Report on the FPGA flagships

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Introductory FPGA programming course

□ A first course (from Spoke2) is foreseen from the 27th to the 30th of November

□ https://agenda.infn.it/event/38191/

   □ This course is an introductory one on high level synthesis tools and ML applications.

   □ The fourth day will be dedicated to the Bondmachine

      □ A second one is foreseen early in 2024

ICSC
Centro Nazionale di Ricerca in HPC, Big Data and Quantum Computing

Introduction to FPGA programming.
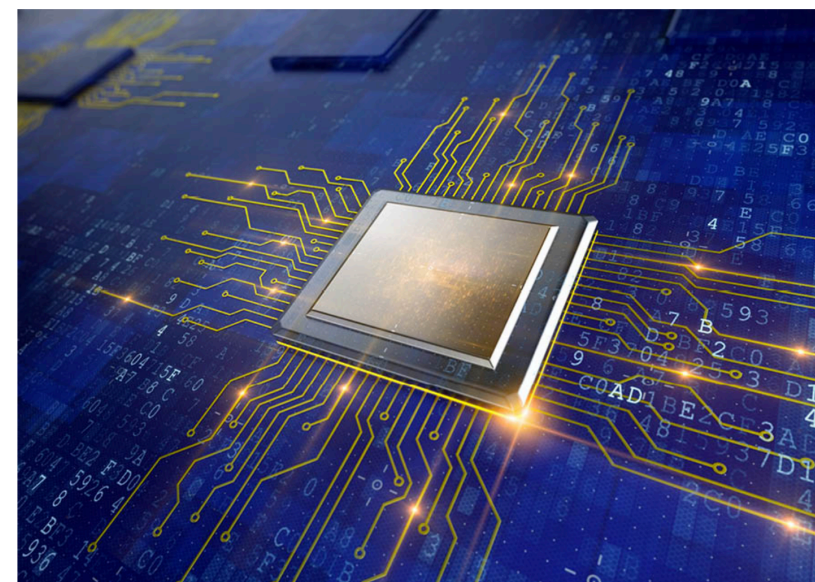
Lecturers:

● Giovanni Petruciiani (CERN),
● Sioni Summers (CERN),
● Mirko Mariotti (INFN)

Facilitators for the afternoon hands-on sessions:

● Marco Lorusso,
● Giulio Bianchini.

Prerequisits for a succesfull attendance and comprehension of the lessons:

● basic C++ programming with usage of templates
● basic python programming
● entry level knowledge of machine learning (not really needed, but it may help for the last part of the course)

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FPGA related contiributions

- [ ] Within the WP4 we set up documents to keep trace of papers and workshops/courses

- [ ] Some of these are relevant for the flaships as well:

  - [ ] Workshop and formation

  - [ ] Papers and contributions to conferences

    - [ ] A. Coccaro,et al: "Fast Neural Network Inference on FPGAs for Triggering on Long-Lived Particles at Colliders", Accepted for pubblication,   https://arxiv.org/pdf/2307.05152.pdf

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Status KPIs

[Link to the flagship document](#)

KPI ID	Description	Acceptance threshold	Status up to today
KPI2.2.3.1	Development of triggering algorithms, on-line analyses, data acquisition on FPGA	Submission of 1 paper to a peer-reviewed journal	1 paper already accepted
KPI2.2.3.2	Online scouting	Submission of 1 paper to a peer-reviewed journal	
KPI2.2.3.3	Development of tools to integrate several FPGAs together	Submission of 1 paper to a peer-reviewed journal	
KPI2.2.3.4	Organizing courses about FPGA programming on low and high level	At least two courses organized	1 course programmed for next week (1/2 of the KPI done) 1 for early 2024

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