali Saidi	ARM

Breakout Sessions

- Key opportunity for building community
  - What can we do to make gem5 better?
  - What can we do to improve/expand the gem5 community?
- Find people with similar issues/concerns/desires
  - Build a plan to address them
  - Report back to the larger group at the end
- Some suggested topics:
  - Verification & validation
  - Restructuring the Python configuration code
  - Improving the review/commit process
  - …

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User Perspectives Talks

- We appreciate your contribution, but schedule is tight
  - We wanted to maximize the opportunities for people to present
- We will brutally cut you off at 15 minutes
  - Don't take it personally
  - There should be time to follow up with speakers later
    - During breaks & lunch
    - After the workshop, or later this week
  - If many people are interested, consider proposing a breakout session
- Please move to the front of the room before the end of the previous speaker's presentation so you are ready to go

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Activity Summary

- 1,515 commits since last user workshop (Dec 2, 2012)
  - From ~86 unique contributors
  - Code base grown from ~430K to ~580K LOC
- Activity has held fairly steady over that period
  - Each month, ~50 commits from ~10-14 contributors
- Prior to ~2011, pattern was different
  - More commits per month (70+)
  - From fewer unique contributors (5-7)
- First derivative still positive (good!), but 2nd derivative is ~0
  - Just a sign of maturity, or is this a problem?

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Major New Features

- Performance
  - KVM acceleration
  - Thread-level parallelization
- Functional Features
  - AArch64 support
  - DVFS support
  - Classic memory system updates (see next talk)
- New Models
  - Replacement of InOrderCPU with MinorCPU
  - New DRAM model & DRAM power model
- Simulation Infrastructure
  - Probes
  - Trace support via protobuf library

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