PyAEDT Script Launcher

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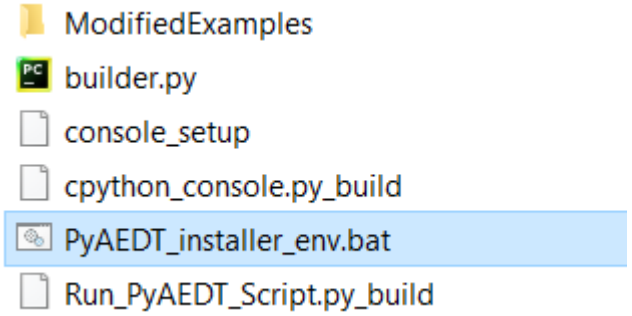
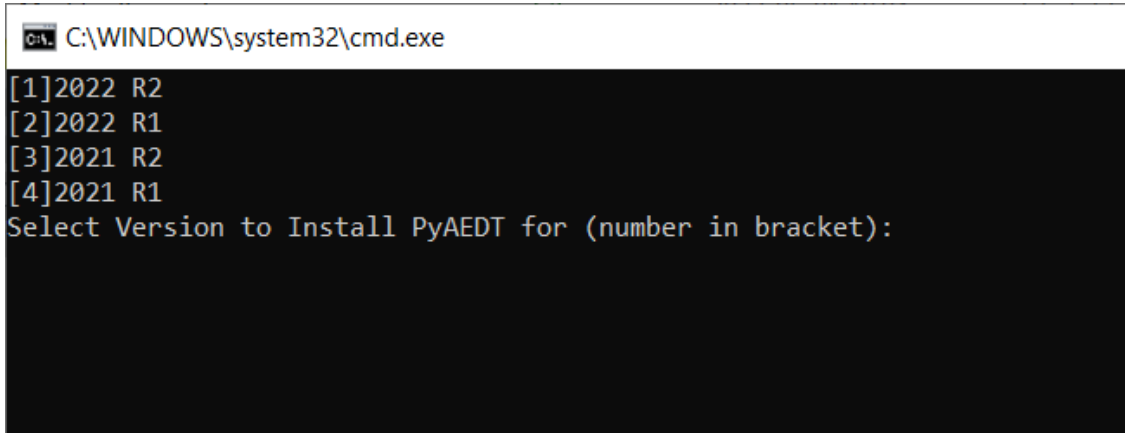
Installing

- Double-Clicking batch file launches installer
  - Command line interface, only requires 1 manual answer to choose a version to install for
  - By default uses bundled python (3.7)
    - Virtual environment created at %appdata% and various libraries installed
  - Can be pointed at particular python install using –p flag from a cmd line call

- Pulls files from online repositories for installation so it **might take a few minutes**





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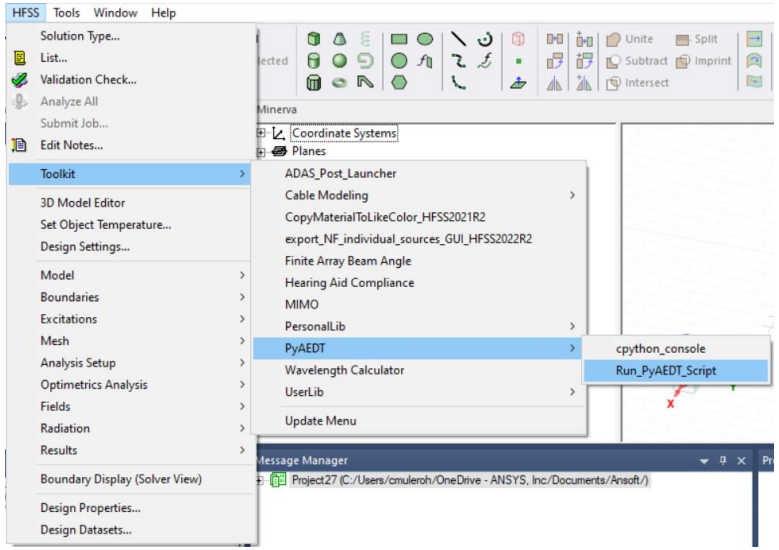
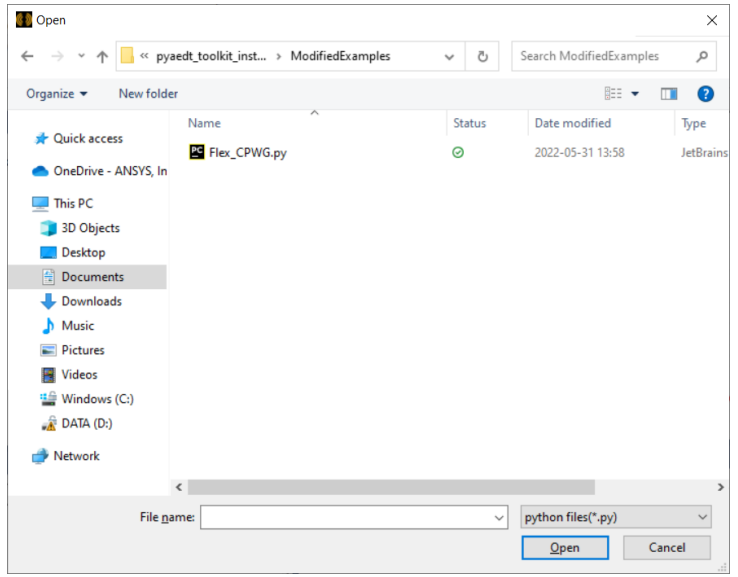
Features

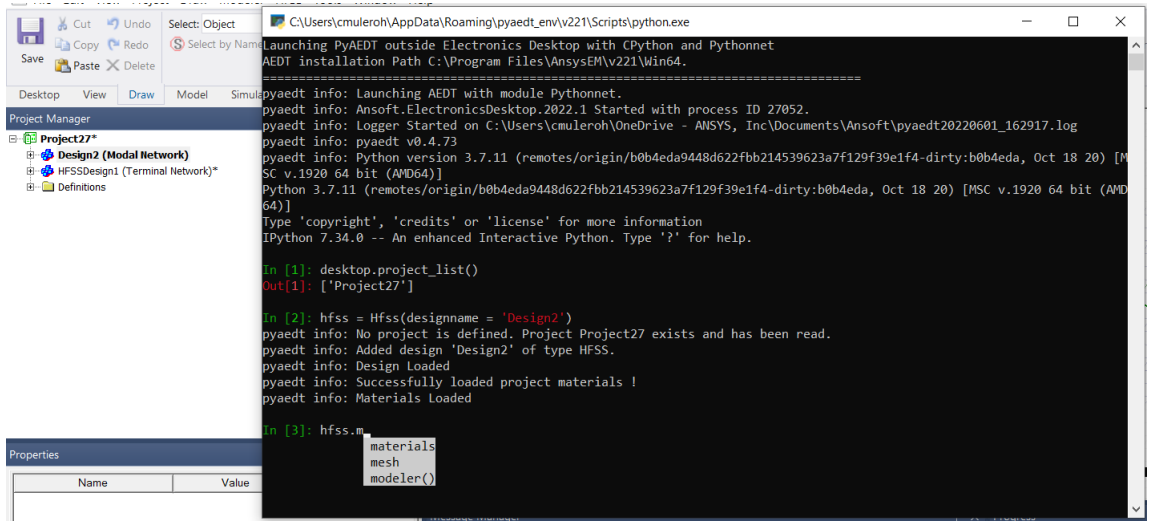
- Installed launcher can be used to directly launch scripts
  - Added code in PyAEDT scripts can allow referencing the launching AEDT instance

- CPython Console is an interactive console
  - similar to the IronPython Command window found in the tools menu
  - Includes tab-drop-down for possible auto-completes
  - Some **colors**

- Installed for all Design types







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Some details:

IronPython

```
Author: Carlos A. Mulero Hernandez
"""
import ...
clr.AddReference('System.Windows.Forms')
from System.Windows.Forms import OpenFileDialog

import os
import subprocess

oProject = oDesktop.GetActiveProject()
oDesign = oProject.GetActiveDesign()
#choose file to launch

file_dialog = OpenFileDialog()
file_dialog.InitialDirectory = oProject.GetPath()
file_dialog.Filter = "python files(*.py)|*.py"
ret = file_dialog.ShowDialog()
print "ret: "+repr(ret)
try:
    if ret == ret.OK:
        #launch file
        pyaedt_toolkit_dir = r'''C:\Program Files\AnsysEM\v221\Win64\syslib\Toolkits\HFSS\PyAEDT'''
        config_file = open(os.path.join(pyaedt_toolkit_dir,'python_interpreter.bat'),'r') #will fail with a file not fou
        python_exe = r'''C:\Users\cmuleroh\AppData\Roaming\pyaedt_env\v221\Scripts\python.exe'''
        print "python.exe: "+python_exe
        pyaedt_script = file_dialog.FileName
        print "pyaedt_script: "+str(pyaedt_script)
        command = [
            python_exe,
            pyaedt_script,
            str(oDesktop.GetProcessID()),
            oDesktop.GetVersion()[:6],  # "2022.1.0" is returned but this makes PyAEDT fail a float conversion
        ]
        subprocess.Popen(command)
    else:
        # exit()
        print "ret didn't pass the equivalence"
        print "ret:"+repr(ret)
except Exception as e:
    print e
```

Py/Ansys

```
############################################################################
# Launch AEDT in Graphical Mode
# ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
# This examples launches AEDT 2022R1 in graphical mode.
process_id = sys.argv[1]
version = sys.argv[2]
with Hfss(  specified_version= version,
            aedt_process_id = process_id,
            new_desktop_session=False,
            non_graphical=False,
        ) as hfss:
    hfss.change_material_override(True)
    hfss.change_automatically_use_causal_materials(True)
    hfss.create_open_region("100GHz")
    hfss.modeler.model_units = "mil"
    hfss.mesh.assign_initial_mesh_from_slider(applycurvilinear=True)


    ############################################################################
    # Input variables
    # ~~~~~~~~~~~~~~~
    # This examples creates a flex cable based on the following variables.
    total_length = 300
    theta = 120
    r = 100
    width = 3
    height = 0.1
    spacing = 1.53
```

- The launcher passes information about the current AEDT instance as command line arguments allowing the script to run **on the launching session**

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Previous Solutions and My Script

- **Manual Install:** Download Python, pip install PyAEDT, execute .py files
  - Seems to leave many wanting more guidance.
  - PyAEDT examples can run by just clicking on them
  - Cumbersome when user doesn't have all the permissions on their account

- **Existing Solution:** `pyaedt_with_ide.bat` is available at https://aedtdocs.pyansys.com/Resources/Installation.html and downloads PyAEDT
  - Uses Python3.7 that is already bundled with AEDT
  - Creates Virtual environment to isolate the installation with AEDT
  - Bypasses need for administrator privileges by writing to %APPDATA%
  - Single file installs PyAEDT and launches a scripting IDE
  - Launches Spyder or Jupyter which might be intimidating for some users
  - File association isn't made so user still needs to return to the .BAT for an IDE/cmd line to launch PyAEDT Scripts

- **My Script:** same installation as the above solution, but creates a launcher instead of requiring an IDE or command line interface
  - Creates a console that points the AEDT session that spawned it with a desktop variable pre-defined
  - Creates a Launcher with a GUI FilePicker that allows running PyAEDT Scripts using the Python3.7 virtual environment
  - One file does the installation
  - Easy to send a customer a script they can run from HFSS
  - File Association isn't made so user needs to use the Launcher to run PyAEDT scripts
  - Workaround still needed for customers who don't have admin rights

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