AACE: Current and Future Projects

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Application Acceleration Center of Excellence (AACE)

- Established by the University of Tennessee in 2011 alongside the National Institute for Computational Sciences (NICS) at Oak Ridge National Laboratory (ORNL)
- Tasked with exploring the application of emerging computing technologies to simulation in science and engineering
- *An essential element of a sustainable software infrastructure for simulation in science and engineering*
- Director: Glenn Brook
Current Projects

• Strategic engagements with vendors and manufacturers
  • Working with Intel to provide feedback on prerelease software and hardware
  • Beginning to work with NVIDIA and AMD
• Strategic engagements with industry
  • Working with SimCenter Enterprises to port and optimize a disaster mitigation system to the Intel® MIC architecture
  • Working with Lockheed-Martin to port and optimize CFD codes to the Intel® MIC architecture
Current Projects

• The Beacon Project
  • Porting and optimizing scientific codes such as ENZO, H3D, MILC, Amber, MADNESS, and MAGMA to the Intel® MIC architecture
  • Open call for 24 additional projects –

• Green computing
  • Exploring energy efficient HPC technologies
  • Upgrading Beacon to be a leadership-class cluster for energy-efficient supercomputing
Future Plans

• Engage industry and partner with NSF research teams to port and optimize key scientific and engineering codes to emerging technologies
• Explore energy efficient technologies for extreme scale computing such as dynamic management of power and performance
• Offer training to the scientific computing community on emerging HPC technologies and techniques for exposing massive parallelism
• Publish accumulated knowledge in scientific papers, conference presentations, and engineering reports
• Expand student exposure to next-generation technologies through internships at AACE
Contact Information

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