Efficient Architectures for Data Science

1st Fall School of the HPI Future SOC Lab

September 18 - 22, 2017 | Hasso Plattner Institute at the University of Potsdam, Germany

Data science applications require an adept handling of underlying hardware and software resources to achieve the required scalability and efficiency. To unleash the full potential of data science technologies, the developers' understanding needs to go beyond the mere usage of third-party library interfaces.

Emerging data science applications can only benefit from improved hardware acceleration, if compute and storage resources are managed efficiently. Non-uniform memory hierarchies and heterogeneous computing architectures offer enormous opportunities but also pose new challenges for deep learning and other machine learning approaches..

The **Fall School on Efficient Architectures for Data Science (EADS)** will bring together students, researchers and industry practitioners to explore these opportunities and challenges.

Contest

The event focuses on hands-on experience and mutual exchange. It features two parts:

- There will be expert-taught classes on data science technologies, efficient resource utilization, and advanced optimization approaches.
- The majority of the time will be allocated to a practical software development and optimization contest, which will challenge participants to apply their knowledge in a real-world data science scenario.

We are looking forward to an exciting week of inspiration, learning, and hacking.

Prize

The best implementations from the programming contest will be awarded special prizes backed by our sponsors. Contestants' solutions will be evaluated regarding their efficiency, resource utilization, performance and exactness. All participants of EADS will receive a certificate for their accomplishments.

Prerequisite

Exceptional Master students and Ph.D. candidates with research interests in data science, machine learning, parallel computing, resource optimization, or heterogeneous computing are encouraged to apply.

Programming skills in C/C++ and Python are desirable.

Important Dates

July 28	End of Early Registration Period
September 10	Final Registration Deadline
September 18-22	**Future SOC Lab Fall School**
November 15	**Award Ceremony** & Future SOC Lab Day - Fall 2017

List of Topics

- Performance of data science techniques and algorithms
- Scalability and efficiency of deep learning
- Efficient resource utilization and monitoring
- Optimization for massively parallel hardware
- NUMA-aware programming
- Heterogeneous and accelerated computing

Venue

The event will take place at Hasso Plattner Institute, Potsdam, with direct access to the HPI Future SOC Lab.

The Future SOC Lab, a cooperation of HPI and the industrial partners Dell EMC, Fujitsu, SAP, and Hewlett Packard Enterprise, offers an infrastructure of powerful hardware and software, including a 1000 core cluster, multi-core servers, a variety of accelerators and coprocessors, and cutting edge storage and interconnect technologies.

The Future SOC lab enables the computational acceleration of various research projects. For EADS, the lab provides a unique location, facilitating programming experiments on state-of-the-art and next-generation infrastructure. For the contest, participants will be granted exclusive access to all Future SOC lab resources.

Registration

https://hpi.de/EADS2017

Registration includes the lectures with accompanying material, exercises, access to the infrastructure, all social events, and refreshments. Accommodation and travel will have to be covered by the participants.

Students may apply for one of 25 admission grants.

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Industry Partners:

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