
University Innovations Using OpenPOWER

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- Develop key Research relationships
- Accelerate new technologies
- Demonstrate capabilities – Proof of Concepts
- Develop skills and knowledge
- Develop ecosystems and partnerships

- Open Systems / Open Software Development
 - Ecosystem, skills, partnerships
 - OpenPOWER, Software Defined Infrastructure
- Cloud Development and Deployment
- High Performance Computing / Technical Computing
 - Accelerated workloads
 - Focus on GPU and FPGA
- Platform and System Security
- Machine Learning / Artificial Intelligence

OpenPOWER Open Software University Cloud Environments

**IIT Bombay
Mumbai, IN
August 18, 2016!!!**

**Oregon State USA
<http://osuosl.org/services/powerdev>**

**SuperVessel
Beijing, China
<http://www.ptopenlab.com>**



- OpenPOWER Platforms
- Open Stack Software
- University research
- Open Development & Ecosystem Support

**UNICAMP, Brazil
<http://openpower.lc.unicamp.br/minicloud/index.html>**

**Brno University (UTY)
RedHat. Czech Republic
<https://it-rhlab.rhcloud.com>**

**HPC Center
University of Texas
USA - TACC
<https://www.tacc.utexas.edu/systems/fabric>**

**Technical
University of
Munich
2H16**

 Available
 In Development

Use Case Open Platform Software Development

Develop and implement a Redfish management application for OpenBMC

- Open source Baseboard Management Controller software development for POWER/OpenPOWER
 - Replace IBM proprietary software with OpenBMC
- Redfish implementation with power measurement/management features
- Power/thermal research with BMC, OCC, and GPUs
- Integrated Security features for key management

Accelerated Machine Learning for Cyber Security and Forensics on IBM Power8 with nVIDIA GPUs

- Phase 1 - Demonstrating the capability of a single Power8 server.
- Utilize both the massive multi-core architecture of Power8 and the feasibility of moving data between the cores and the GPUs.
 - Ability to exploit lower precision floating point in the GPUs vs. Power8
- In future, lower precision floating point support will be available in follow-ons to the K40s
 - Benefit of CAPI (later NVLINK) over PCI bus in heterogeneous super-computing nodes
 - Utilization of CAPI-based GPU-enhanced computing as a seamless accelerator.

2016 / 2017 University Challenge: Innov8 with POWER8+

- **Approach for 2016 / 2017:**
 - Continue to expand program to work with top universities across Americas, Europe and Asia
 - Feature graduate / senior led projects sponsored by respected researchers, leading experts
- **Focus:**
 - Embrace Cloud and Cognitive *plus* Technical Computing initiatives to solve real world business problems by applying OpenPOWER / ISV / *Open Source Community* innovations
- **Result:**
 - Outcome of work provides commercial project learning, mindshare with students
 - Showcase teams at IBM InterConnect 2017 – Mar 19-23 in Las Vegas

Area Covered	Focus	University	OpenPOWER	ISV, Open Source SW
Cloud, Cognitive and Emerging Open Source	<ul style="list-style-type: none"> ▪ Cloud innovations (SuperVessel) ▪ Data & Analytics Acceleration ▪ Blockchain/Financial Services ▪ Security and Compliance 	University Partners being selected now!!	Contribute equipment, resources, expertise	Open to all ISV, SWG, Open Source apps available for Linux on Power
Technical Computing	<ul style="list-style-type: none"> ▪ Healthcare/Genomics/ ▪ Financial Services ▪ Oil and Gas 	same as above	same as above	same as above

