Folder and File Naming Scheme for Organizing pCT Data Directory

Bold and Underlined : Folder names

Bold and Italic : File names

(1) **Object** : folder containing all of the experimental/simulated data and reconstructed images associated with the object with this name.

- **(a)** **Experimental** : folder containing data and images generated from an experimental scan of the object.
  - **(i)** **Reference_Images** : folder containing reference images (xCT, RSP, etc) relevant to analysis/comparison of the data/images for this object and data type.
  - **(ii)** **MMDDYYYY** : folder containing data and reconstructed images corresponding to all experimental scans of the object performed on this date.
    - **(1)** **Run** : folder containing data and reconstructed images corresponding to the experimental scan of the object for this particular run # of this date.
      - **(a)** **Input** : folder containing raw data generated by scan of object from each gantry angle and transmitted by event builder.
        - **(i)** ***raw_xxx.bin*** : binary files containing trigger/tracker/energy detector data from event builder associated with gantry position "*xxx*" = {"*001*", "*002*", "*003*", $\cdots$}.
      - **(b)** **Output** : folder containing calibration and post processed data generated from analysis of raw data and used as input to image reconstruction.
        - **(i)** **MMDDYYYY** : folder containing the post processed "*projection_xxx.bin*" data generated on this date and the reconstructions using this data.
          - **(1)** ***calib.txt*** : text file containing calibration curve coefficients for tv corrected WEPL calibration.
          - **(2)** ***projection_xxx.bin*** : binary files containing tracker coordinates and WEPL data associated with gantry position "*xxx*" = {"*001*", "*002*", "*003*", $\cdots$} converted from raw data using tracker alignment, track reconstruction, and WEPL calibration routines and used as input to image reconstruction.
          - **(3)** **Reconstruction** : folder containing preprocessed data and reconstructed images generated using the "*projection_xxx.bin*" data along with reference images relevant to the object.
            - **(a)** **MMDDYYYY** : folder containing the preprocessed data generated on this date and the reconstructed images generated from this data.
              - **(i)** ***hull.txt*** : text file specifying hull in 1s/0s.
              - **(ii)** ***MLP.bin*** : binary file with MLP path data for each history entering hull.
              - **(iii)** ***x_0.txt*** : text file specifying voxel values of initial iterate.
              - **(iv)** ***WEPL.bin*** : binary file specifying WEPL value for each history entering hull.
              - **(v)** ***histories.bin*** : binary file specifying entry/exit coordinates/angles, bin number, gantry angle, and hull entry x/y/z voxel # for each history entering hull.
              - **(vi)** **Images** : folder containing reconstructed images generated using this preprocessed data.
                - **(1)** **MMDDYYYY** : folder containing the reconstructed images generated on this date using the preprocessed data above.
                  - **(a)** ***x_k.dcm*** : DICOM images of x after k iterations.
                  - **(b)** ***x_k.txt*** : text images of x after k iterations.
                  - **(c)** ***x_k.png*** : PNG images of x after k iterations.

(b) **Simulations** : folder containing data and images generated from a simulated scan of the object.

(i) **Reference_Images** : folder containing reference images (xCT, RSP, etc) relevant to analysis/comparison of the data/images for this object and data type.

(ii) **G_MMDDYYYY** : folder containing data and reconstructed images corresponding to all GEANT4 simulated scans of the object generated on this date.

(1) **Run** : folder containing data and reconstructed images corresponding to the GEANT4 simulated scan of the object for this particular run # of this date.

(a) **Input** : folder containing raw data files generated by simulated scan of object for each gantry angle.

(i) ***raw_xxx.bin*** : binary files containing trigger/tracker/energy detector data from event builder associated with gantry position "*xxx*" = {"*001*", "*002*", "*003*", $\cdots$}.

(b) **Output** : folder containing calibration and post processed data generated from analysis of raw data and used as input to image reconstruction.

(i) **MMDDYYYY** : folder containing the post processed "*projection_xxx.bin*" data generated on this date and the reconstructions using this data.

(1) ***calib.txt*** : text file containing calibration curve coefficients for tv corrected WEPL calibration.

(2) ***projection_xxx.bin*** : binary files containing tracker coordinates and WEPL data associated with gantry position "*xxx*" = {"*001*", "*002*", "*003*", $\cdots$} converted from raw data using WEPL calibration routine and used as input to image reconstruction.

(3) **Reconstruction** : folder containing preprocessed data and reconstructed images generated using the "*projection_xxx.bin*" data along with reference images relevant to the object.

(a) **MMDDYYYY** : folder containing the preprocessed data generated on this date and the reconstructed images generated from this data.

(i) ***hull.txt*** : text file specifying hull in 1s/0s.

(ii) ***MLP.bin*** : binary file with MLP path data for each history entering hull.

(iii) ***x_0.txt*** : text file specifying voxel values of initial iterate.

(iv) ***WEPL.bin*** : binary file specifying WEPL value for each history entering hull.

(v) ***histories.bin*** : binary file specifying entry/exit coordinates/angles, bin number, gantry angle, and hull entry x/y/z voxel # for each history entering hull.

(vi) **Images** : folder containing reconstructed images generated using this preprocessed data.

(1) **MMDDYYYY** : folder containing the reconstructed images generated on this date using the preprocessed data above.

(a) ***x_k.dcm*** : DICOM images of x after k iterations.

(b) ***x_k.txt*** : text images of x after k iterations.

(c) ***x_k.png*** : PNG images of x after k iterations.

(iii) **T_MMDDYYYY** : folder containing data and reconstructed images corresponding to all TOPAS simulated scans of the object generated on this date.

(1) **Run** : folder containing data and reconstructed images corresponding to the TOPAS simulated scan of the object for this particular run # of this date.

(a) **Input** : folder containing raw data files generated by simulated scan of object for each gantry angle.

(i) ***raw_xxx.bin*** : binary files containing trigger/tracker/energy detector data from event builder associated with gantry position "*xxx*" = {"*001*", "*002*", "*003*", $\cdots$}.

(b) **Output** : folder containing calibration and post processed data generated from analysis of raw data and used as input to image reconstruction.

(i) **MMDDYYYY** : folder containing the post processed "*projection_xxx.bin*" data generated on this date and the reconstructions using this data.

(1) ***calib.txt*** : text file containing calibration curve coefficients for tv corrected WEPL calibration.

(2) ***projection_xxx.bin*** : binary files containing tracker coordinates and WEPL data associated with gantry position "*xxx*" = {"*001*", "*002*", "*003*", $\cdots$} converted from raw data using WEPL calibration routine and used as input to image reconstruction.

(3) **Reconstruction** : folder containing preprocessed data and reconstructed images generated using the "*projection_xxx.bin*" data along with reference images relevant to the object.

(a) **MMDDYYYY** : folder containing the preprocessed data generated on this date and the reconstructed images generated from this data.

(i) ***hull.txt*** : text file specifying hull in 1s/0s.

(ii) ***MLP.bin*** : binary file with MLP path data for each history entering hull.

(iii) ***x_0.txt*** : text file specifying voxel values of initial iterate.

(iv) ***WEPL.bin*** : binary file specifying WEPL value for each history entering hull.

(v) ***histories.bin*** : binary file specifying entry/exit coordinates/angles, bin number, gantry angle, and hull entry x/y/z voxel # for each history entering hull.

(vi) **Images** : folder containing reconstructed images generated using this preprocessed data.

(1) **MMDDYYYY** : folder containing the reconstructed images generated on this date using the preprocessed data above.

(a) ***x_k.dcm*** : DICOM images of x after k iterations.

(b) ***x_k.txt*** : text images of x after k iterations.

(c) ***x_k.png*** : PNG images of x after k iterations.