nifti_writer_example

December 12, 2024

```python
[3]: from readii.io.writers.nifti_writer import NIFTIWriter
     from readii.io.writers.base_writer import BaseWriter
     from pathlib import Path
     import subprocess
     import SimpleITK as sitk
     import pandas as pd
     import uuid
     import random
     import sys
     from readii.utils import logger


     # copy this writer from the other notebook:
     class CSVWriter(BaseWriter): # noqa

       # The save method is the only method that needs to be implemented for the
     ↪subclasses of BaseWriter
       def save(self, data: list, **kwargs) -> Path:  # noqa
         output_path = self.resolve_path(**kwargs)
         with output_path.open('w') as f: # noqa
           pd.DataFrame(data).to_csv(f, index=False)
         return output_path
```

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[5]: ROOT_DIRECTORY = Path("TRASH", "writer_examples", "nifti_writer_examples")
     FILENAME_FORMAT = "PatientID-{PatientID}/Study-{Study}/
     ↪{Modality}_SeriesUID-{SeriesUID}"

     data_sets = []
     random.seed(42)   # Set random seed for reproducibility

     random_5d = lambda: random.randint(10000, 99999)

     for MODALITY in ["CT", "RTSTRUCT"]:
       data_sets.extend([
         {
           "image": sitk.Image(10, 10, 10, sitk.sitkInt16),
           "metadata": pd.DataFrame({"PatientID": ["JohnAdams"], "Study":
     ↪["Study001"]}),
```

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        "PatientID": "JohnAdams",
        "Study": "Study001",
        "Modality": MODALITY,
        "SeriesUID": random_5d(),
    },
    {
        "image": sitk.Image(20, 20, 20, sitk.sitkInt16),
        "metadata": pd.DataFrame({"PatientID": ["JaneDoe"], "Study":
↪["Study002"]}),
        "PatientID": "JaneDoe",
        "Study": "Study002",
        "Modality": MODALITY,
        "SeriesUID": random_5d(),
    },
    {
        "image": sitk.Image(30, 30, 30, sitk.sitkInt16),
        "metadata": pd.DataFrame({"PatientID": ["AliceSmith"], "Study":
↪["Study003"]}),
        "PatientID": "AliceSmith",
        "Study": "Study003",
        "Modality": MODALITY,
        "SeriesUID": random_5d(),
    }
])

# Create a writer with the specified root directory and filename format
with (
  NIFTIWriter(
    root_directory=ROOT_DIRECTORY,
    filename_format=f"{FILENAME_FORMAT}.nii.gz",
    overwrite=True
  ) as nifti_writer,
  CSVWriter(
    root_directory=ROOT_DIRECTORY,
    filename_format=f"{FILENAME_FORMAT}_metadata.csv"
  ) as metadata_writer
):
  # Iterate over the data sets and save them
  for data_set in data_sets:

    # The actual data being saved is image or data, but the rest of the kwargs
↪are
    # only for resolving the filename
    try:
      nifti_writer.save(
        image=data_set["image"],
        PatientID=data_set["PatientID"],
```

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                Study=data_set["Study"],
                Modality=data_set["Modality"],
                SeriesUID=data_set["SeriesUID"]
            )
        metadata_writer.save(
            data=data_set["metadata"],
            PatientID=data_set["PatientID"],
            Study=data_set["Study"],
            Modality=data_set["Modality"],
            SeriesUID=data_set["SeriesUID"]
        )
    except FileExistsError as e:
        logger.exception(f"Error saving data set: {e}")
        sys.exit(1)

output = subprocess.check_output(["tree", "-nF", ROOT_DIRECTORY])
print(output.decode("utf-8"))
```

```
TRASH/writer_examples/nifti_writer_examples/
  PatientID-AliceSmith/
    Study-Study003/
        CT_SeriesUID-13278.nii.gz
        CT_SeriesUID-13278_metadata.csv
        RTSTRUCT_SeriesUID-39256.nii.gz
        RTSTRUCT_SeriesUID-39256_metadata.csv
  PatientID-JaneDoe/
    Study-Study002/
        CT_SeriesUID-24592.nii.gz
        CT_SeriesUID-24592_metadata.csv
        RTSTRUCT_SeriesUID-42098.nii.gz
        RTSTRUCT_SeriesUID-42098_metadata.csv
  PatientID-JohnAdams/
    Study-Study001/
        CT_SeriesUID-93810.nii.gz
        CT_SeriesUID-93810_metadata.csv
        RTSTRUCT_SeriesUID-46048.nii.gz
        RTSTRUCT_SeriesUID-46048_metadata.csv

7 directories, 12 files
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