



CLOUD-BASED HIGH PERFORMANCE MULTIMEDIA PROCESSING

SECOND NESUS WINTER SCHOOL & PHD SYMPOSIUM 2017

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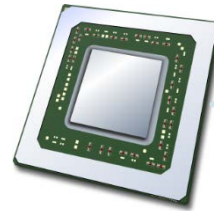
22 February 2017

Context

- I. Multi-CPU/Multi-GPU based Multimedia Processing
- II. Cloud-based Multimedia Processing
- III. Experimental results

Conclusion

Intensive treatments
Large volumes
HD, Full HD, 4K, etc.



Multi-CPU

Computing time ?
Real time ?
Cost ?



Image processing
Video processing
Medical imaging

Multimedia processing



GPU or Multi-GPU

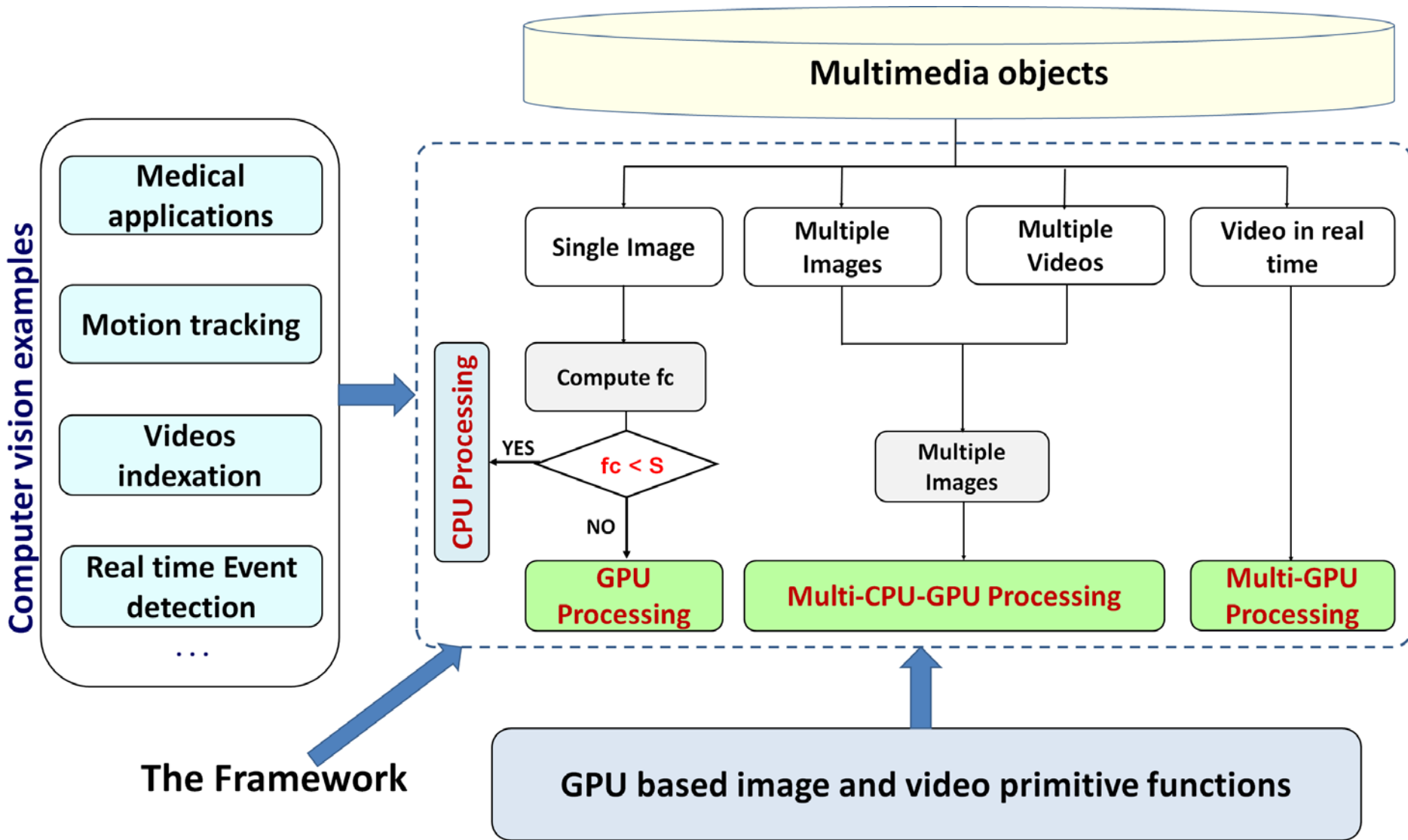
Acceleration
Parallel computing
Hybrid computing
CPU or/and GPU ?

Context

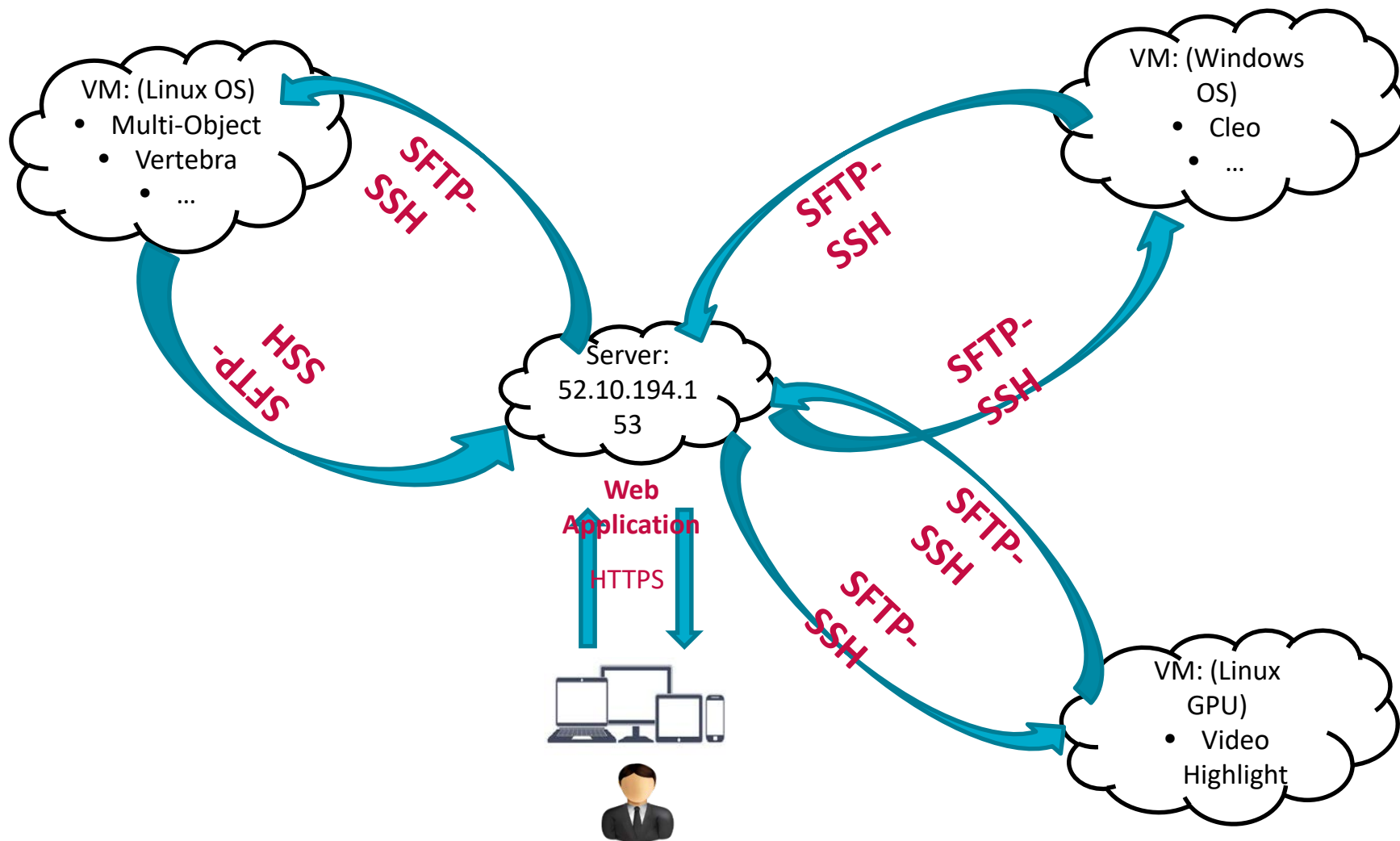
- Computer vision techniques require generally the use of several libraries that should be downloaded, installed and configured
 - High intensive applications require a high computing power
 - A long process which is not so appreciated by users and even developers
-
- Cloud application for guests to have access to different computer vision techniques without having to download, install and configure the corresponding software.



Multi-CPU-GPU based Multimedia Processing



Cloud-based Multimedia Processing



Experimental results

GPU based motion tracking
OpenCV CPU : 10 fps

MOVACP: MONITORING COMPUTER VISION APPLICATIONS IN CLOUD PLATFORMS

Username: (Email) Password:

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Real time motion tracking and analysis in multi-user scenarios
Based on this framework, we developed several real-time and GPU detection using moving camera, event detection and event localization



3D image reconstruction from 2D radiographs
Fast statistical reconstruction algorithm based on a general model which can deal with such instrumented spines



Tennis Highlights
An Efficient tool for summarizing Tennis Matches



Web based medical image segmentation framework
web based framework for spine curve extraction and vertebra segmentation in MRI images



Bone analysis: mineral density and microarchitecture computation
3D reconstruction of the bone density and microarchitecture from 2D radiographs



Keratoconus Detection
An application for keratoconus detection that help ophthalmic doctors



Real time motion tracking and analysis in cardio echographie
Based on this framework, we developed several real-time and GPU cardio detection and segmentation

The Cloud platform : www.media-process.com

Future work

- Integration of primitive image and video processing functions
- Integration of GPU versions that could offer fast treatments
- Integration of a data extra-security option for data encryption if needed
- Integration of a forum to collect the feedback of users
- Reducing the time of data upload to the platform.



THANK YOU

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