Wistron Auto Scheduling Program and Plug-in for Copy Constraint and Round Removing

H.Z. Chen, Tim YT Wu, Michael Wen, Lawrence Huang

Wistron Packing Design Dept.

摘要

本成果為針對Abaqus建構不同的客製化功能： 1. 利用程式語言編譯使用者界面，能夠協助使用者以圖形化的方式執行排程計算、預估結束時間、一鍵新增任務，變更任務順序、自動進行檔案分類資料夾管理等，並且新增任務標籤與線上資料庫連動，方便使用者專案管理。2. 利用Abaqus Plug-in與Python，讓使用者複製選取的組裝件到其他模型，能夠由程式判斷組裝件之間的拘束條件，同時複製有效拘束到目標模型，讓插件能完成模型的分件簡化/多件結合。3. 在CAD→CAE時，常有會有細碎特徵需要由CAE端進行處理，Abaqus本身已提供多種優秀的細碎特徵處理方式，但依舊需要人員手動點選處理。此圓角處理插件，使用者只需選取所有需要進行圓角移除的面，接著選擇欲處理的圓角模式，再執行後便會利用複製零件的方式處理所選取的圓角，方便使用者於處理完畢後能夠進行比對，不僅能夠節省工程師選取特徵所需要的時間，更能夠於下班時讓電腦自動處理，讓工程師能夠將時間使用在更有價值的任務上。

關鍵字：排程、插件、拘束條件、圓角、自動化

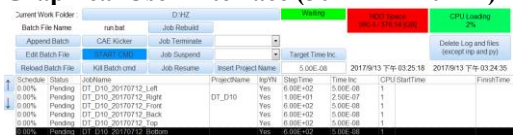
ABSTRACT

This study builds some customized functions for Abaqus that including：1. A GUI(graphical user interface) scheduling program which can help user to estimate finish time, create new simulation missions, rearrange projects, and file the files into different folder automatically. It allows user to connect with a clouding management database. 2. This Abaqus plug-in provides user a smart-copy operation. After clicking the source instances and target model, it will copy instances and its related and effective constraint to destination. It is a convenient way to divide big model or combine many assemble. 3. Abaqus has many modify buttons for different tiny features. However, engineer still spends much time in front of screen to fix these. Engineer can use this plug-in to fix tiny round features when they are off duty, so they will save more time to do other valuable problems. When it finishes, it has an original part and a modified part that can make a comparison.

Keywords: Scheduling、Plug-in、Constraint、Round、Automatic

Auto Scheduling Program : No abaqus license required , user friendly GUI

Graphical User Interface (30min → 10min)

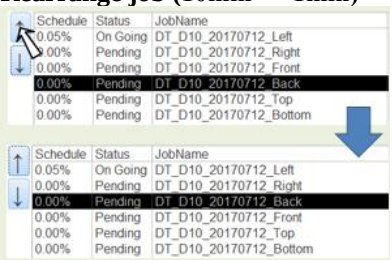


- User defined folder, CPU/disk information and multi-function with buttons.
- Estimate finish time for user to control their simulation plan.
- Show model's element amount, D.O.F., and percent change mass.
- Modify dt of mass scaling without opening INP file.

Sub-script (2min → 0min)

- Execute user defined python script after each job automatically.

Rearrange job (10min → 1min)

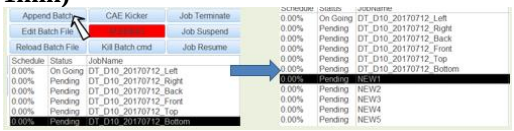


- Easy to rearrange job that was not started.

File management (5min → 0min)

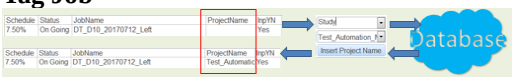
- Create the folder and move related files into it automatic when job finished or be terminated.
- Clear files automatic when the job is failed and user need to re-start.

Append Job List by Batch File (10min → 1min)



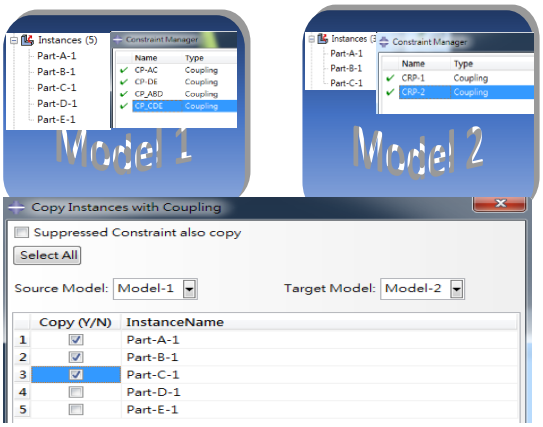
- Allow user to add the new job list at the end of current job list by batch file, then the software will continue the whole process until finish or stop by user.

Tag Job



- User can insert the job into the project list, and it can help administrator to understand the CAD resource distribution by data analysis.

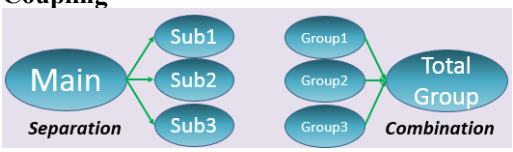
New Plug-in : Copy user defined instance and constraint to another model



- This plug-in will help user to copy instances with effective constraints from one model to another.

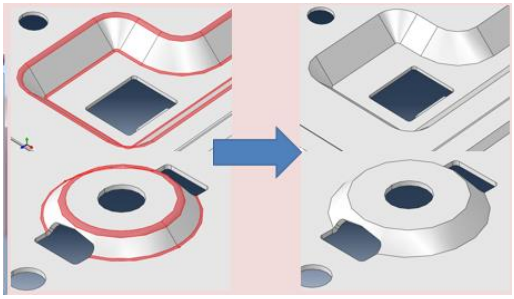
- In this case (ABCDE→ABC), it will only copy CP-AC completely, and select CP-AB from CP_ABD.

Application of "Copy Instance With Its Coupling"



- Separation : Analyst can separate several sub models from main model and without re-setting any constraint that main model have set.
- Combination : The giant project can be modeled efficiently by different analyst with several (independent) groups in the same time.

New Plug-in : Automatic Round Removing

Round Feature Removing Automatic

- Sometimes we need to remove small features that might increase calculation time manually.
- This plug-in allows user to define the "removing region" of round feature, and provides 4 algorithms as figure.
- User can select multi algorithms in one process, and plug-in will copy part between each algorithms.