Università della Svizzera italiana

Institute of Computing CI

HPC Software Atelier, Fall Semester 2021
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Project 1
HPC Emerging Application Presentation
Due date: https://doodle.com/poll/cfuubkey5yznsu62

Present an emerging parallel application or algorithm (100 points)

Examine an application problem for which parallel high performance computing has been used or an important algorithm which has been parallelized. You may pick a problem from research activities at the Universita della Svizzera italiana or at the CSCS (Switzerland), somewhere on the web, or elsewhere (so long as it is verifiable). Please build a **group of 3 or 4 students** from the HPC course and prepare slides for a **10 min presentation** in class.
Some specific details to consider may include the following:

- What is the scientific problem being solved?
- If you pick up the parallelization of an important algorithm, describe both the complexity of the sequential and the parallel algorithm.
- How well did the application achieve its scientific objective? Are simulation results compared to physical results?
- What parallel platform has the application or the algorithm targeted? (distributed vs. shared memory, graphical processing units, vector, etc.). What tools were used to build the application or to implement the algorithm? (languages, libraries, etc.)
- If the application or the algorithm is run on a major supercomputer, where does that computer rank on the Top 500 list?
- How well did the application or the algorithm perform? How does this compare to the platform's best possible performance?
- Does the application or the algorithm scale to large problems on many processors? If you believe it has not, what bottlenecks may have limited its performance?

Not all of these details will be available for all applications or algorithms. You ought to explain what you find noteworthy about the application or its implementation. For inspiration you may refer to projects and papers noted in the CSCS 2020 annual report:

https://www.cscs.ch/publications/annual-reports/cscs-annual-report-2020/

Every group member must be present and speak during the presentation. Please ensure that each group memeber presents for roughly the same amount of time. Presentations will be timed, so please ensure that you have practiced your presentation before hand and are confident about the timing. A presentation slide template has been provided on iCorsi. The use of this template is optional, but it may be a helpful guide for making slides. Presentations will be given on a rolling basis throughout the semester with a maximum of three presentations every Tuesday. Please sign up for a presentation slot at Doodle.

Please ensure that only one member of every group picks a slot. For the name in the doodle poll please use the family name of every group member separated by underscores i.e. bansal_holt_schenk.

In order to be respectful of your collegues, we expect that on the day of your presentation that every presenting group joins before the beginning of the first presentation and remains until the conclusion of the final presentation.

Submission: Upload the slides of your presentation as a single pdf file on the iCorsi system before the deadline.