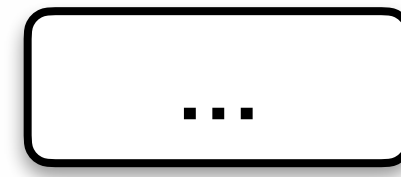# ML on FPGA and Cloud

Firmware development

- **Study of frameworks to build firmware accelerator on FPGA**

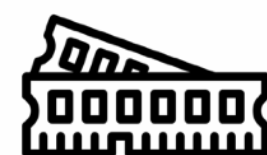- **Developed local solution to build FPGA accelerator**
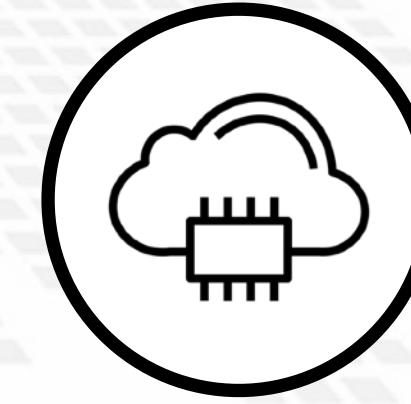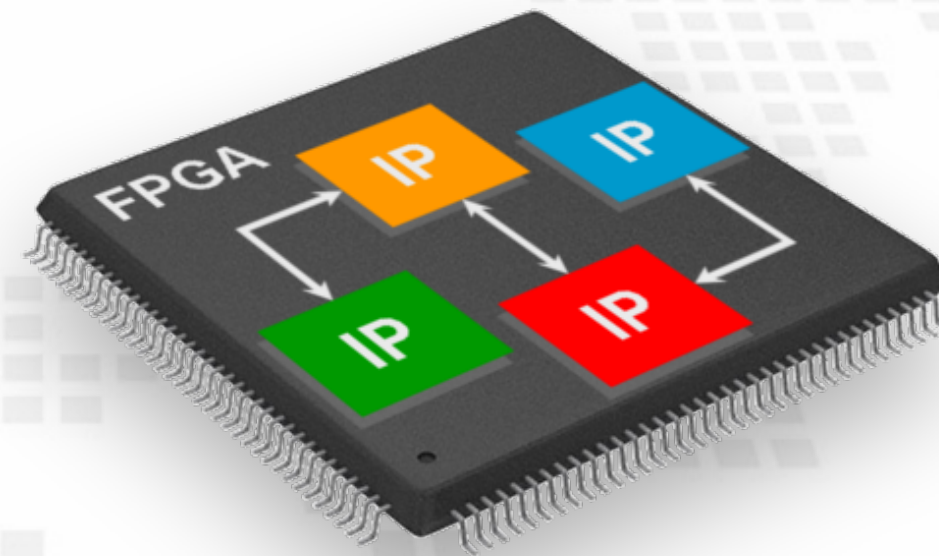
  - General purpose
  - Machine Learning Inference

- **Analysis**

  Latency   Resource   Energy

https://fastmachinelearning.org/hls4ml/
https://github.com/thesps/conifer
https://github.com/Xilinx/Vitis-AI
http://bondmachine.fisica.unipg.it/
https://indico.jlab.org/event/459/contributions/11826/
https://agenda.infn.it/event/34683/contributions/197368
https://agenda.infn.it/event/30202/contributions/168531/
https://github.com/BondMachineHQ

Firmware via cloud

- **FPGA through cloud paradigm**

  Use remote FPGA for rapid prototyping and development

- **Machine Learning Inference as a Service**

  Deploy inference algorithm on FPGA and access ML predictions from a remote computing resource

- **Build firmware as a Service**

  Automation of the build and load process

Giulio Bianchini on behalf of the Perugia team, 15/12/2023