Instructions

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December 20, 2017

- The following five files will be output from the interface (under `inputs/` directory):
  - `eweld.in`
  - `eweld_weld_parameters.in`
  - `eweld_boundary_condition.in`
  - `eweld_preheat_interpass_temperature.in`
  - `eweld_temperature_monitor.in`
  - `eweld_mesh_key.txt` (Not need to do now. This option will allow users to input their own meshes.)
- For automatic mesh, the following steps will be run:
  1. Check if `pass_coordinates.out` exists in `input` directory, if no, run `determine_passes_arc_v4.exe` to create `pass_coordinates.out` [1]. `eweld.in` will be input.
  2. Run `Automesh_v14.py` with SALOME to create `Mesh_3D.unv`
     (a) The files will be input:
     - `./inputs/eweld.in`
     - `./inputs/eweld_weld_parameters.in`
     - `./setting/Setting_arc_efficiency_dfault.in`

     (b) The files will be output:
     - `Mesh_3D.unv`
     - `model_dflux.for`
     - `model_step.in`

[1] On linux, compile `determine_passes_arc_v4.out`, to get `determine_passes_arc_v4.out` via `gfortran determine_passes_arc_v4.for -o determine_passes_arc_v4.out`

3. Run

   `python unv2calculix.py Mesh_3D.unv Model3d`

   `Model3d.inp` will be created.

4. Run

   `python Analysis_file_create.py`

   - The files will be input:
     * `./inputs/eweld.in`
     * `eweld_boundary_condition.in`
     * `eweld_preheat_interpass_temperature.in`
   - The files will be output:
     * `model_bc.in`
     * `model_ele4.in`
     * `model_ele6.in`
     * `model_ele8.in`
     * `model_film.in` (not now)
     * `model_group.in`
     * `model_ini_temperature.in`
     * `model_material.in`
     * `model_node.in`

5. Moving `model_dflux.for` to the Calculix directory and rename to `dflux.f`
6. Run `analysis.inp` with calculix