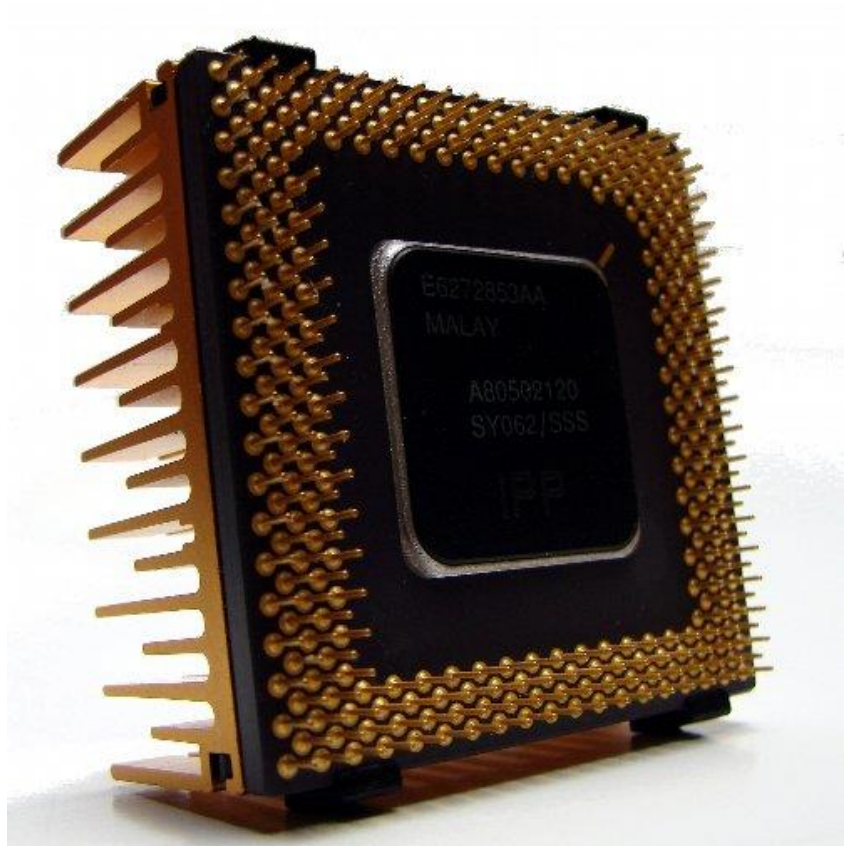


# PRACTICAL 1

## ADDITIONAL STUDY MATERIAL P-IV

- CUDA installation



2017

### GPGPU programming project

P-IV. Routine implementation with CUDA for algorithm acceleration in GPGPU

#### Computer architecture

Degree in Computer Engineering  
Computer Technology department  
University of Alicante

# ADDITIONAL STUDY MATERIAL P-IV

## ALGORITHMS ACCELERATION PROJECT USING GPGPU

### I. DOWNLOAD

The first thing is to download the CUDA SDK from the official website:

<https://developer.nvidia.com/cuda-toolkit>

Once here, select the latest version of the toolkit



The screenshot shows the NVIDIA CUDA Zone website. The top navigation bar includes links for Getting Started, Downloads, Training, and Ecosystem. The breadcrumb trail indicates the path: Home > CUDA ZONE > Tools & Ecosystem > Language & APIs > CUDA Toolkit. The main heading is "CUDA Toolkit". Below this, a paragraph describes the toolkit as a comprehensive development environment for C and C++ developers. The page is divided into two columns. The left column is for CUDA 5.5, labeled "Production Release", and lists features such as MPI Applications, Guided Performance Analysis, and Support for ARM Platforms. The right column is for CUDA 6.0, labeled "RELEASE CANDIDATE", and lists features such as Unified Memory, Drop-in Libraries, and Multi-GPU scaling.

**DOWNLOAD CUDA 5.5**  
Production Release

CUDA 5.5 Production release now available on the [download page](#).

**Optimized for MPI Applications**

- Enhanced Hyper-Q support for multiple MPI processes via the new Multi-Process Service (MPS) on Linux systems.
- MPI Workload Prioritization enabled by CUDA stream prioritization.
- Multi-process MPI debugging & profiling.

**Guided Performance Analysis**

- Step-by-step guidance helps you identify performance bottlenecks and apply optimizations in the NVIDIA Visual Profile and Nsight Eclipse Edition.

**Support for ARM Platforms**

- Native compilation, for easy application porting.

**DOWNLOAD CUDA 6.0**  
RELEASE CANDIDATE

Dramatically simplify parallel programming with CUDA 6.0 .

**Unified Memory**

- Simplifies programming by enabling applications to access CPU and GPU memory without the need to manually copy data. [Read more](#) about unified memory.

**Drop-in Libraries**

- Automatically accelerate applications' BLAS and FFTW calculations by up to 8X by simply replacing the existing CPU libraries with the GPU-accelerated equivalents.

**Multi-GPU scaling**

- cublasXT** - a new BLAS GPU library that automatically scales performance across

Then it will appear a page like the next:

## CUDA Toolkit Pre-Production Downloads

The CUDA 6.0 RC (Release Candidate) installers include the CUDA Toolkit, CUDA samples, Nsight Visual Studio edition (for Windows) and Nsight Eclipse Edition (for Linux / Mac OS X), and developer drivers.

More details about these downloads in the [CUDA 6.0 RC Release Notes](#).

In order to use graphics cards based on the [Maxwell architecture](#), please get [updated drivers](#)

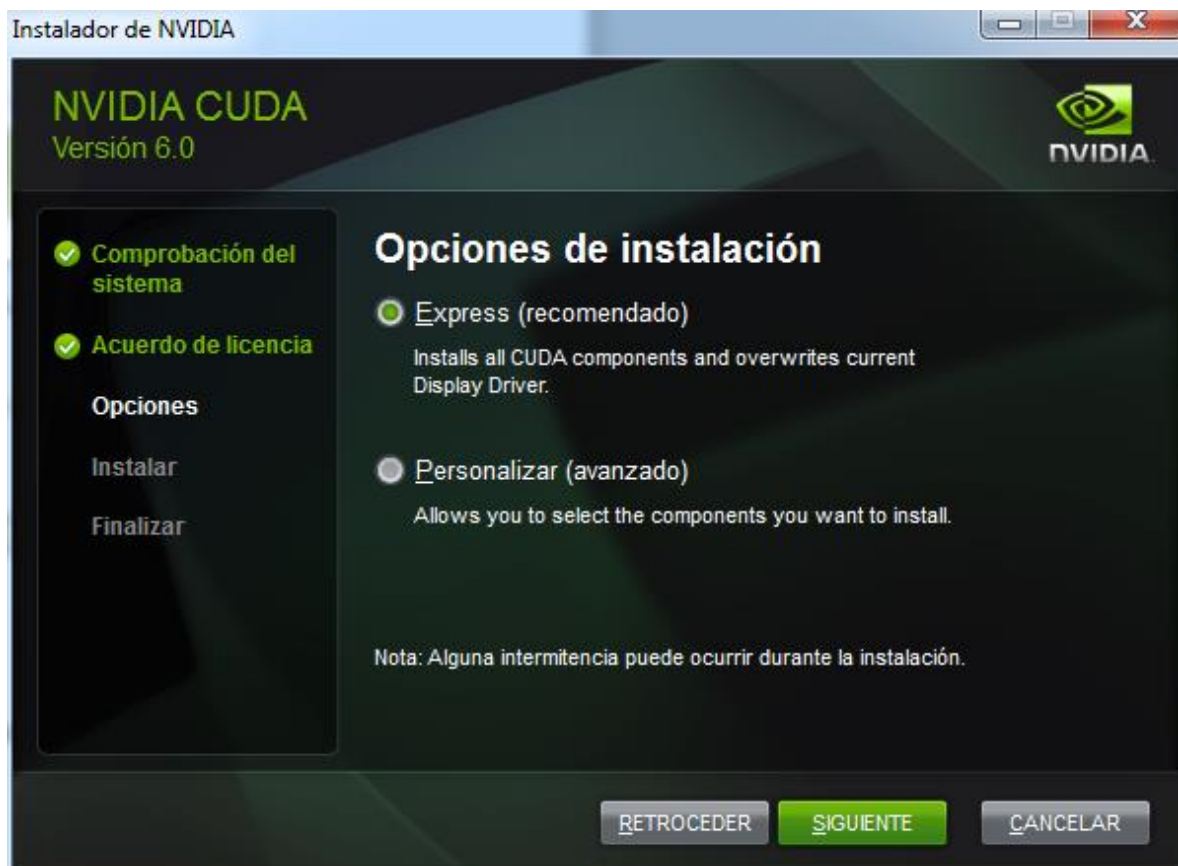
Operating System	Distribution	Architecture		Related Documentation
		x86 64-bit	ARMv7 32-bit	
Windows*	8.1, 7 & Vista - Notebook	64-bit	32-bit	Windows Getting Started Guide
	8.1, 7 & Vista - Desktop	64-bit	32-bit	
	XP - Desktop	64-bit	32-bit	
Linux	RHEL 6, CentOS 6	RPM RUN		Linux Getting Started Guide
	RHEL 5, CentOS 5	RUN		
	Fedora 19	RPM RUN		
	OpenSUSE 12.3	RPM RUN		
	SLES 11 (SP2 & SP3)	RPM RUN		
	Ubuntu 13.04	DEB** RUN	DEB	
	Ubuntu 12.04	DEB** RUN	DEB RUN	
Mac OSX	10.9 & 10.8	PKG		Mac Getting Started Guide

In it, select and download the proper version for your computer.

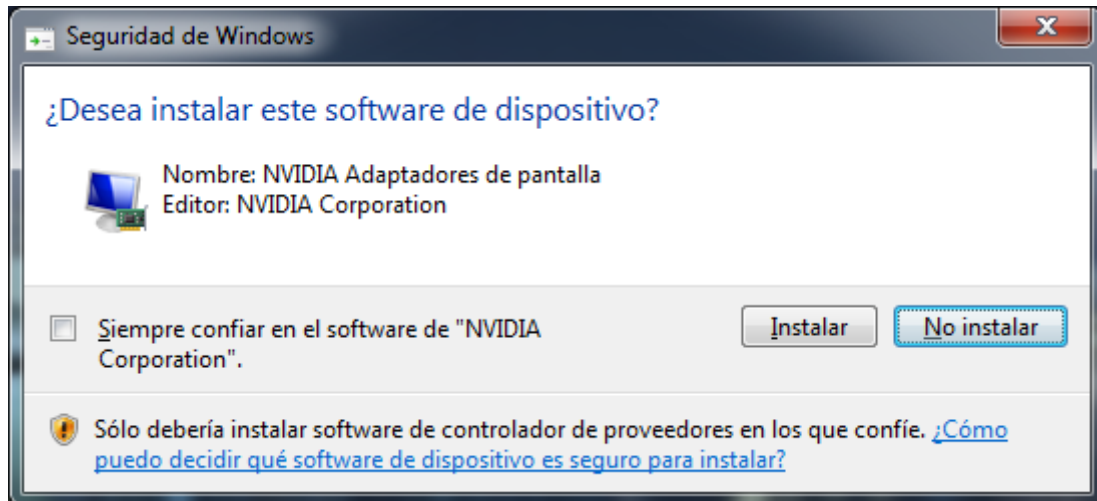
## II. INSTALLATION

Go to the folder where the CUDA toolkit has been downloaded and execute it. Use the default folder for the installation despite it is a “temp” place.

After few minutes a window like the next appear, select the Express installation and it will start installing.



Continue the installation accepting to install the software for the device.



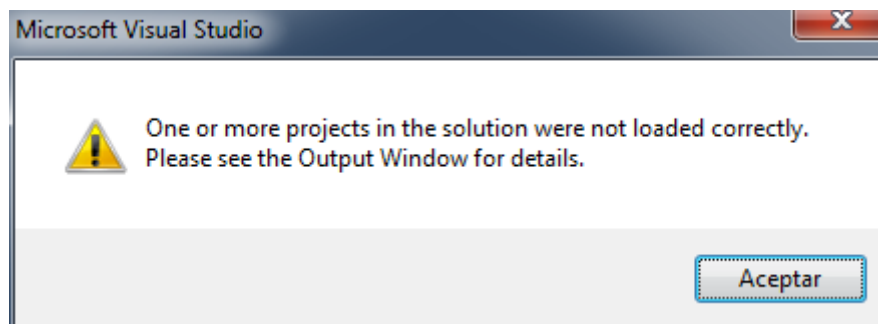
NOTE → It is normal if the screens blink or shut down few times.

Continue the installation accepting to install bus driver for NVIDIA



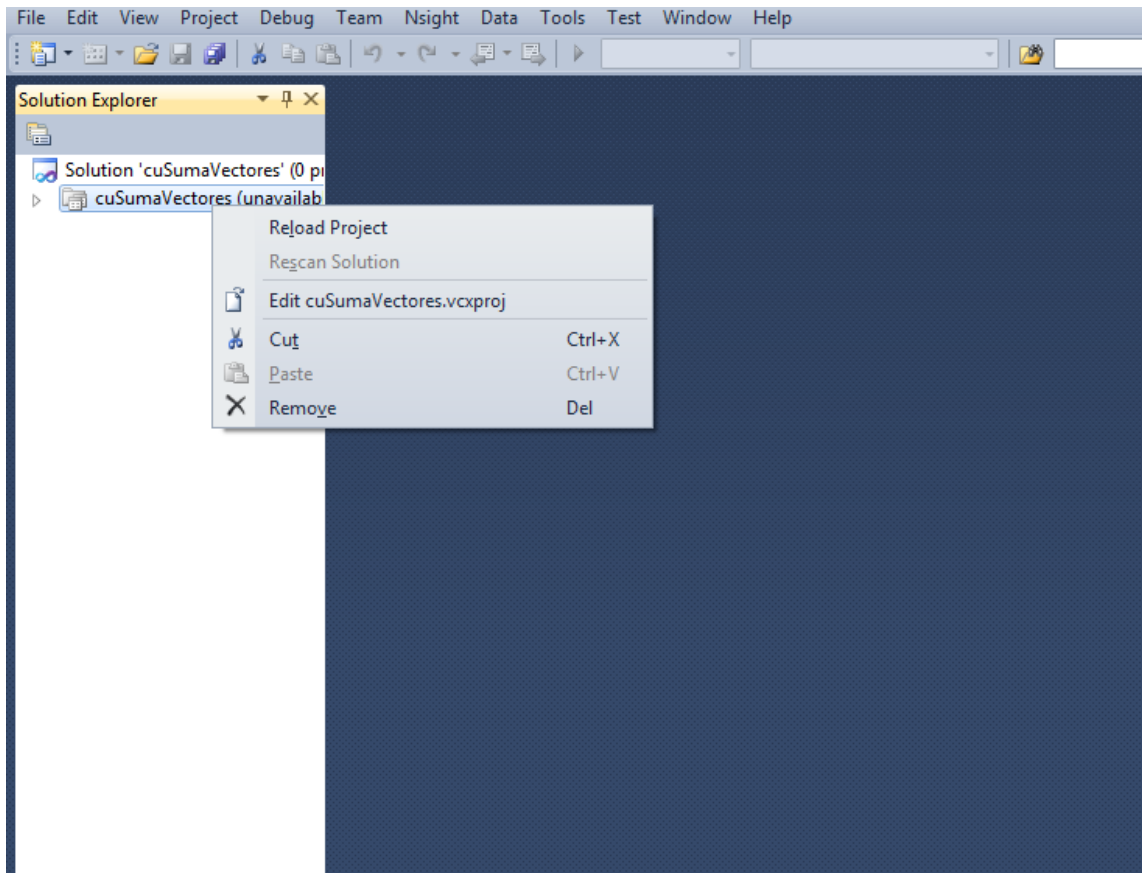
### III. VISUAL STUDIO

Execute the solution of the Project (in this case cuSumaVectores.sln). Once the VS2010 starts a warning appears



Continue accepting this notification and the VS2010 will open the solution.

Click with the right button over the solution and in the menu select “Edit project\_name” (Edit cuSumaVectores.vcxproj)



A tagged document will be opened. Find the following instruction and change the version of the CUDA for the one you have downloaded previously.

Original:

```
<Import Project="$(VCTargetsPath)\BuildCustomizations\CUDA 5.0.props" />
<Import Project="$(VCTargetsPath)\BuildCustomizations\CUDA 5.0.targets" />
```

Replace for this in case of CUDA version 6:

```
<Import Project="$(VCTargetsPath)\BuildCustomizations\CUDA 6.0.props" />
<Import Project="$(VCTargetsPath)\BuildCustomizations\CUDA 6.0.targets" />
```

Save the changes and click again with the right button over the project as before and select “Reload Project”.

Now you will see all the solution with the files of it.

