SPRAWOZDANIE

Zajęcia: Informatyczne Systemy Medyczne

Prowadzący: prof. dr hab. Vasyl Martsenyuk

Laboratorium: 4

Data: 18.11.2020

Temat: „Użycie standardu obrazów medycznych DICOM”

Wariant: 3

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2 semestr,

Gr. B

https://github.com/jacekaGIT/ATH-1g

1. Polecenia:

Używając kody źródłowe ImageJ opracować przeglądarkę skompresowanych plików DICOM według wariantu.

References

Standard https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3354356/
Biblioteka obrazów https://www.dicomlibrary.com/

Utilities dcm4che:
Strona https://www.dcm4che.org/
Download https://sourceforge.net/projects/dcm4che/files/dcm4che3/

Examples:
dcm2xml - Convert DICOM to xml
dcm2dcm –jpll img.dcm jpll.dcm - Compress DICOM image in.dcm to jpll.dcm with JPEG Lossless, Non-Hierarchical, First-Order Prediction
dcm2dcm jpll.dcm out.dcm - Decompress DICOM image jpll.dcm to out.dcm with Explicit VR Little Endian Transfer Syntax

ImageJ:
Strona projektu imagej.net
Strona developera https://imagej.net/Develop
Kody źródłoowe https://imagej.net/Source_code

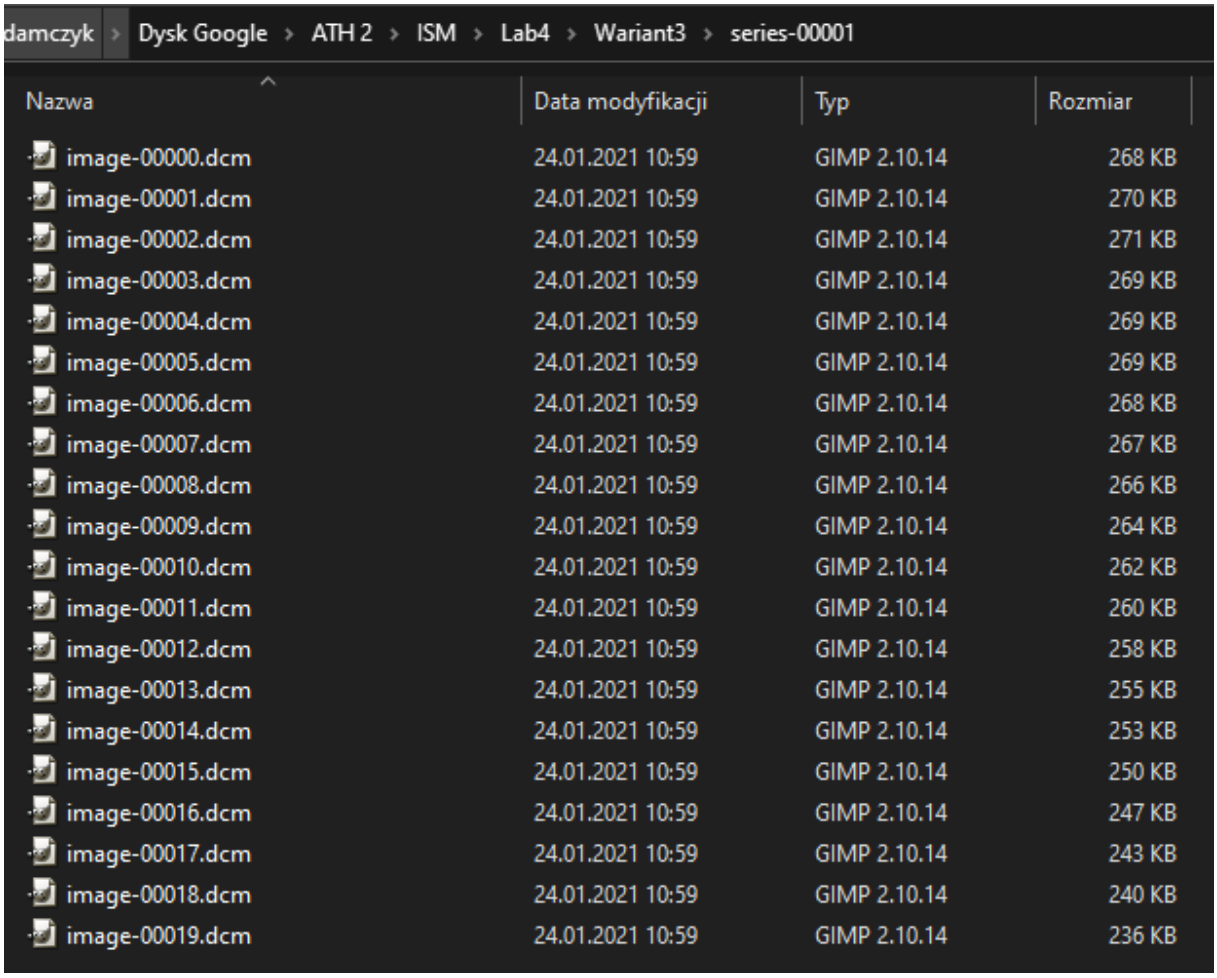
Wersja skryptowa ImageJ:
https://ij.imjoy.io/
Dokumentacja developera https://imagej.nih.gov/ij/developer/index.html

2. Wprowadzane dane:

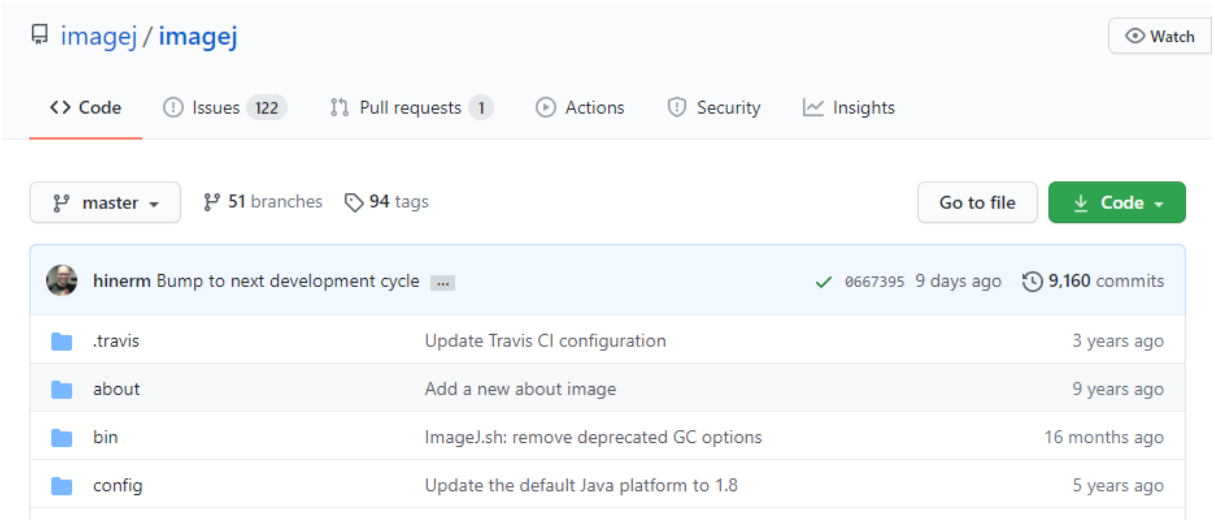
- Komedy z konsoli
- Obrazy *.dcm
- ……..

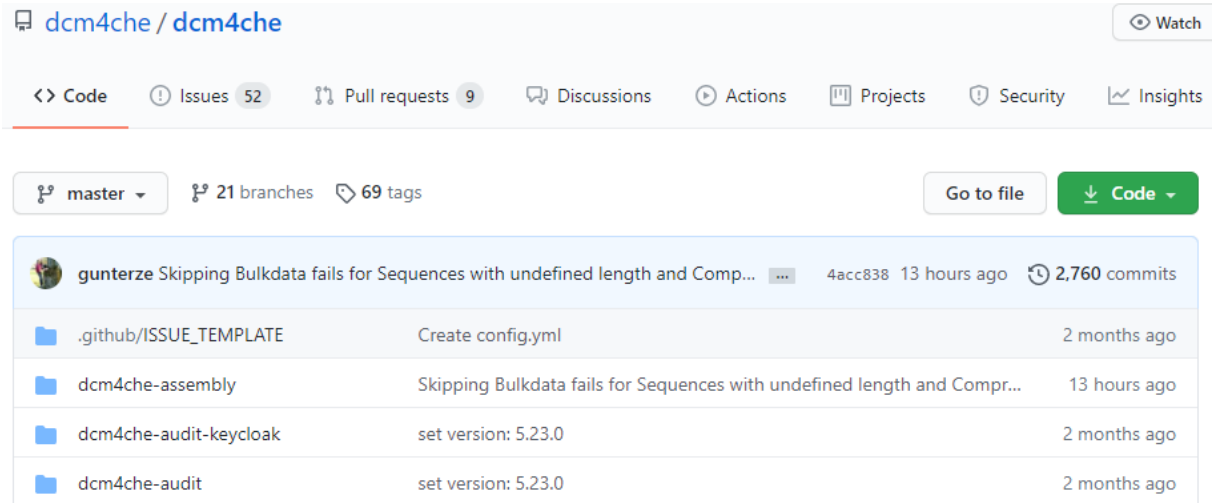
3. Komendy, wyniki działania, zrzuty ekranu:

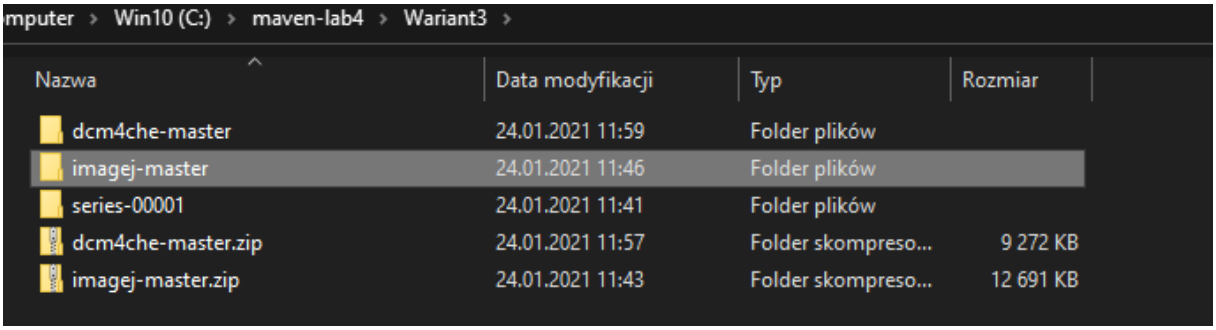
3.1. Pobranie obrazów, wypakowanie.



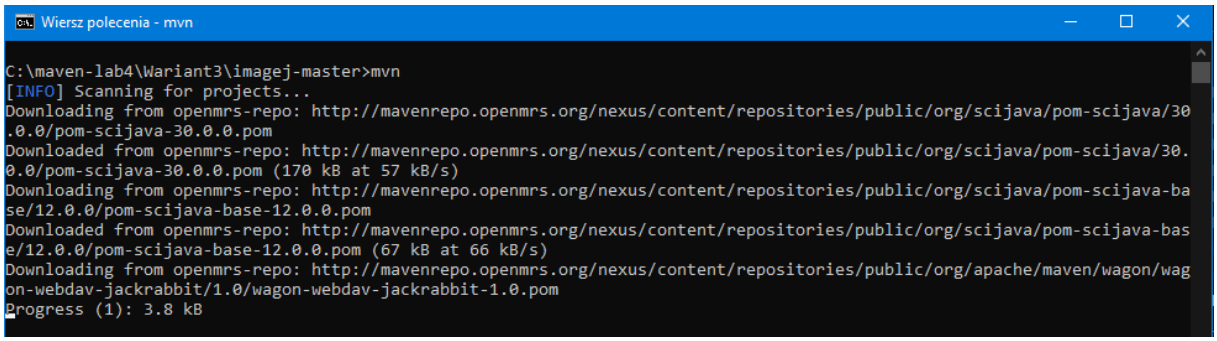
3.2. Pobranie repozytoriów z GIT, wypakowanie.

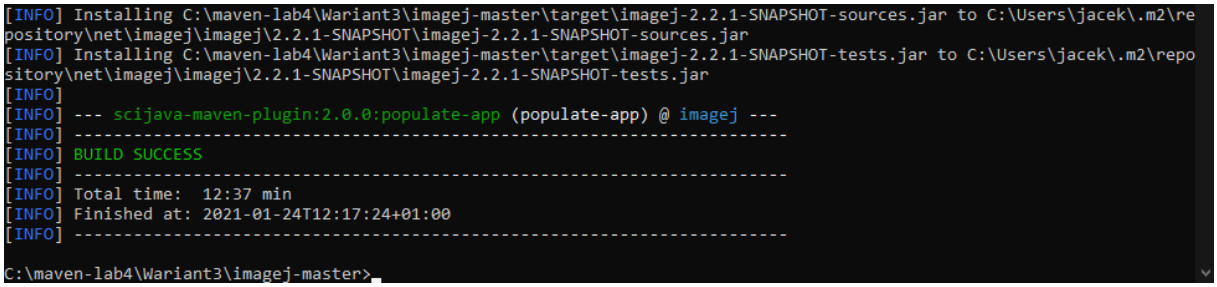




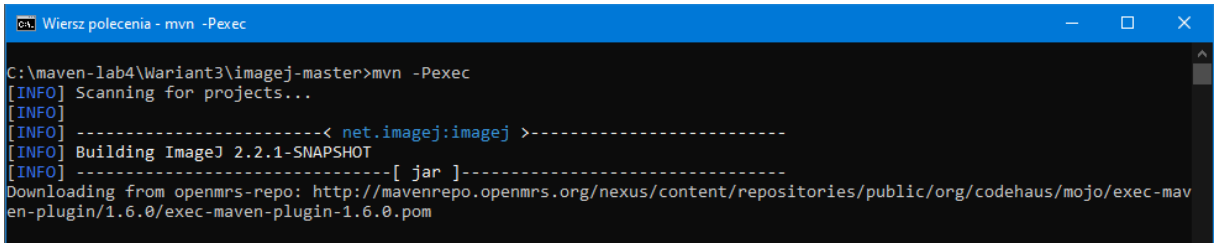


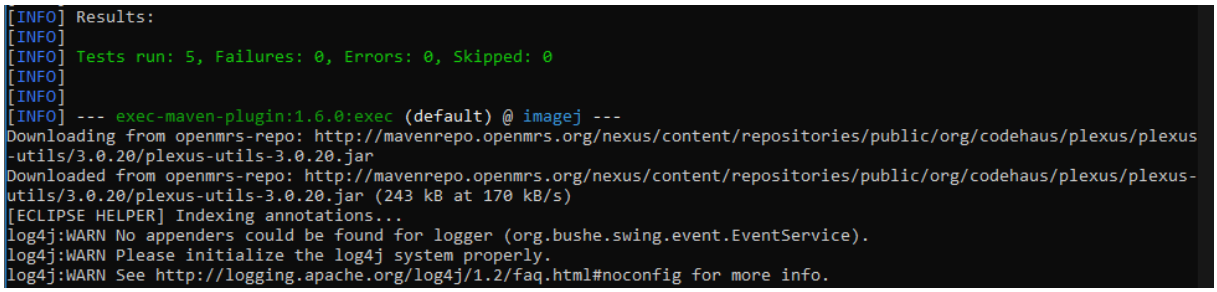
3.3. Instalacja ImageJ.

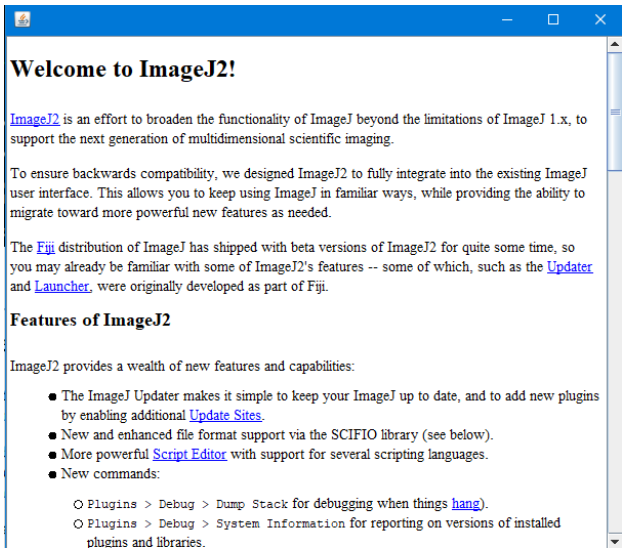


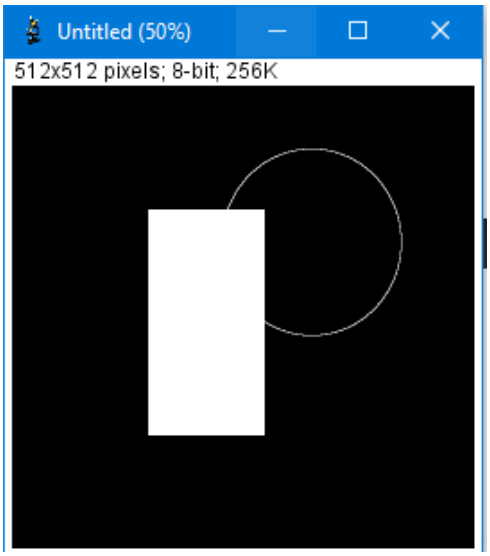


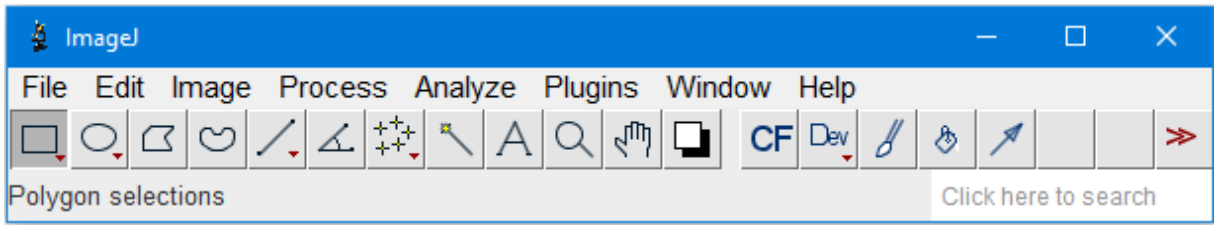
3.4. Uruchomienie ImageJ.



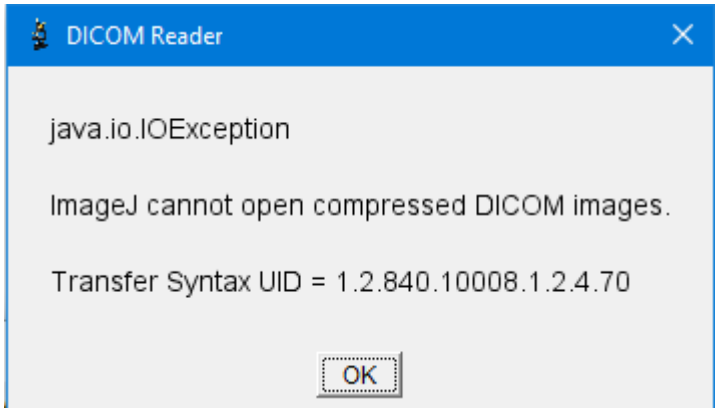








Nie odczytuje skompresowanych plików DICOM



3.5. Instalacja dcm4che.

mvn install

```
[INFO] dcm4che-tool-xml2dcm ............................... SUCCESS [  0.247 s]
[INFO] dcm4che-tool-xml2hl7 ............................... SUCCESS [  0.173 s]
[INFO] dcm4che-assembly ................................... SUCCESS [02:47 min]
[INFO] dcm4che-jboss-modules .............................. SUCCESS [ 54.616 s]
[INFO] dcm4che-camel ...................................... SUCCESS [ 18.565 s]
[INFO] ------------------------------------------------------------------------
[INFO] BUILD SUCCESS
[INFO] ------------------------------------------------------------------------
[INFO] Total time:  16:19 min
[INFO] Finished at: 2021-01-24T12:59:34+01:00
[INFO] ------------------------------------------------------------------------
```

Po zamianie formatu za pomocą dcm2jpg.bat

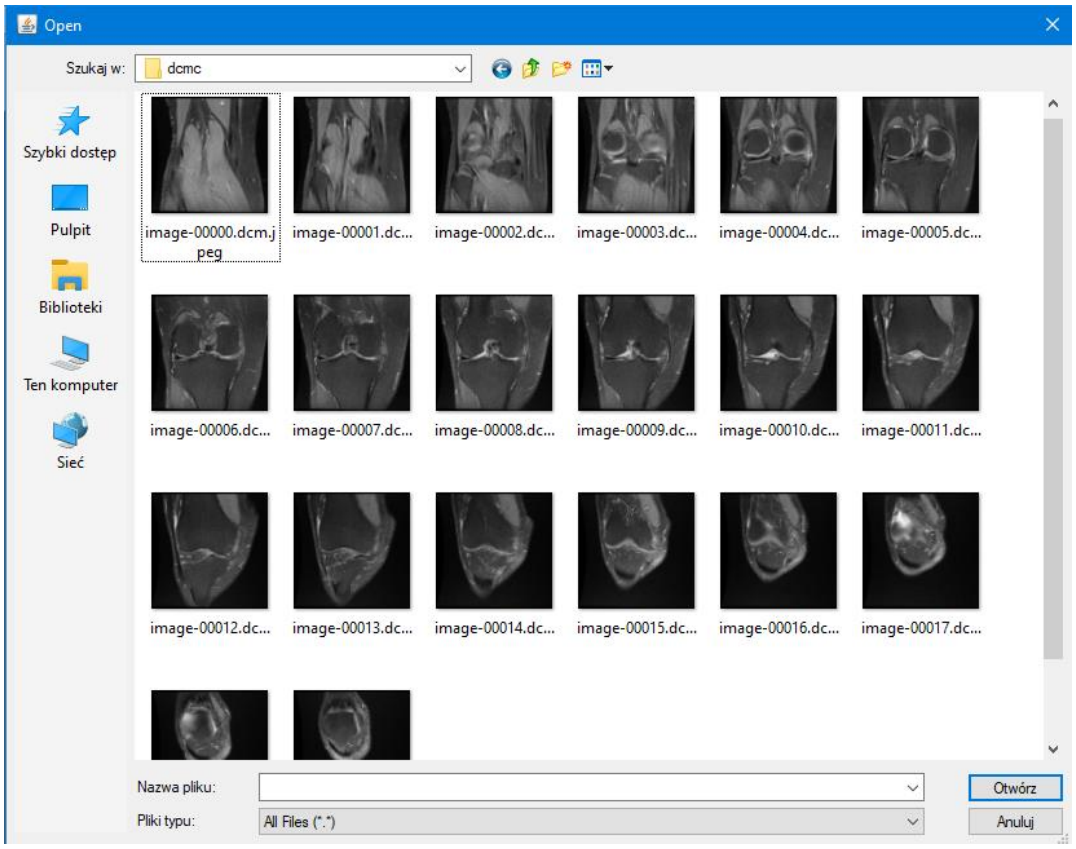
Jest w:

C:\maven-lab4\Wariant3\dcm4che-master\dcm4che-assembly\target\dcm4che-5.23.0-bin\dcm4che-5.23.0\bin>

Zamiana formatu wszystkich plików

```
C:\maven-lab4\Wariant3\dcm4che-master\dcm4che-assembly\target\dcm4che-5.23.0-bin\dcm4che-5.23.0\bin>cd dcmc

C:\maven-lab4\Wariant3\dcm4che-master\dcm4che-assembly\target\dcm4che-5.23.0-bin\dcm4che-5.23.0\bin\dcmc>dir
 Volume in drive C is Win10
 Volume Serial Number is 4A82-ABBB

 Directory of C:\maven-lab4\Wariant3\dcm4che-master\dcm4che-assembly\target\dcm4che-5.23.0-bin\dcm4che-5.23.0\bin\dcmc

24.01.2021  13:27    <DIR>          .
24.01.2021  13:27    <DIR>          ..
24.01.2021  13:27            31 610 image-00000.dcm.jpeg
24.01.2021  13:27            33 651 image-00001.dcm.jpeg
24.01.2021  13:27            35 206 image-00002.dcm.jpeg
24.01.2021  13:27            37 348 image-00003.dcm.jpeg
24.01.2021  13:27            36 462 image-00004.dcm.jpeg
24.01.2021  13:27            34 877 image-00005.dcm.jpeg
24.01.2021  13:27            34 683 image-00006.dcm.jpeg
24.01.2021  13:27            33 740 image-00007.dcm.jpeg
24.01.2021  13:27            34 632 image-00008.dcm.jpeg
24.01.2021  13:27            33 625 image-00009.dcm.jpeg
24.01.2021  13:27            32 204 image-00010.dcm.jpeg
24.01.2021  13:27            32 436 image-00011.dcm.jpeg
24.01.2021  13:27            28 457 image-00012.dcm.jpeg
24.01.2021  13:27            26 834 image-00013.dcm.jpeg
24.01.2021  13:27            26 020 image-00014.dcm.jpeg
24.01.2021  13:27            27 684 image-00015.dcm.jpeg
24.01.2021  13:27            24 378 image-00016.dcm.jpeg
24.01.2021  13:27            24 637 image-00017.dcm.jpeg
24.01.2021  13:27            23 780 image-00018.dcm.jpeg
24.01.2021  13:27            24 191 image-00019.dcm.jpeg
              20 File(s)        616 455 bytes
               2 Dir(s)  48 476 753 920 bytes free

C:\maven-lab4\Wariant3\dcm4che-master\dcm4che-assembly\target\dcm4che-5.23.0-bin\dcm4che-5.23.0\bin\dcmc>
```

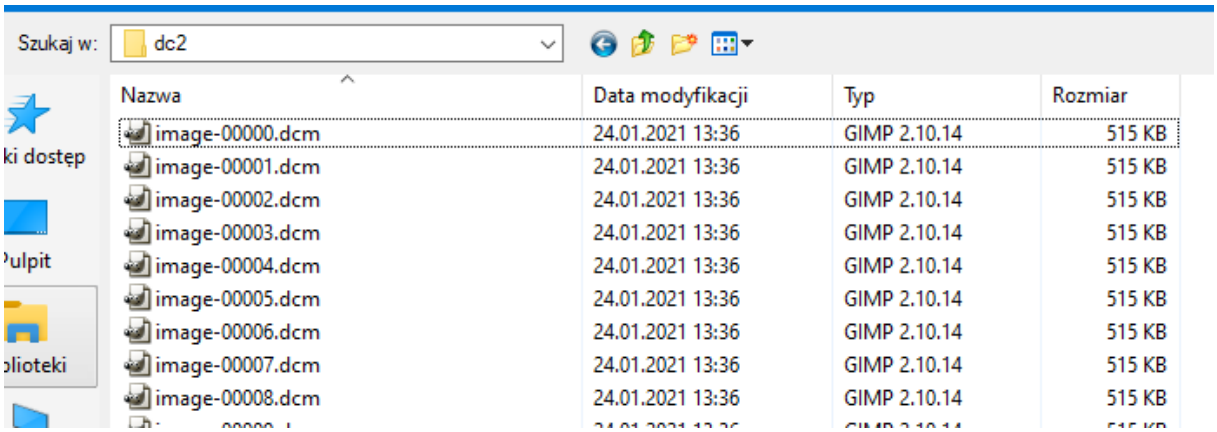
Teraz przeglądarka widzi pliki *.jpeg prawidłowo. (źle utworzone rozszerzenie – ale to nie przeszkadza przy odczycie plików).



Plik wczytany do ImageJ

Zamiana na *.dcm niespompresowany (za pomocą ddcm2dcm)

```
 Directory of C:\maven-lab4\Wariant3\dcm4che-master\dcm4che-assembly\target\dcm4che-5.23.0-bin\dcm4che-5.23.0\bin\dc2

24.01.2021  13:36    <DIR>          .
24.01.2021  13:36    <DIR>          ..
24.01.2021  13:36           526 576 image-00000.dcm
24.01.2021  13:36           526 580 image-00001.dcm
24.01.2021  13:36           526 578 image-00002.dcm
24.01.2021  13:36           526 578 image-00003.dcm
24.01.2021  13:36           526 578 image-00004.dcm
24.01.2021  13:36           526 576 image-00005.dcm
24.01.2021  13:36           526 576 image-00006.dcm
24.01.2021  13:36           526 574 image-00007.dcm
24.01.2021  13:36           526 578 image-00008.dcm
24.01.2021  13:36           526 576 image-00009.dcm
24.01.2021  13:36           526 576 image-00010.dcm
24.01.2021  13:36           526 576 image-00011.dcm
24.01.2021  13:36           526 580 image-00012.dcm
24.01.2021  13:36           526 578 image-00013.dcm
24.01.2021  13:36           526 578 image-00014.dcm
24.01.2021  13:36           526 578 image-00015.dcm
24.01.2021  13:36           526 578 image-00016.dcm
24.01.2021  13:36           526 576 image-00017.dcm
24.01.2021  13:36           526 576 image-00018.dcm
24.01.2021  13:36           526 576 image-00019.dcm
              20 File(s)     10 531 542 bytes
               2 Dir(s)  48 469 540 864 bytes free

C:\maven-lab4\Wariant3\dcm4che-master\dcm4che-assembly\target\dcm4che-5.23.0-bin\dcm4che-5.23.0\bin\dc2>
```



Przeglądarka widzi pliki *.dcm.

4. Wnioski:

Przeglądanie skompresowanych plików *.dcm możliwe jest po ich przekształceniu do formatów akceptowalnych przez ImageJ. Można to zrobić poleceniami wsadowymi z „dcm4che”. „dcm2dcm.bat” przekształca na format *.dcm nieskompresowany a „dcm2jpg.bat” na format *.jpeg.

End Lab