

Introduction to Pioneer 3-DX, ARIA and MobileSim

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2016/09/19

What is Pioneer

- Pioneer is a family of mobile robots, including two-wheel and four-wheel drive versions.

➤ <http://www.mobilerobots.com/>



Pioneer 3-AT



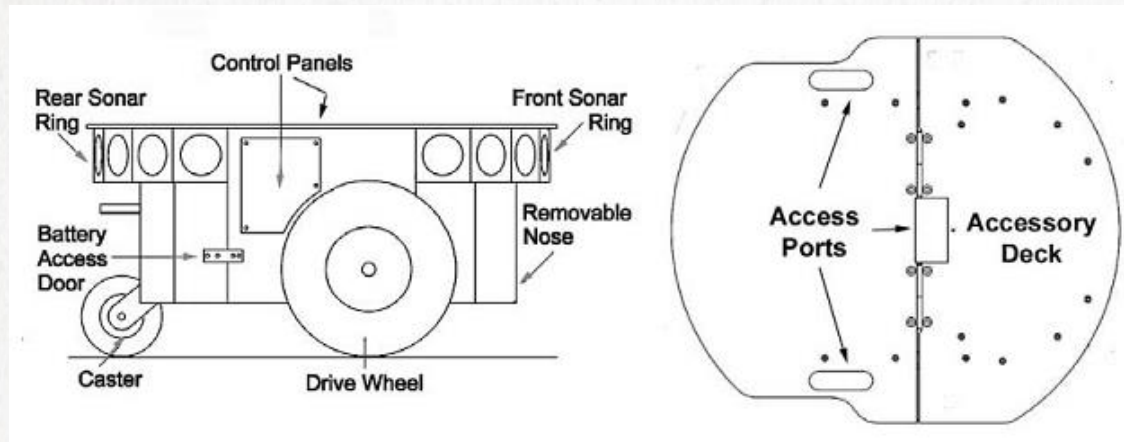
Pioneer 3-DX



Pioneer LX

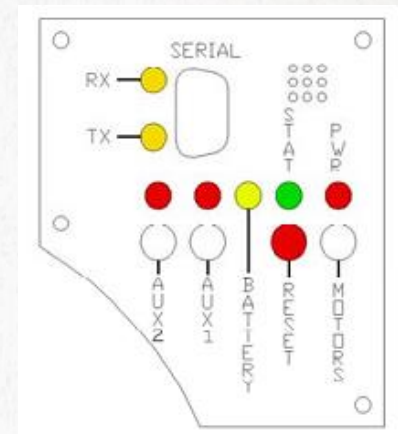
Pioneer 3-DX

- Specifications



Side view

Top view

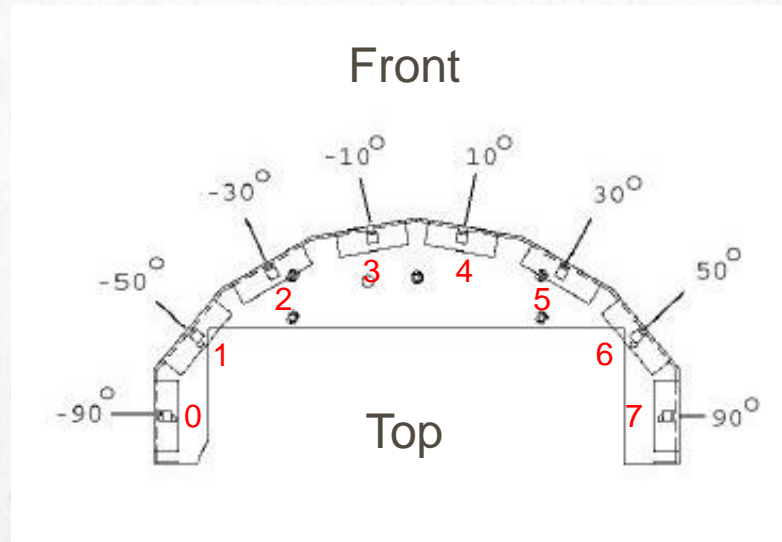


Control Panels

Pioneer 3-DX

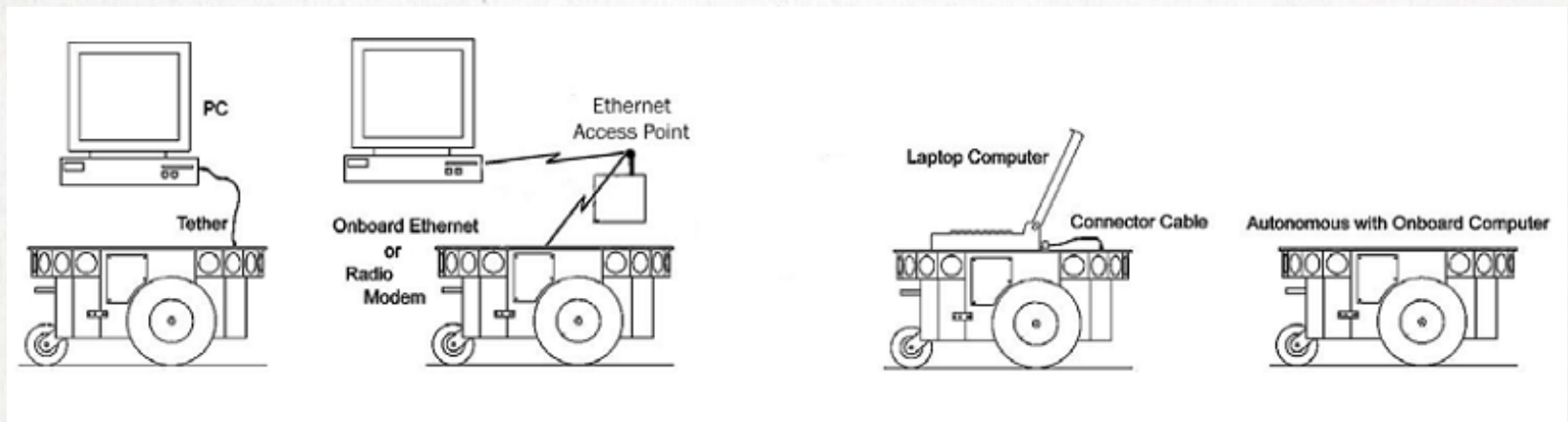
- Sonars
 - 8 sonar arrays: One on each side, and six facing outward at 200 intervals
 - Range from 10cm to 5m

Sonar numbers



Connection Options

- All MobileRobots platforms are served in a client-server architecture.



ARIA

- Open-source C++ library for all MobileRobots platforms and many accessory devices.
- Applications developed with ARIA can easily navigate the mobile platform, as well as manage odometry, sensor readings, and other operating data.
- Download link:

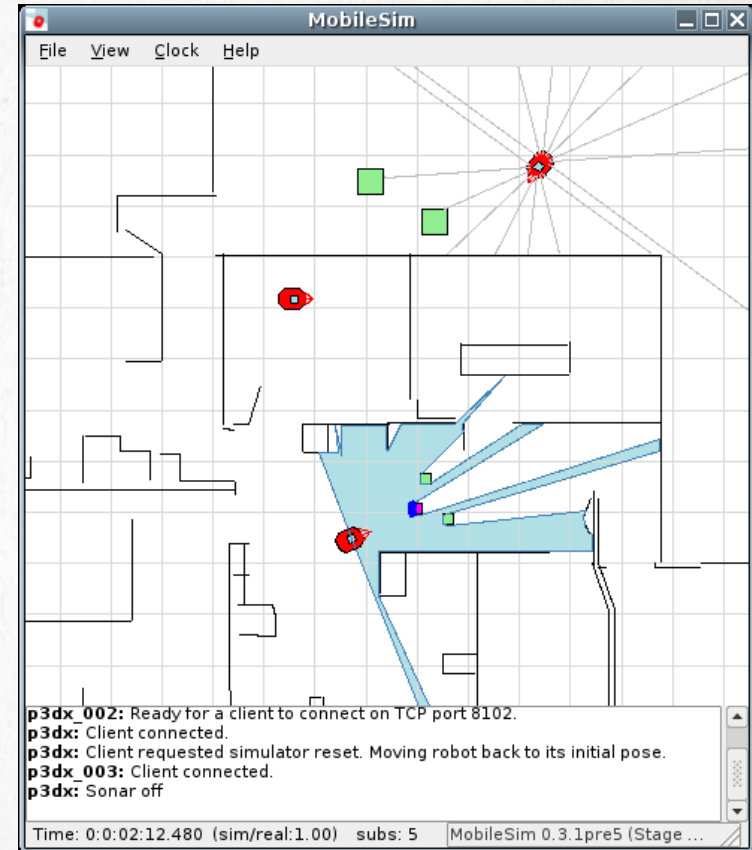
<http://robots.mobilerobots.com/wiki/ARIA>

Examples of ARIA

- Path
 - Program Files\MobileRobots\Aria\examples
 - Important examples
 - demo.cpp
 - General purpose testing and demo program, using ArMode classes to provide keyboard control of various robot functions.
 - wander.cpp
 - Example using actions and sonars to implement a random wander avoiding obstacles.
-

MobileSim

- MobileSim provides a simulation environment for MobileRobots platforms and many accessories.
- Download link:
<http://robots.mobilerobots.com/wiki/MobileSim>
- The following pages show how to run MobileSim on Windows and Ubuntu.

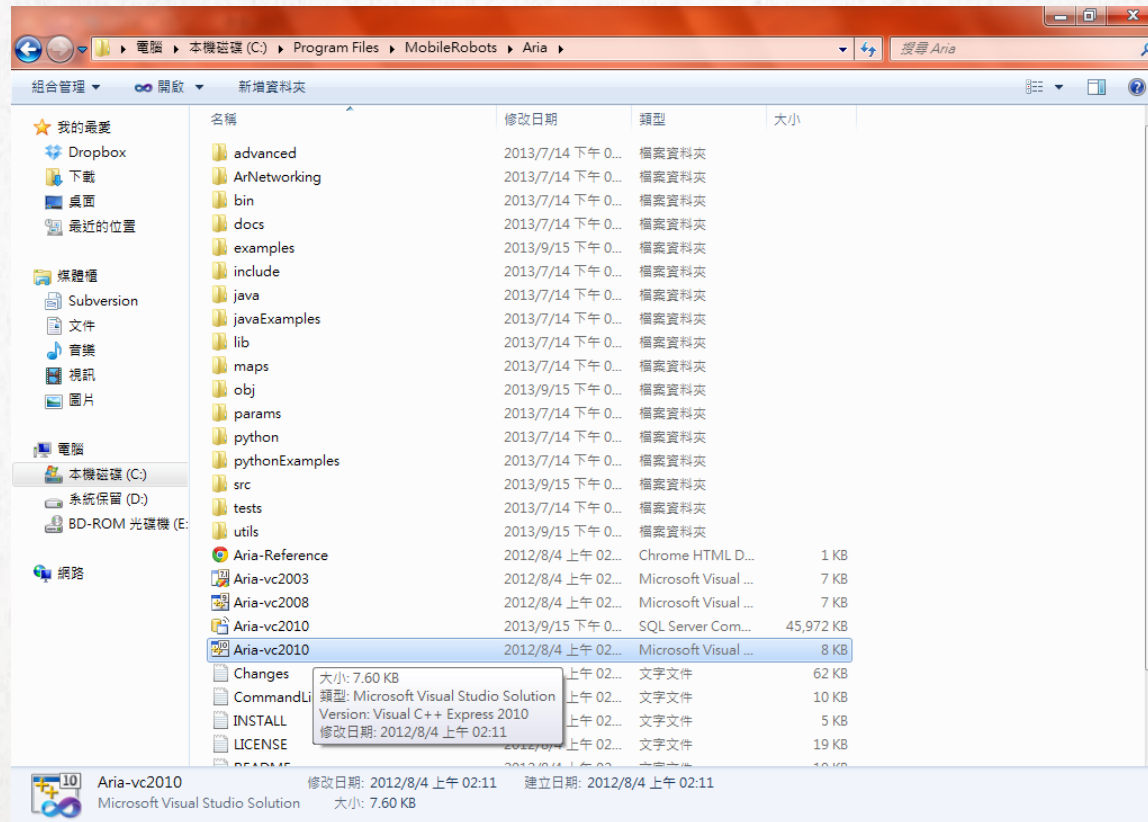


Windows

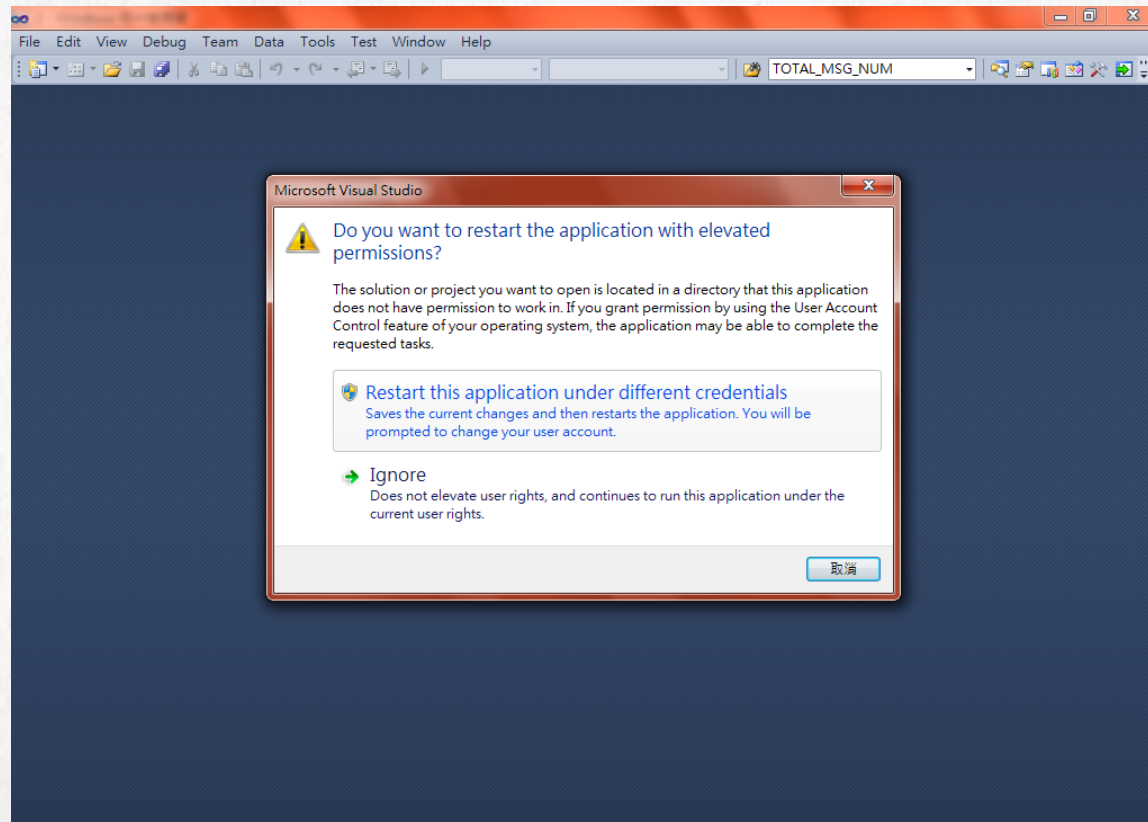
- Download ARIA and MobileSim.
 - Latest Version for Windows:
 - ARIA 2.9.0-1
 - MobileSim 0.7.5
 - Install them with the executable file.
 - The default path should be located at:
 - C:\Program Files\MobileRobots\Aria
 - C:\Program Files\MobileRobots\MobileSim
-

Windows

Start ARIA

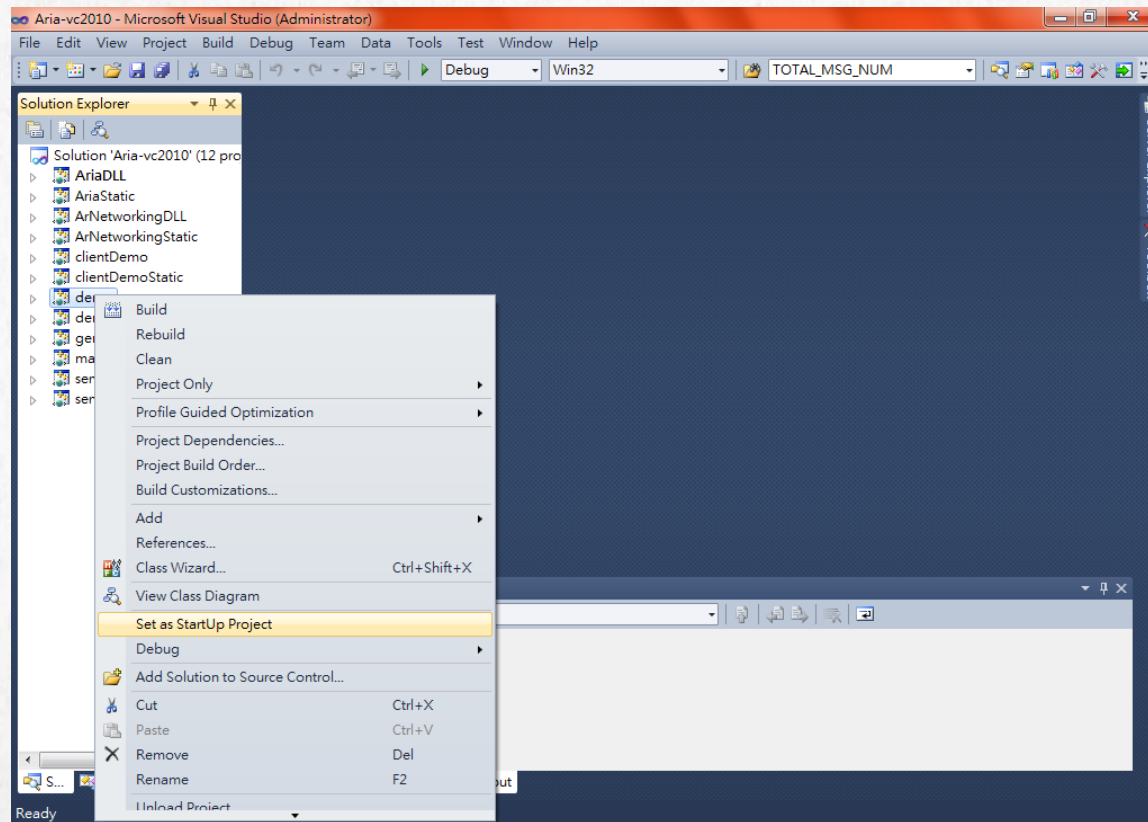


Windows



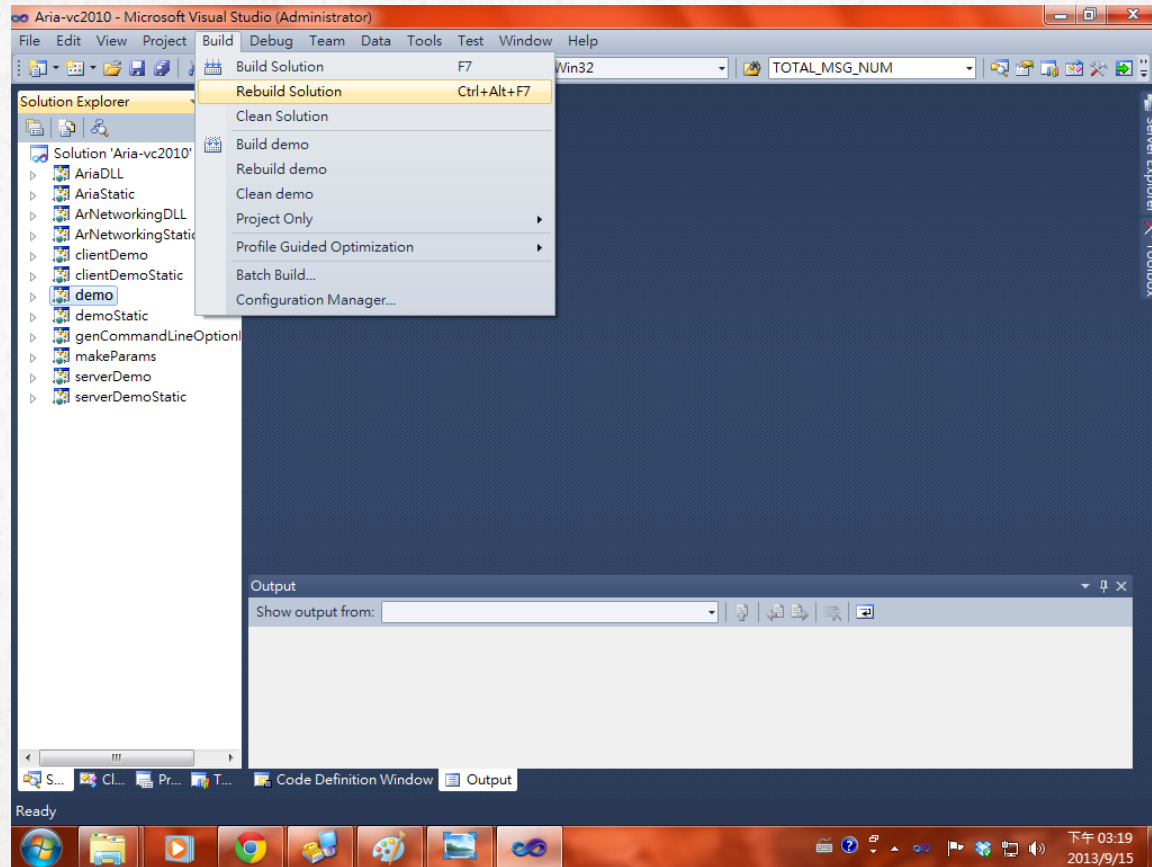
Windows

Set demo as the startup project

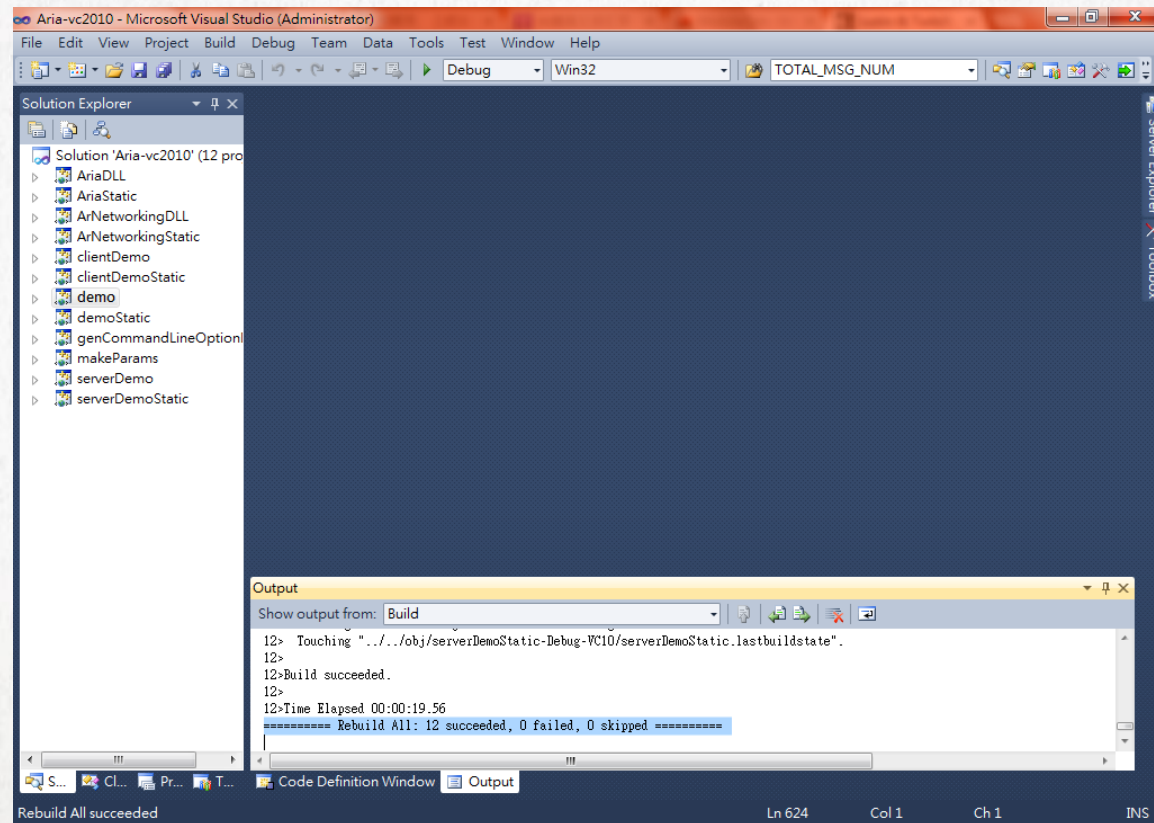


Windows

Rebuild the solution

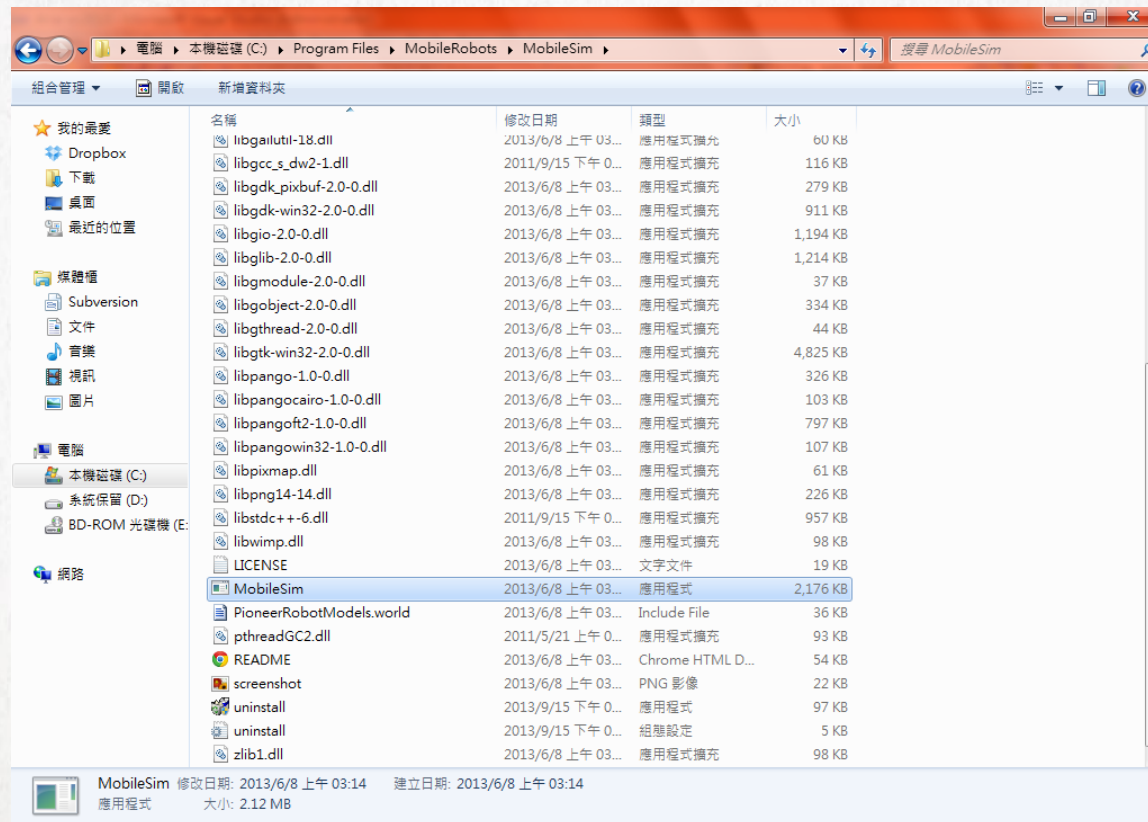


Windows



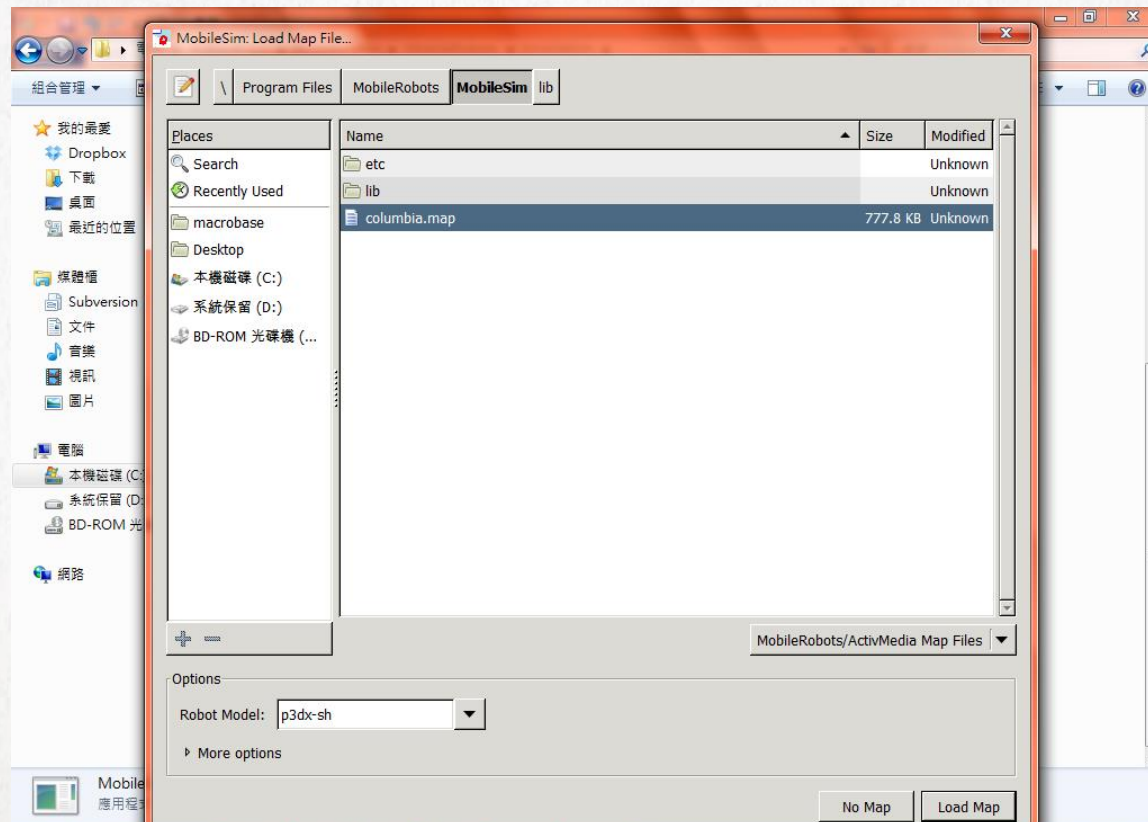
Windows

Execute MobileSim



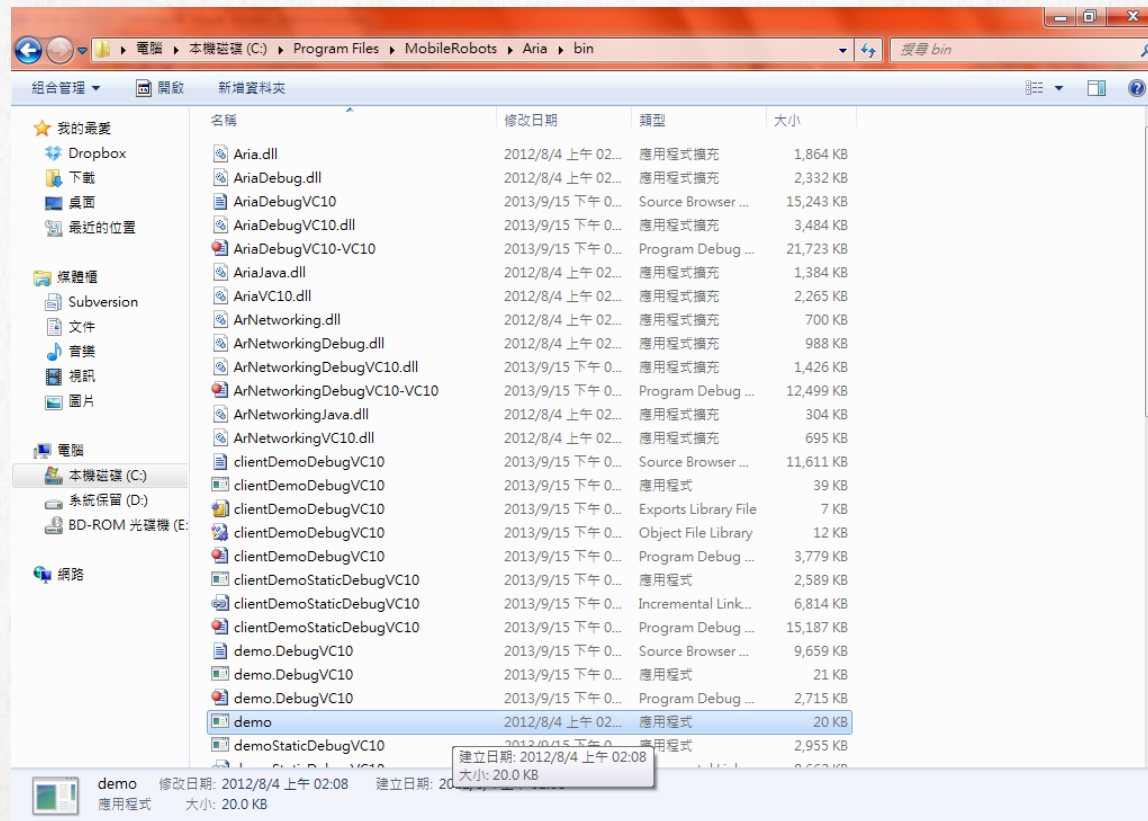
Windows

Load the map



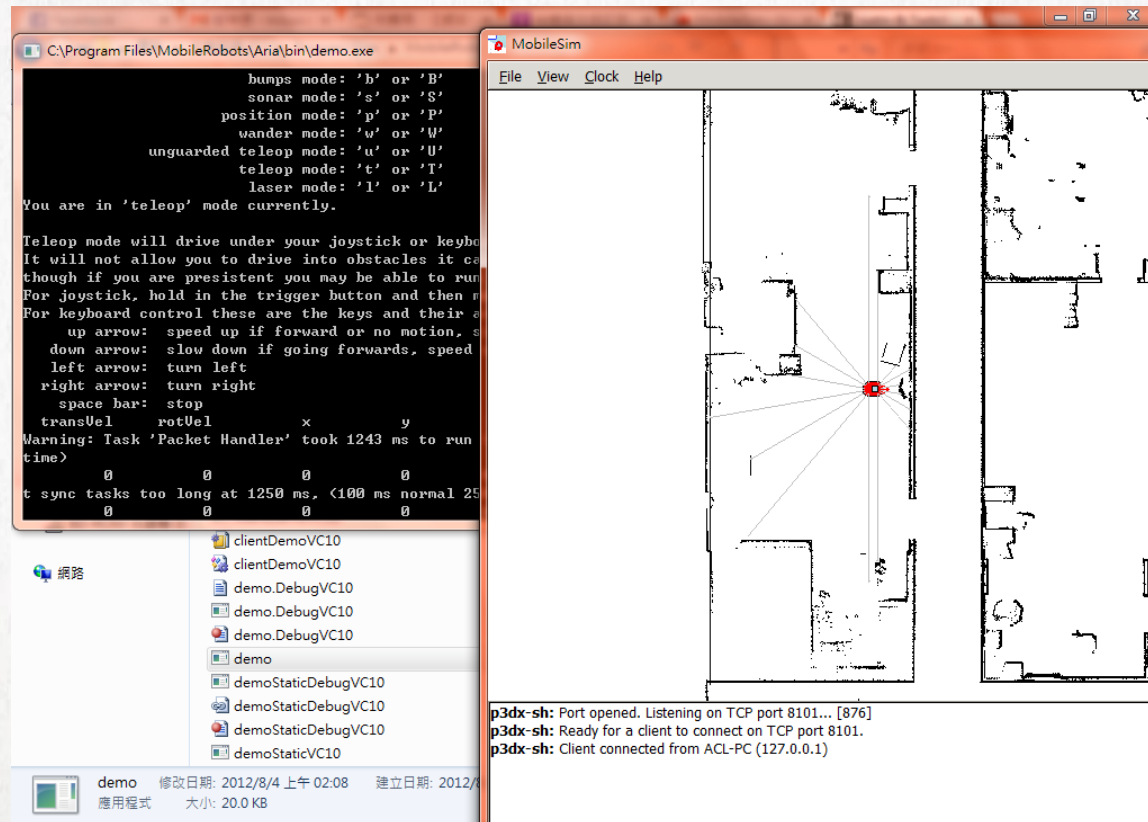
Windows

Execute demo



Windows

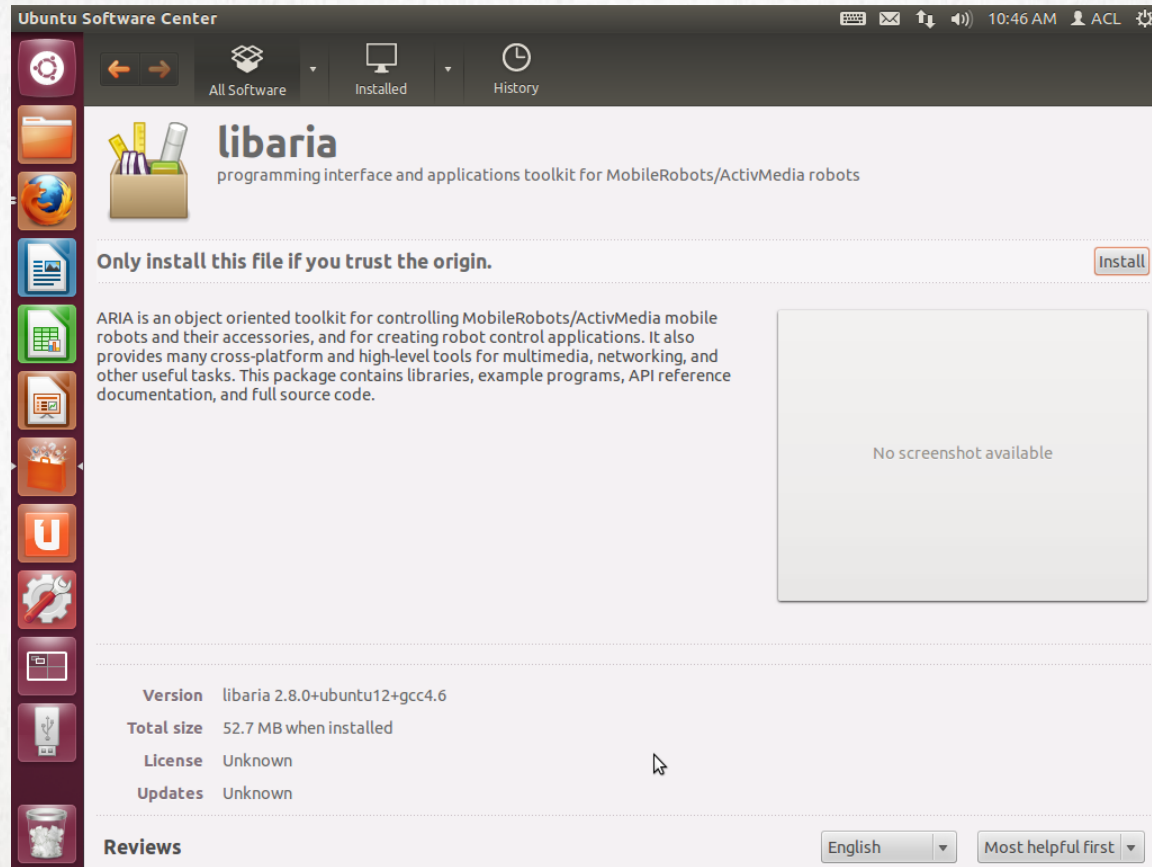
Try to control the mobile robot in different modes.



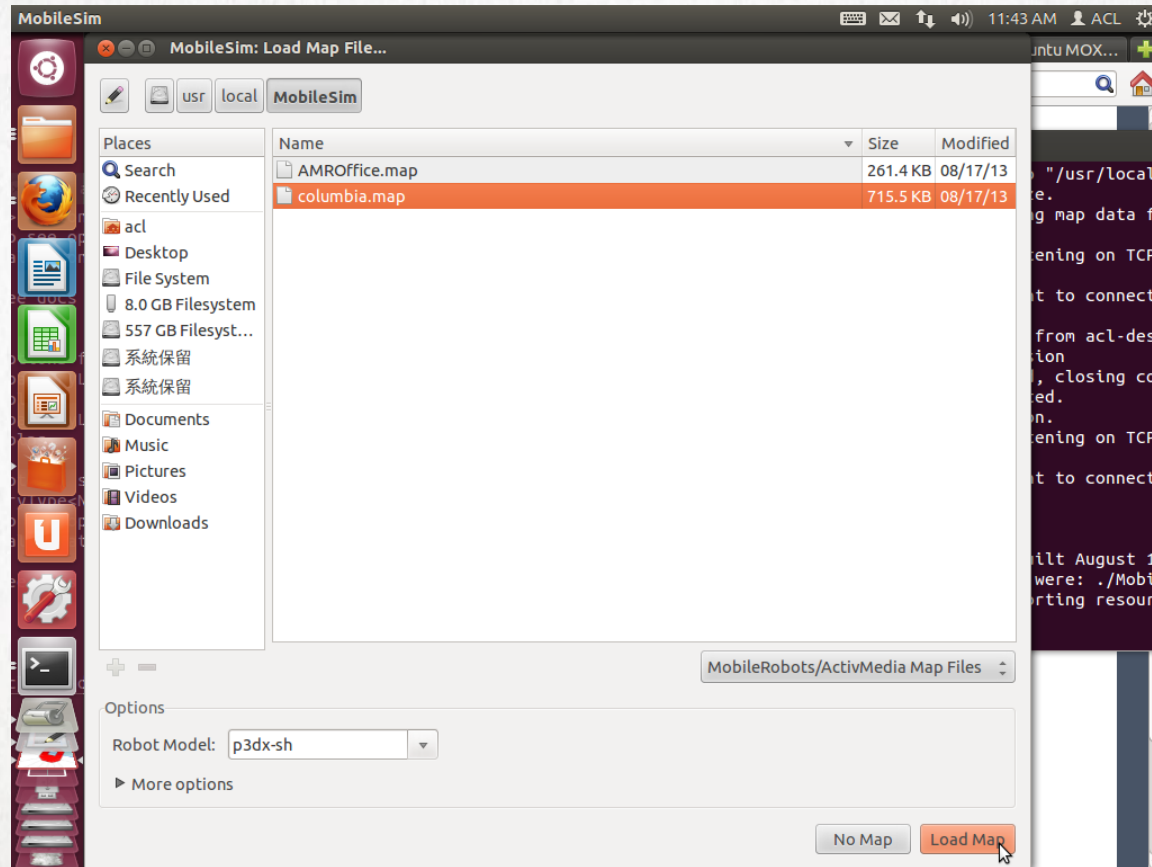
Ubuntu

- Download ARIA and MobileSim.
 - Latest Version for Ubuntu 12.04
 - ARIA 2.9.0
 - MobileSim 0.7.5
 - Install them with the file.
 - They should be located at:
 - /usr/local/Aria
 - /usr/local/MobileSim
 - Make ARIA before use it.
-

Ubuntu



Ubuntu



Ubuntu

The screenshot displays an Ubuntu desktop environment. At the top, a terminal window shows the command prompt at `top: /usr/local/Aria/examples`. Below this, a list of modes is displayed: `bumps mode: 'b' or 'B'`, `sonar mode: 's' or 'S'`, `position mode: 'p' or 'P'`, `camera mode: 'c' or 'C'`, `command mode: 'd' or 'D'`, `robot config mode: 'o' or 'O'`, `io mode: 'i' or 'I'`, `tcm2 mode: 'm' or 'M'`, and `acts mode: 'a' or 'A'`. The current mode is `acts`. Below the list, instructions for joystick and keyboard control are provided. A table of motor parameters is also shown:

motor	x	y	th	volts
0	-374	-515	-125.6	13.0

Below the table, a link to the [MobileSim Source Code 0.7.3 archive](#) with GCC 3.4 is provided. To the right of the terminal, a web browser window displays the robots.mobilerobots.com/wiki/MobileSim page. The page content includes the same mode list and instructions as the terminal window. Below the text, a diagram shows a robot's field of view (sonar) in a simulated environment. At the bottom right, a terminal window shows the following output:

```
p3dx-sh: Port opened. Listening on TCP port 8101... [14]
p3dx-sh: Ready for a client to connect on TCP port 8101.
p3dx-sh: Client connected from acl-desktop (127.0.0.1)
```

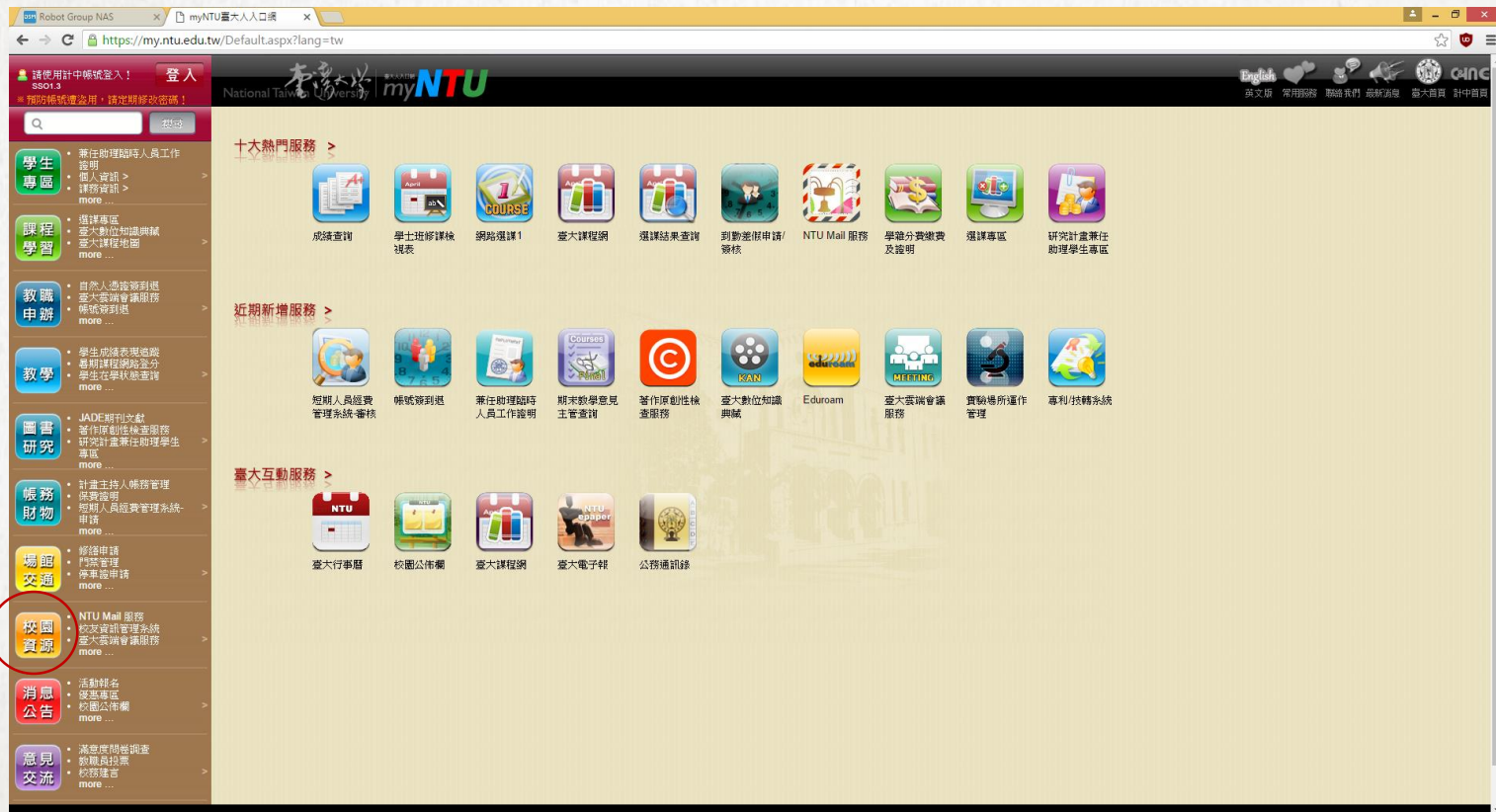
MacOS

- If you use MacOS we strongly recommend you do either a dual boot and install Windows or install a virtual machine (with Windows).

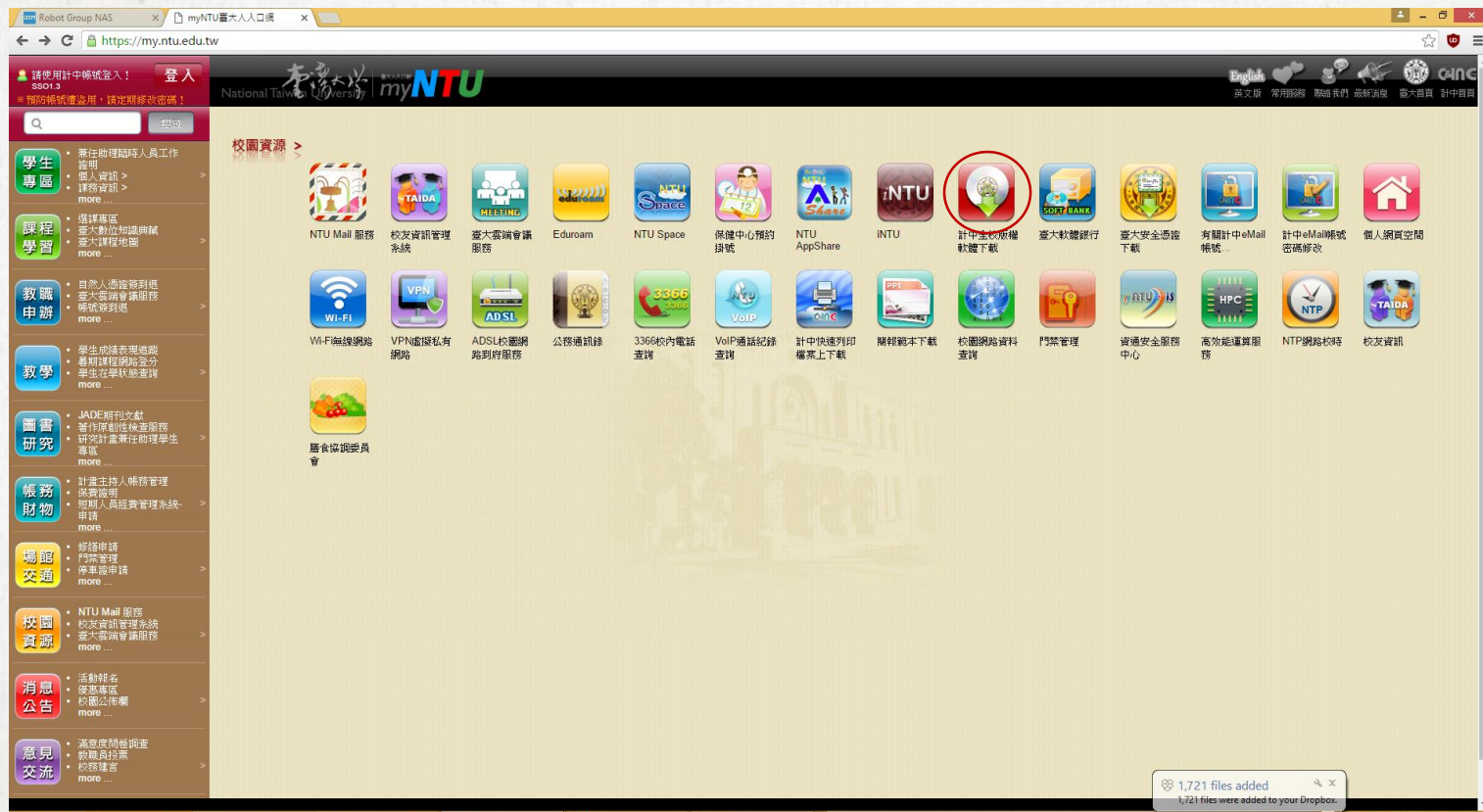
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Get Windows10 free from NTU



Get Windows10 free from NTU



Get Windows10 free from NTU

The screenshot shows a web browser window with the address bar displaying <https://download.cc.ntu.edu.tw/index.php>. The page content is organized into sections for different software downloads.

網路認證程式 Filesize: 4.0K [download 下載](#)

windows 10作業系統 2016/07/13

Windows 10 Education
無須安裝 [請參考認證說明網頁](#)

安裝前請注意事項:
1. 安裝後「無法直接降級回原作業系統」• 安裝前請先備份重要資料 •
2. 安裝前 • 請先確認您所使用的應用軟體是否有支援 windows 10 作業系統 •

Windows 10*64作業系統	Filesize: 4.1G	download 下載
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Windows 10*32作業系統	Filesize: 2.9G	download 下載
Windows 10*32-language pack	Filesize: 919M	download 下載
Windows 10*32-eng	Filesize: 2.8G	download 下載
Windows 10*64-eng	Filesize: 3.7G	download 下載

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Assignment1 Announcement

- Assignment1 is now live on CEIBA.
 - Deadline: **2016/10/03 13:20**
 - Make sure you followed the requirements before submission.