GAP Roma overview

27 Marzo 2014

Piano a breve termine

- Entro I primi di Maggio:
- risultati sul HLT:
  - APE: interfaccia athena GPU
  - Time-benchmark L2mu standard
  - Implementazione anche rozza su GPU
- Risultati NMR:
  - Fit non lineari su GPU
  - Prime immagini ricostruite su GAP01

Conferenze

- TIPP 2014 2-6 June
  - Poster di fisica medica: The GAP Project - GPU for Realtime Applications in High Level Trigger and Medical Imaging, **Id 333**
  - talk trigger: GPU for online processing in low-level trigger **Id:** 330
  - Late fee 1/4 550 -> 650 euro
- IEEE-RT 26-30 May
  - Accettato o talk o poster, si va solo con talk?
  - Late fee 24/4 50000 ->60000 JPY

Conferenza GPU2014

- Alla fine il talk a Roma lo fara' qualcuno di GAP riassumendo la conf di Pisa e dando una overview sulle attivita' HEP

- A Roma l'audience e' troppo eterogeneo per entrare nel dettaglio dei problemi trigger HEP
  - Non utile per noi (speakers) e per la conf

Summer student DOE-INFN

- Characterisation of an innovative trigger system based on Graphical Processing Units for the muon identification in the ATLAS Experiment

- Ho mandato mail in giro a contatti in US, mandatene anche voi!

Summer Student

- • Title:
- Characterisation of an innovative trigger system based on Graphical Processing Units for the muon identification in the ATLAS Experiment

- •Subject:
- The proposed research activity concerns the development of parallel trigger algorithms, and their implementation on graphical processing units (GPU). The high level trigger of the ATLAS experiment will be used as a benchmark to evaluate the performances of the new algorithms. The time constraints of LHC force the trigger system to deploy approximate solutions of complex pattern recognition problems. The use of GPUs will allow to implement, within the same time budget, refined algorithms to reach a better efficiency for signal events, especially for the LHC upgrade when multiple interactions per bunch crossing will increase substantially. An highly selective trigger is crucial to improve the sensitivity to interesting physics signals.

- The student will contribute to the ongoing activities on this subject carried out by a small team of researches. In particular, he or she will contribute the de development of parallel algorithms implemented on a GPU based system. He or she will also contribute to the characterisation of he performance of this new implementation, and compare it against the performance of the present ATLAS muon algorithm.

- This study will be carried out in the multidisciplinary context of the GAP group. GAP is a research project aimed at the developing of a novel system for realtime scientific applications. GAP aims at realizing a new system for data analysis and patter recognition in real time. Such a system will be developed for applications in HEP trigger systems and medical imaging and will be based on the deployment of GPUs.

- •Training Value:
- The student will have the possibility to work on innovative trigger algorithms based on massive computing parallelism. He/she will learn how to program GPUs and how a trigger algorithm of a large LHC experiment is structured.

- •Computing Knowledge:
- Ability to work in a Unix environment and program in C/C++, basic programming skill for parallel devices (CUDA, OpenCL,) is not required although beneficial

- •Recommended Period:
- June-October

- * Vacation
- 11-22 August

- * Tutor
- Matteo Bauce, Andrea Messina (secondary)