

Centre de Calcul de l'Université de Bourgogne

RE-COOP #2.2
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① Preface

Achtung!!!

What do we try to solve?

② The CCUB

③ Case Study

④ Requirements

⑤ And the Future



Preface Achtung

What it will be about and will not be about ...



- ▶ ~~Tutorial: "How to use the computer cluster of the UB"~~
- ▶ "Do we do the right thing?"



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Why at RE-COOP?



- ▶ The right persons: PhDs and permanent



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- ▶ Tutorial: ~~“How to use the computer cluster of the UB”~~
- ▶ “Do we do the right thing?”

Why at RE-COOP?



- ▶ The right persons: PhDs and permanent
- ▶ No polluted conversation in the coffee room



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What do we try to solve?

Data, data, data, ...





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Some thoughts ...

- ▶ Clusters do not make your research ...



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- ▶ Solve problem that you could not solve before



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What do we try to solve?

Some thoughts ...

- ▶ Clusters do not make your research ...
- ▶ ... they contribute to make proper and fast research
- ▶ Solve problem that you could not solve before
- ▶ And finally save ££££\$\$\$\$



The CCUB Hardware

In numbers

- ▶ # cores: 3278 - Typically Intel Xeon 2660 at 2.0 GHz
- ▶ RAM: 12792 Go - Typically at least 64 Go per machine
- ▶ GPU: 1180 Gflops - 2 x Tesla cards
- ▶ HDD: 20 To per users

Organisation

- ▶ Interactive computers
- ▶ Bash computers



The CCUB Hardware

Interactive computers

- ▶ Large resources: up to 40 cores (80 threads) and 256 Go of RAM
- ▶ 3 computers to connect “krenek”
- ▶ Work with usual languages: Matlab, python, C++, java, etc.
- ▶ Connect through SSH and possibility of Remote Desktop
- ✗ Connection is time limited

Bash computers

- ▶ Execution through script
- ▶ Deployment setting up # cores per jobs
- ▶ Priority automatically set up depending of the hardware requirements and the time on the queue
- ✓ Up to 7 days by executing scripts



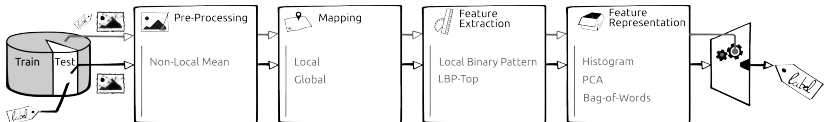
Case Study

Classification of SD-OCT volumes with LBP

Background

- 1 week + 1 week to design, implement, and evaluate an ML framework for DME detection

Framework



What if ...

- NLM denoising → a full working day of processing
- Executing a script per patient → 30 jobs in parallel
- Harder, better, faster, stronger → parallelize in the algorithm & patient processing



Requirements

Spirit

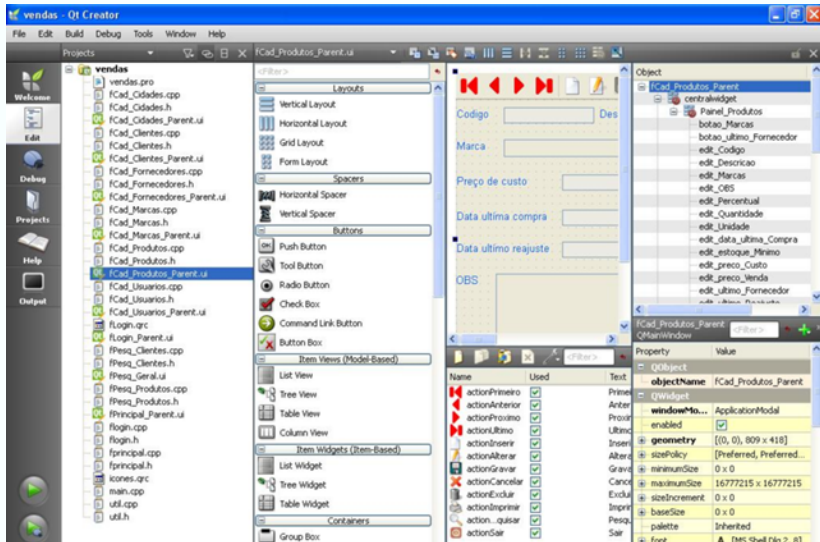
- ▶ The 2W: Will & Wishes

Skill

- ▶ Learn & understand to parallelize on CPU and GPU
- ▶ Come back to the source - terminal/editor/compiler
- ▶ Move to linux



Requirements





Requirements

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Requirements

Spirit

- ▶ The 2W: Will & Wishes

Skill

- ▶ Learn & understand to parallelize on CPU and GPU
- ▶ Come back to the source - terminal/editor/compiler
- ▶ Move to linux



And the Future

Hardware

- ▶ A new server 24 cores Intel Xeon 2700 and 128 GB + Tesla K40
- ▶ ODROID XU4: 2k screen capable + Octa Core → 74\$
- ▶ Investing money in Ultra-laptop or in the CCUB?

→ Invest money in the cluster + odroid + laptop (or ubuntu phone)

