

## Instruction to install driver and set up the aero-pendulum

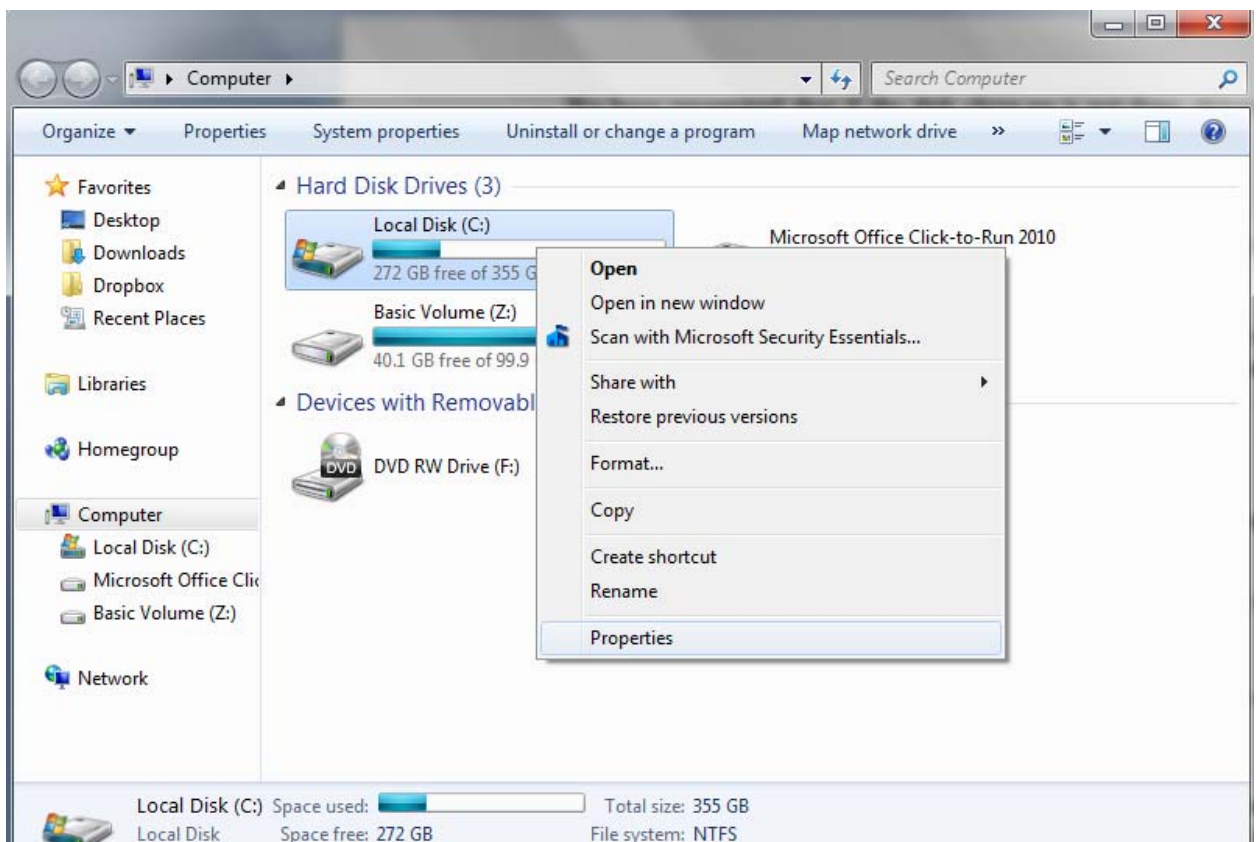
We have recognized that if the disk clean-up is not done, driver installation on 64bit systems reports Code 10 error and doesn't seem to be installed properly. To avoid this error, please perform disk clean up before attempting to install the driver.

**WINDOWS WARNINGS/ALERTS:** The pendulum uses Win driver USBser.sys . The Driver\_64.inf file is just an info file that points Win to search for its own USBser.sys driver. So **IGNORE** the warnings from Win saying "the driver is from unknown publisher .... and select "Install anyway..." when asked.

0. Download the USBDriver32 or USBDriver64 bit zip file from the d2l.arizona.edu course website and unzip in a **KNOWN** location/directory on your computer. You will point the installer to that location later.

1. **Disk clean up**

**Open Start → Computer → Right click the disk drive in which the OS (64 bit) is installed → Properties.**




Local Disk (C:) Properties

Security Previous Versions Quota  
General Tools Hardware Sharing

Type: Local Disk  
File system: NTFS

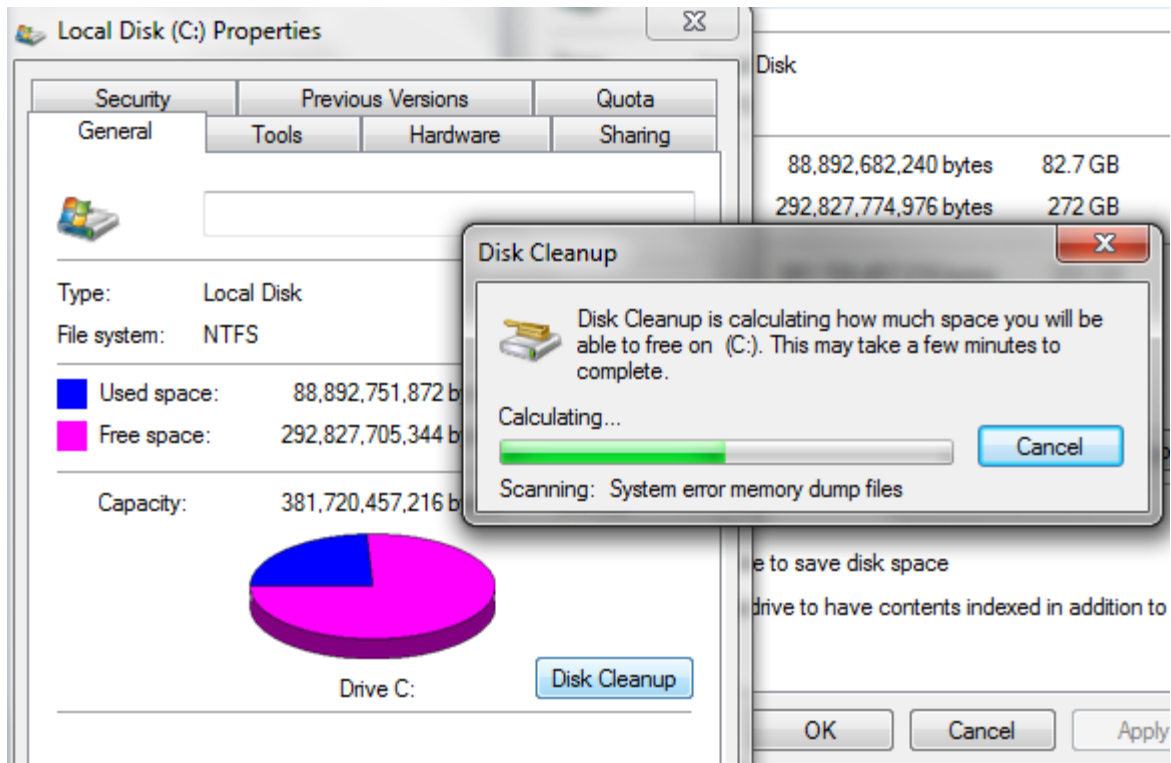
Used space:	88,892,682,240 bytes	82.7 GB
Free space:	292,827,774,976 bytes	272 GB
Capacity:	381,720,457,216 bytes	355 GB



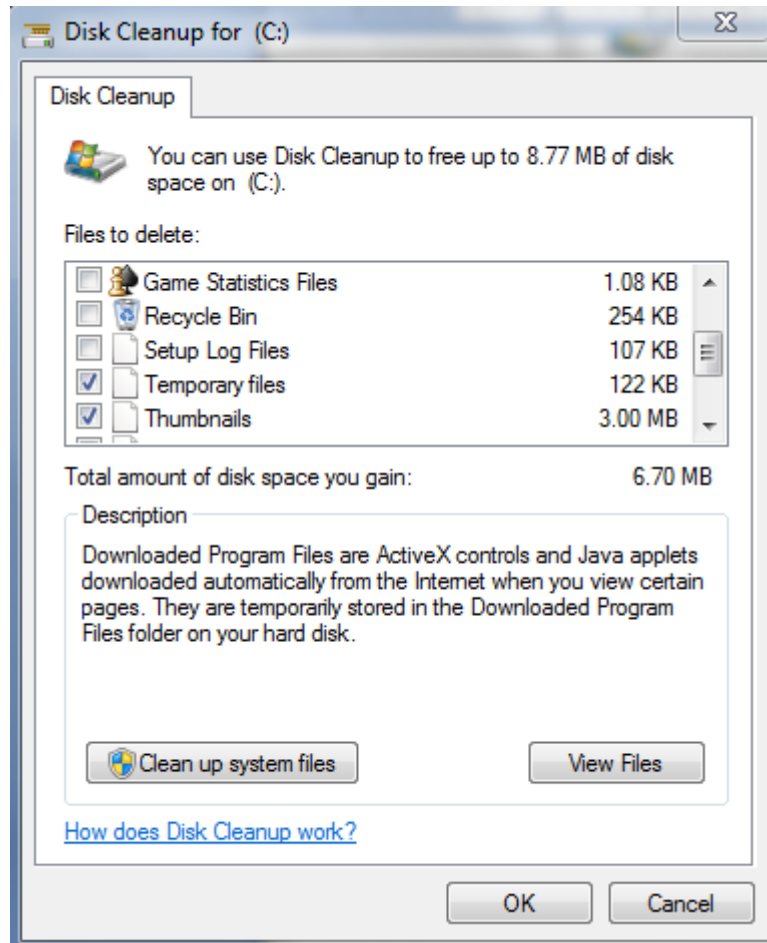
Drive C: Disk Cleanup

Compress this drive to save disk space  
 Allow files on this drive to have contents indexed in addition to file properties

OK Cancel Apply

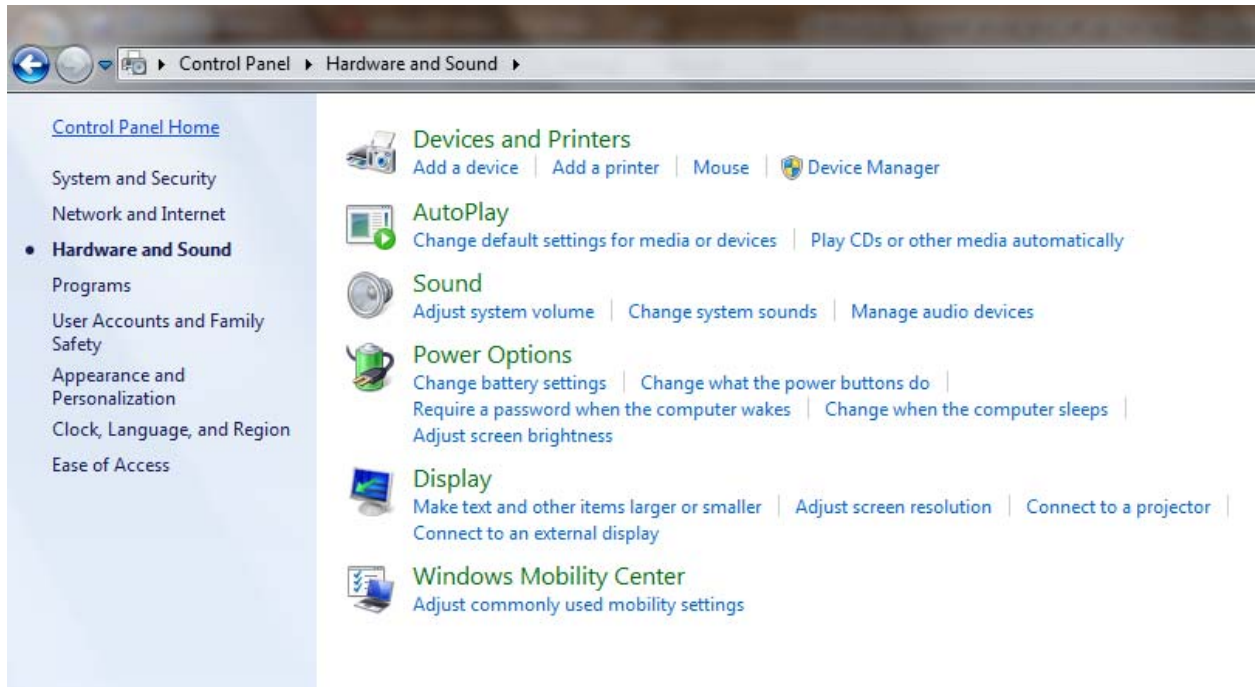


**Click on “Disk Clean up”. A “disk clean up” window will pop up. In “disk cleanup for:” pop up make sure to select “Temporary Files” and “Temporary Internet Files” under “Files to delete:” Press “OK”.**

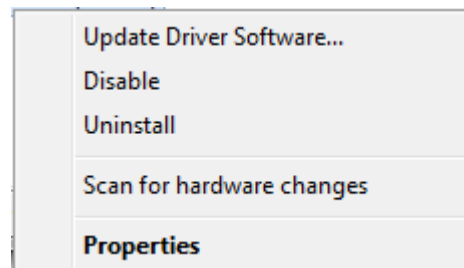


2. **Connect the aero pendulum into your system.**
3. **Go to Device Manager**

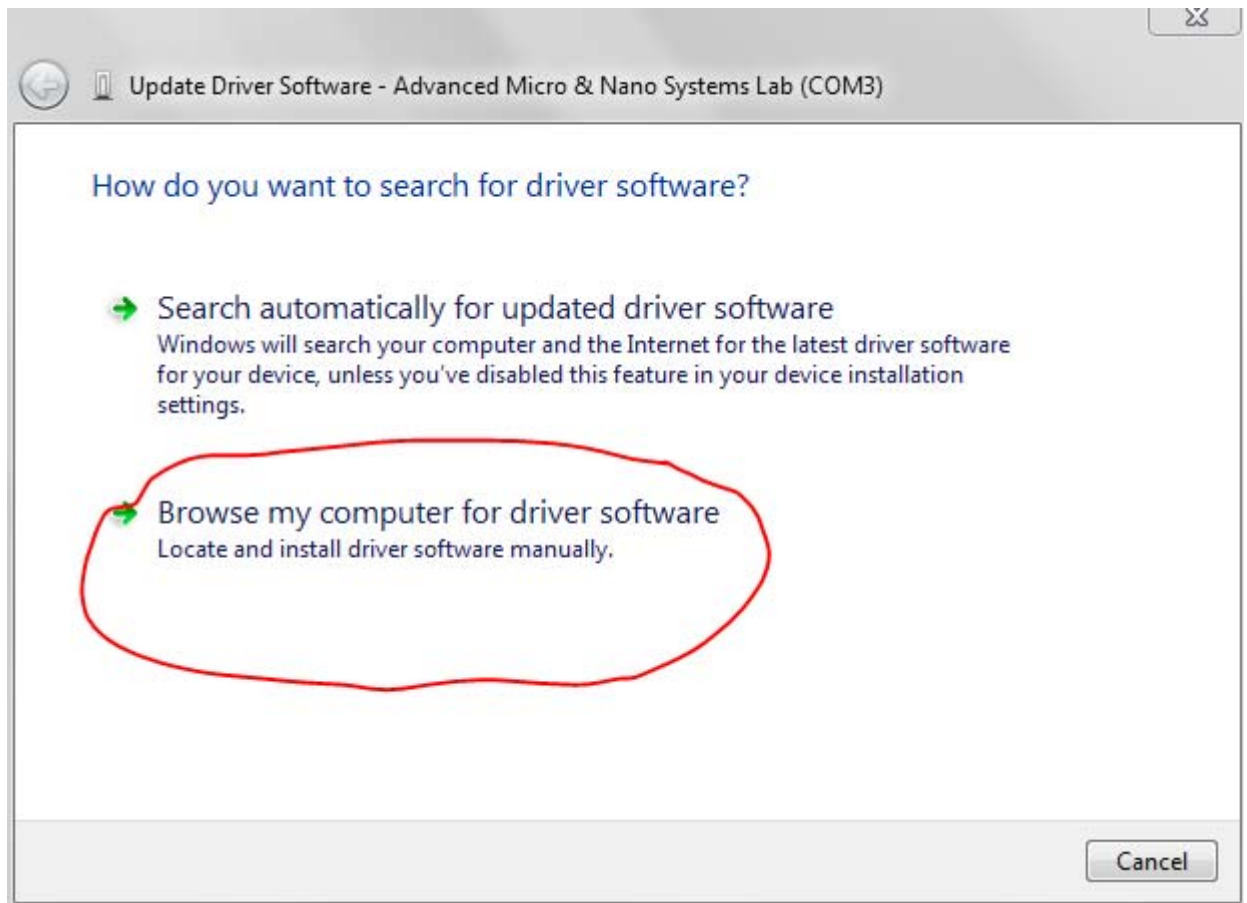
**Start → Control Panel → Hardware and Sounds → Device Manager.**



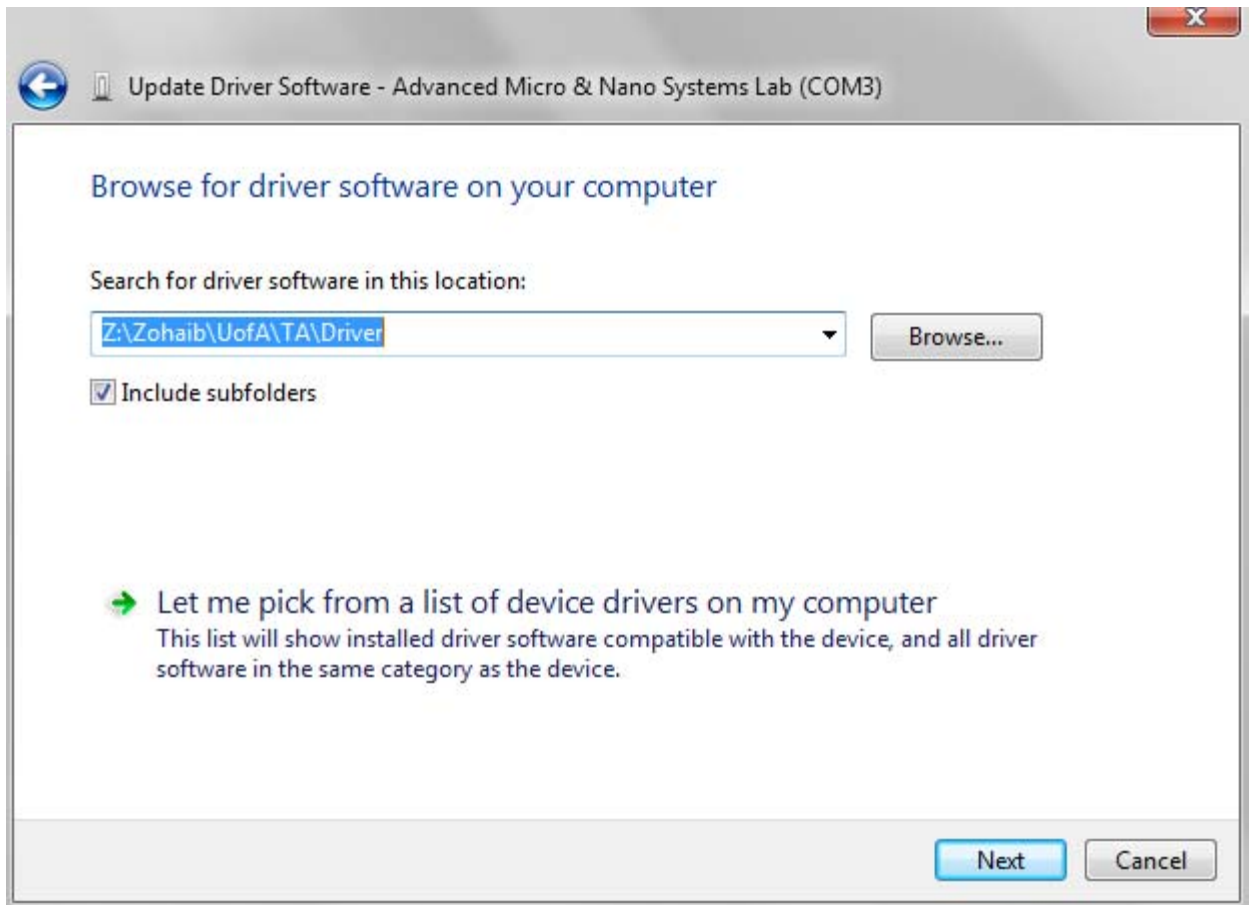
4. Right click “Unknown Device”. It must be under “Other devices”.
5. Click “Update Driver Software..”



6. Click “Browse my computer for driver software”



7. Click “Let me pick from a list of device drivers on my computer”



## Browse for driver software on your computer

Search for driver software in this location:

Z:\Zohaib\UofA\TA\Driver

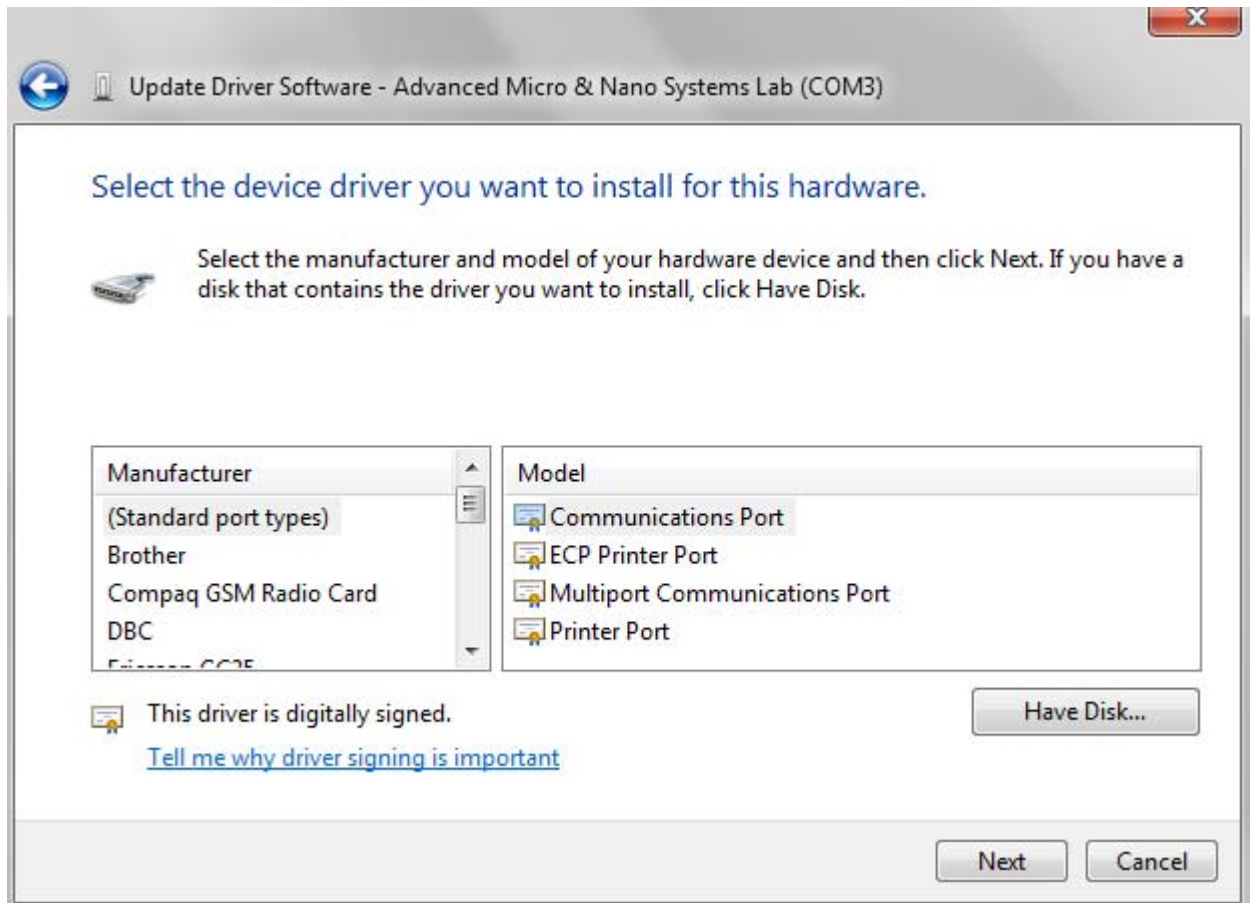
Browse...

Include subfolders

➔ Let me pick from a list of device drivers on my computer  
This list will show installed driver software compatible with the device, and all driver software in the same category as the device.

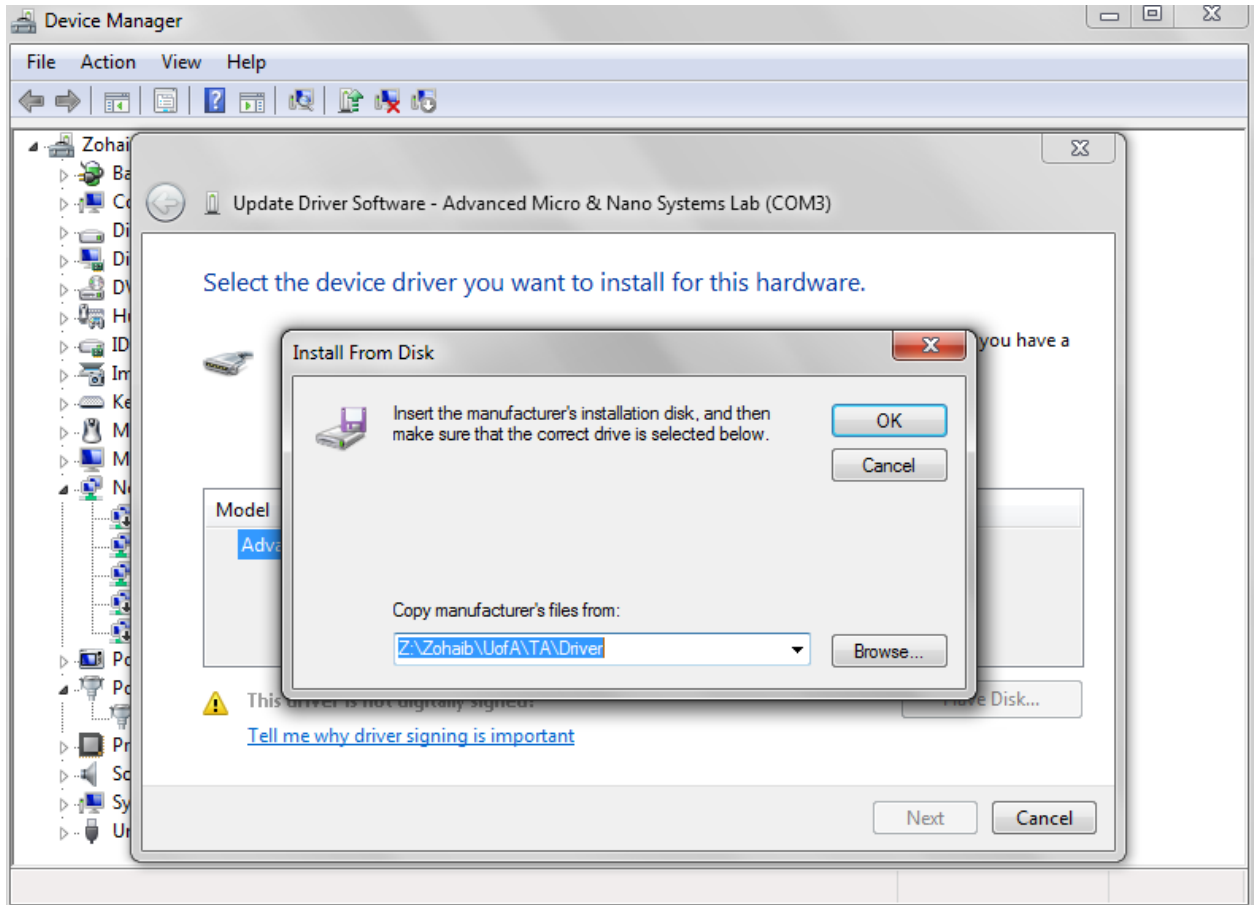
Next

Cancel



8. Click on “Have Disk”
9. Under the “Install From Disk” window pop up, in “Copy manufacturer’s files from:” write down the full address of the physical location of driver (USB\_Driver64.inf)

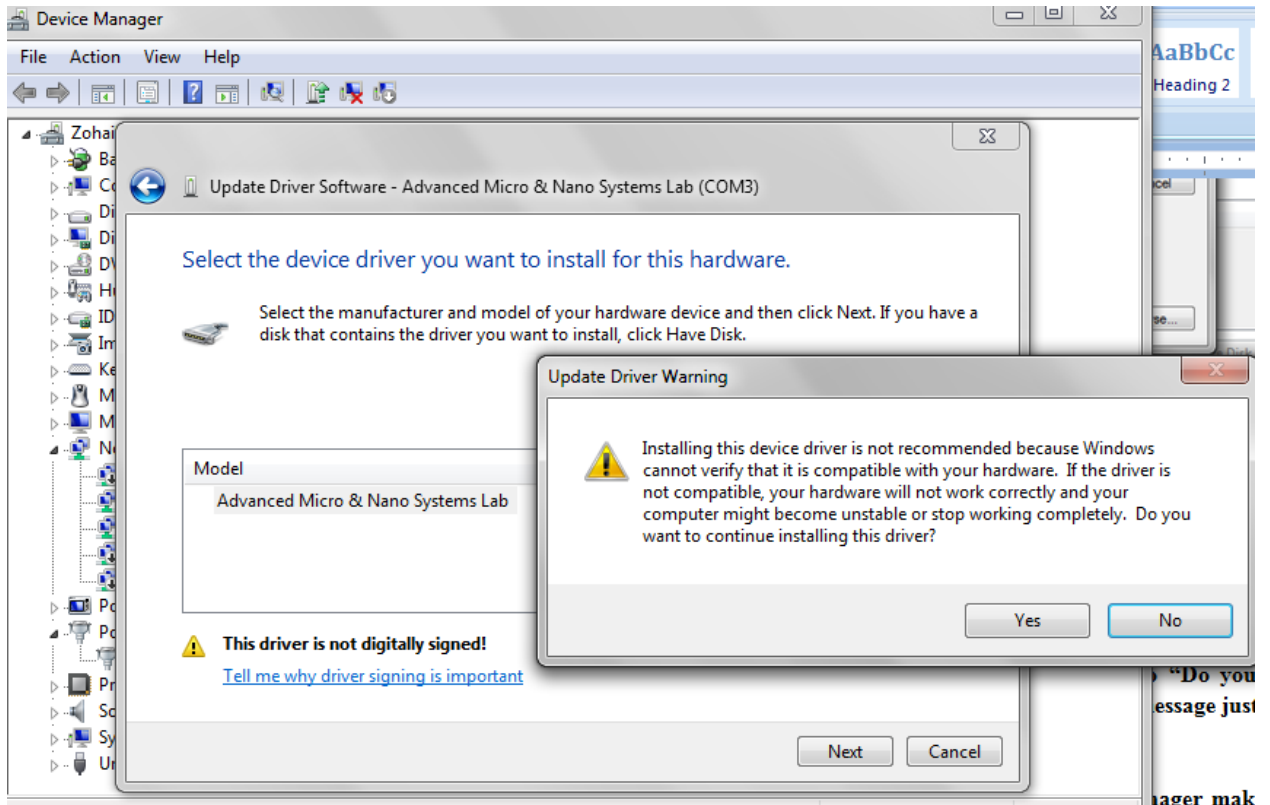




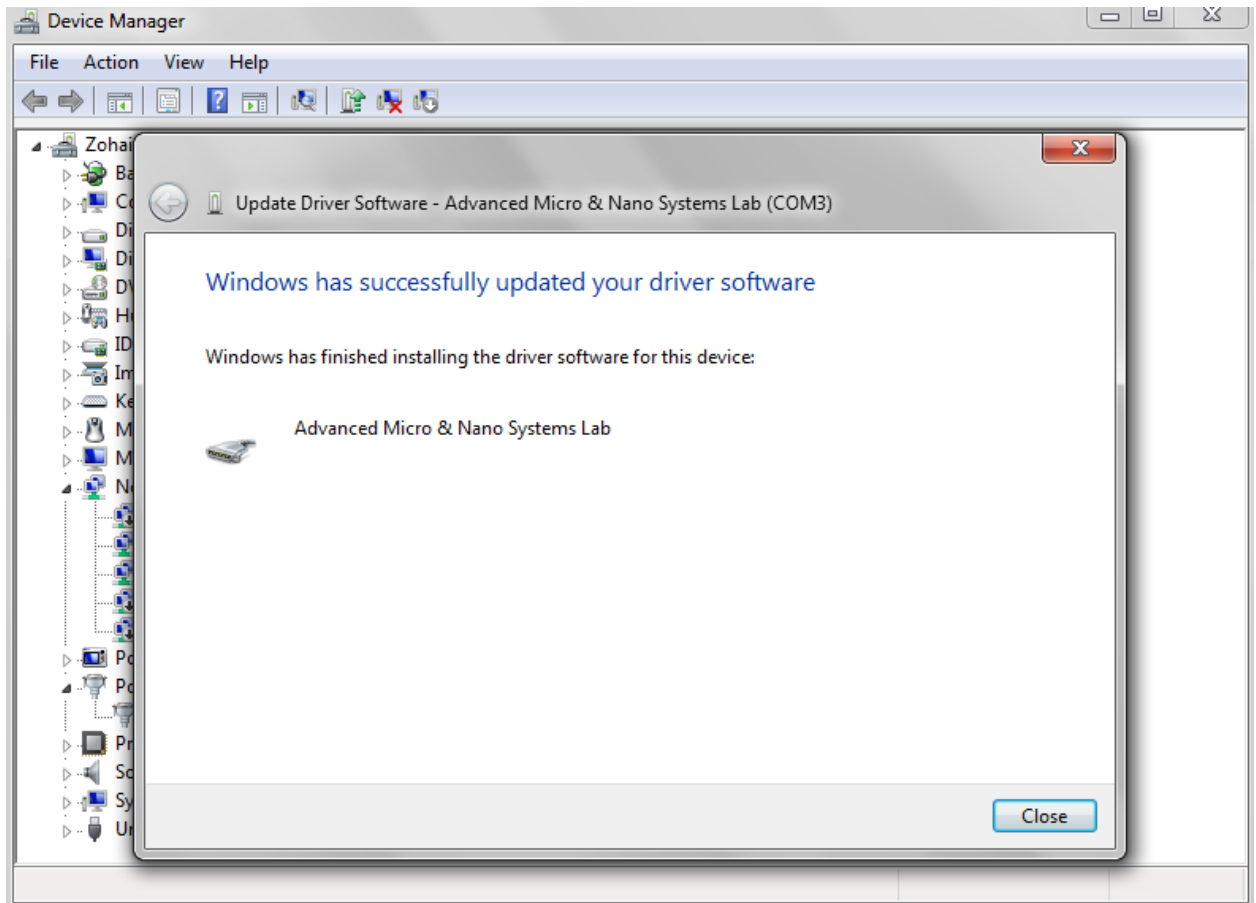
**10. Press “OK”**

**11. Press “Next”**

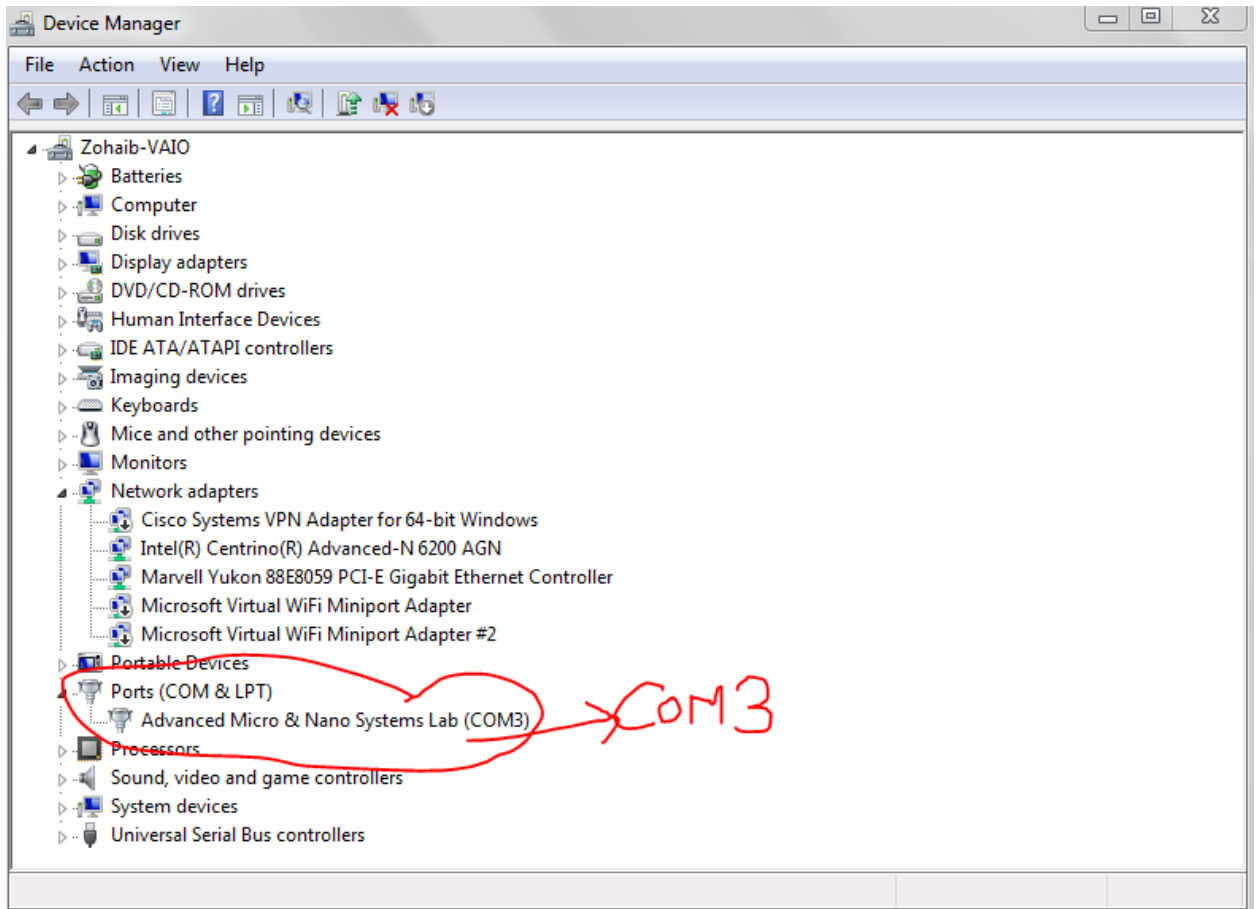
**12. A warning window would pop up, Proceed with a “YES” to “Do you want to continue installing driver?” or you may get any other warning message just ignore it and proceed anyway.**

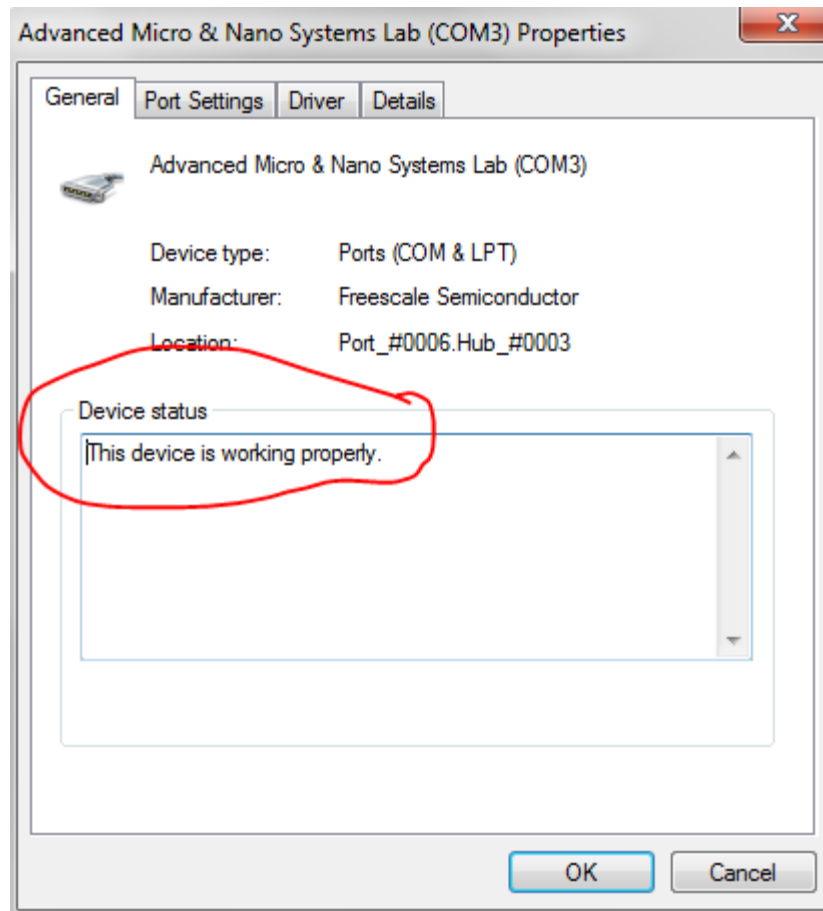


13. Continue with the installation.





14. To make sure the driver's properly installed, in the device manager make note of the COM port that is mentioned at the end of "Advanced Micro and Nano systems Lab (COM3 or 4 or whatever)" and double click it. In the [pop up window it must say "The device is working properly".





## Running the Simulink model

1. Once the driver is properly installed. Make sure that both the files “AeropendulumSoftRT.mdl” and “msfun\_realtime\_pacer.m” are in the same folder.

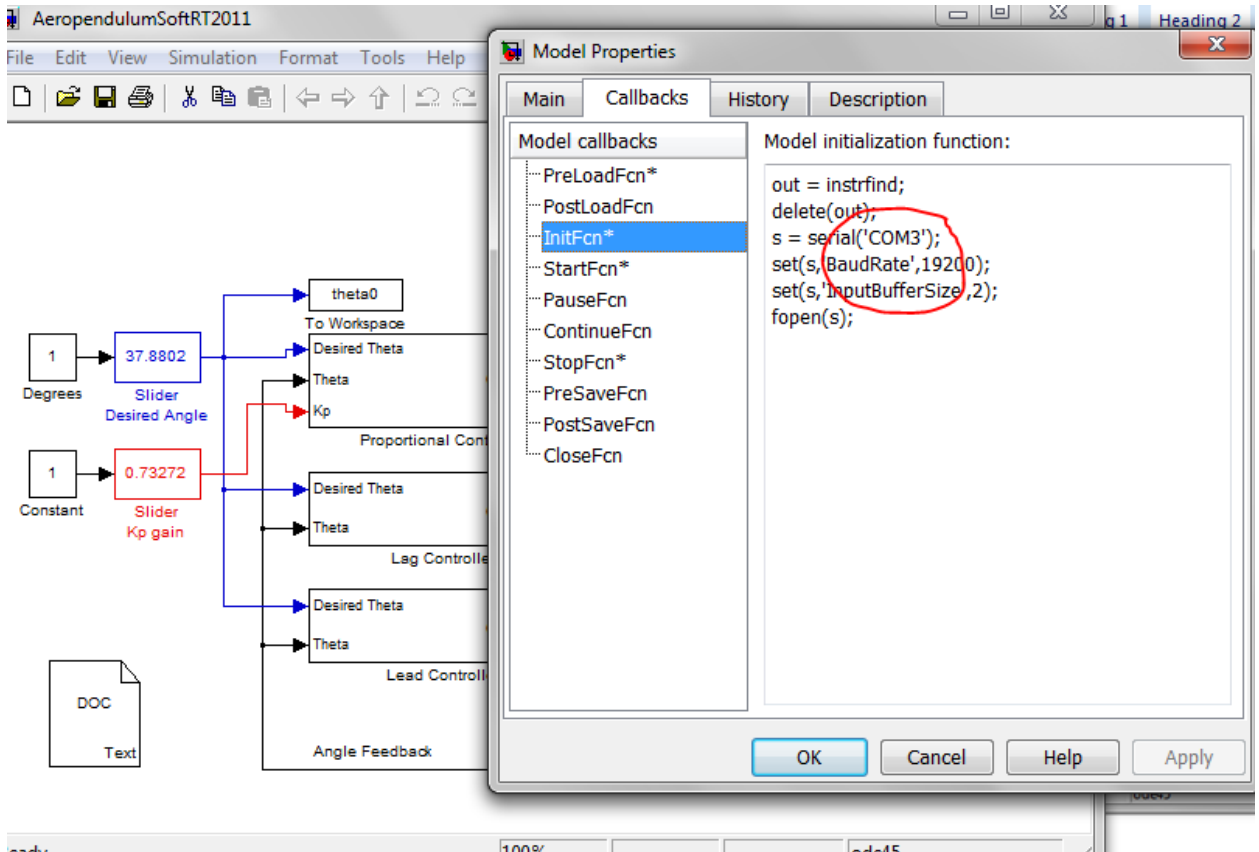
Name	Date modified	Type	Size
 AeropendulumSoftRT2011	2/1/2012 12:49 PM	Simulink Model	85 KB
 msfun_realtime_pacer	1/26/2012 11:11 AM	MATLAB Code	4 KB

2. Open “AeropendulumSoftRT.mdl”.
3. Go to file →Model properties →Callback →initFcn\* (highlight it).

The image shows a Simulink model window titled "AeropendulumSoftRT2011" and a "Model Properties" dialog box overlaid on it. The model window displays a control system diagram with two input sliders: "Slider Desired Angle" (value 37.8802) and "Slider Kp gain" (value 0.73272). The diagram includes blocks for "To Workspace", "Proportional Control", "Lag Control", "Lead Control", and "Angle Feedback". The "Model Properties" dialog box provides the following information:

- Model Information for: [Aeropendu](#)**
- Source File:** [Z:\Zohaib\UofA\TA\Aero test\AeropendulumSoftRT2011.mdl](#)
- Last Saved:** Wed Feb 01 12:49:48 2012
- Created On:** Mon Nov 02 16:08:06 2009
- Is Modified:** no
- Model Version:** 1.268

The dialog box has tabs for "Main", "Callbacks", "History", and "Description". At the bottom, there are buttons for "OK", "Cancel", "Help", and "Apply". The status bar at the bottom of the Simulink window shows "Ready", "100%", and "ode45".



4. You will find these parameters:

```

out = instrfind;
delete(out);
s = serial('COM4');
set(s,'BaudRate',19200);
set(s,'InputBufferSize',2);
fopen(s);

```

5. Just change the `s = serial('COM4')` to the whichever COM your pendulum is using for example:

if you pendulum is using COM3 make the following changes:  
`s = serial('COM3');`

6. The COM value can also be found by typing `INSTRFIND` in the command window in MATLAB.

7. Save the `.mdl` file and close it down. Restart it and click play in the Simulink model and your pendulum must response to the commands now. Make sure to keep the pendulum in a wide open area as it will start swinging.

