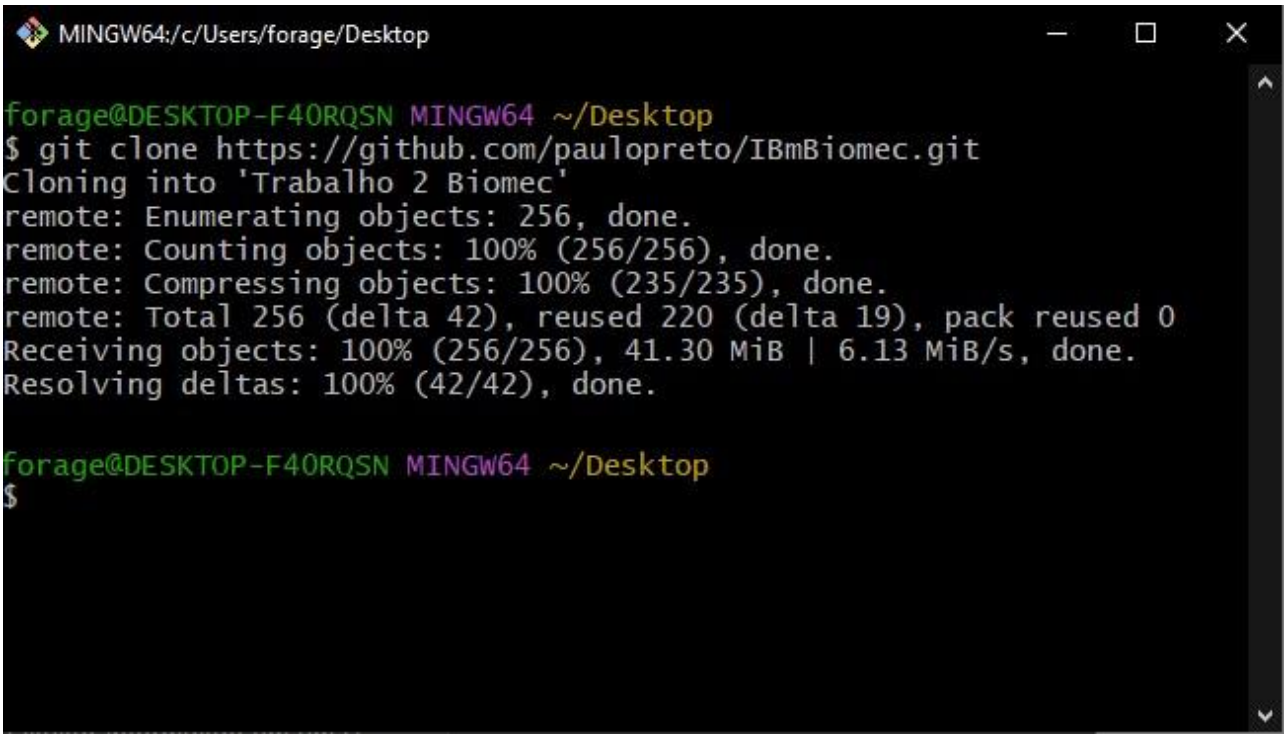
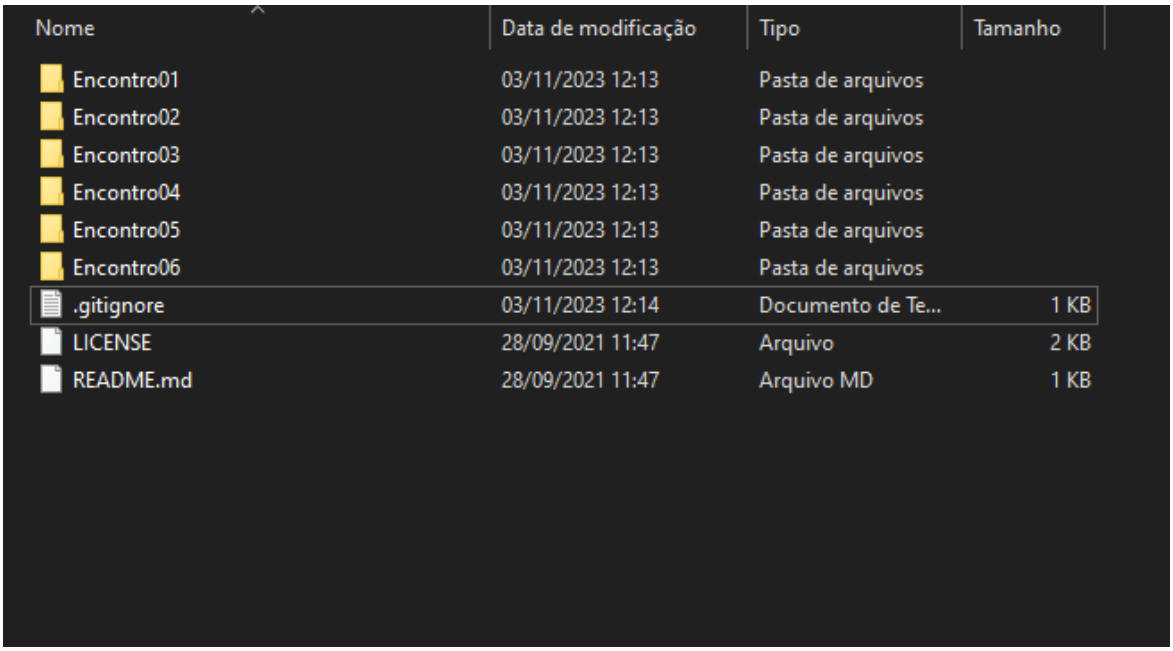
Explicação passo a passo para execução do trabalho

Após o download do Git e python e a criação de um repositório no Github, foi aberta uma nova pasta vazia para a cópia dos arquivos do Github do professor, executando o seguinte comando no Git:

git clone https://github.com/paulopreto/IBmBiomec.git



Após a execução do comando, os arquivos do repositório foram copiados para a pasta.



Em seguida foram necessárias algumas instalações no CMD para possibilitar a execução do código que irá gerar a reconstrução 3D, como: **Pandas, matplotlib, numpy e scipy.**

```
Microsoft Windows [versão 10.0.17763.2183]
(c) 2018 Microsoft Corporation. Todos os direitos reservados.

C:\Users\Usuario>pip install pandas
Collecting pandas
  Downloading pandas-1.3.3-cp39-cp39-win_amd64.whl (10.2 MB)
     |████████████████████████████████| 10.2 MB 6.4 MB/s
Collecting numpy>=1.17.3
  Downloading numpy-1.21.2-cp39-cp39-win_amd64.whl (14.0 MB)
     |████████████████████████████████| 14.0 MB 6.8 MB/s
Collecting pytz>=2017.3
  Downloading pytz-2021.1-py2.py3-none-any.whl (510 kB)
     |████████████████████████████████| 510 kB 2.2 MB/s
Collecting python-dateutil>=2.7.3
  Downloading python_dateutil-2.8.2-py2.py3-none-any.whl (247 kB)
     |████████████████████████████████| 247 kB 6.8 MB/s
Collecting six>=1.5
  Downloading six-1.16.0-py2.py3-none-any.whl (11 kB)
Installing collected packages: six, pytz, python-dateutil, numpy, pandas
Successfully installed numpy-1.21.2 pandas-1.3.3 python-dateutil-2.8.2 pytz-2021.1 six-1.16.0
```

Comando: pip install pandas

```
C:\Users\Usuario>pip install matplotlib
Collecting matplotlib
  Downloading matplotlib-3.4.3-cp39-cp39-win_amd64.whl (7.1 MB)
     |████████████████████████████████| 7.1 MB 3.3 MB/s
Collecting pyparsing>=2.2.1
  Downloading pyparsing-2.4.7-py2.py3-none-any.whl (67 kB)
     |████████████████████████████████| 67 kB 1.8 MB/s
Requirement already satisfied: python-dateutil>=2.7 in c:\users\usuario\appdata\local\programs\python\python39\lib\site-packages (from matplotlib) (2.8.2)
Collecting kiwisolver>=1.0.1
  Downloading kiwisolver-1.3.2-cp39-cp39-win_amd64.whl (52 kB)
     |████████████████████████████████| 52 kB 175 kB/s
Requirement already satisfied: numpy>=1.16 in c:\users\usuario\appdata\local\programs\python\python39\lib\site-packages (from matplotlib) (1.21.2)
Collecting pillow>=6.2.0
  Downloading Pillow-8.3.2-cp39-cp39-win_amd64.whl (3.2 MB)
     |████████████████████████████████| 3.2 MB 6.8 MB/s
Collecting cycler>=0.10
  Downloading cycler-0.10.0-py2.py3-none-any.whl (6.5 kB)
Requirement already satisfied: six in c:\users\usuario\appdata\local\programs\python\python39\lib\site-packages (from cycler>=0.10->matplotlib) (1.16.0)
Installing collected packages: pyparsing, pillow, kiwisolver, cycler, matplotlib
Successfully installed cycler-0.10.0 kiwisolver-1.3.2 matplotlib-3.4.3 pillow-8.3.2 pyparsing-2.4.7
```


Comando: pip install matplotlib

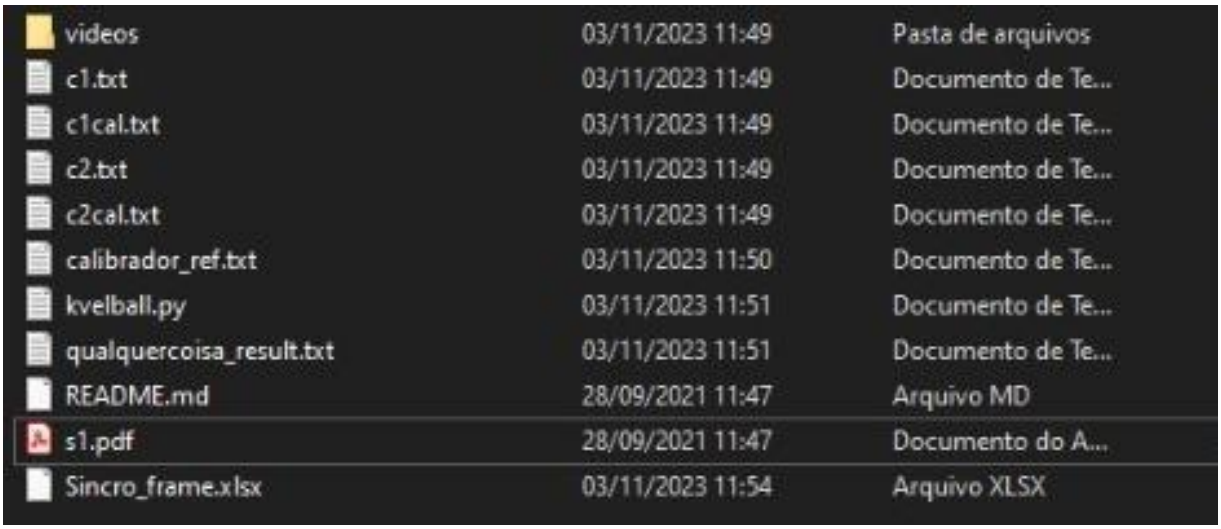
```
C:\Users\Usuario>pip install numpy
Requirement already satisfied: numpy in c:\users\usuario\appdata\local\programs\python\python39\lib\site-packages (1.21.2)
WARNING: You are using pip version 21.2.3; however, version 21.2.4 is available.
You should consider upgrading via the 'C:\Users\Usuario\AppData\Local\Programs\Python\Python39\python.exe -m pip install --upgrade pip' command.
```

Comando: pip install numpy

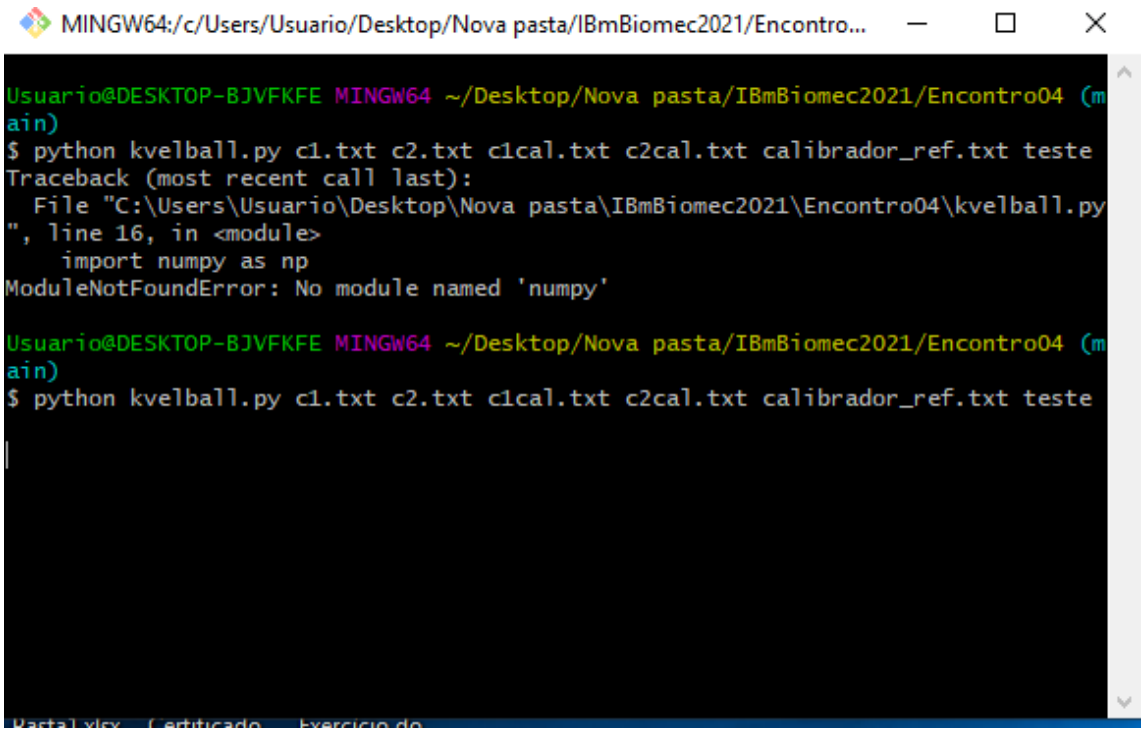
```
C:\Users\Usuario>pip install scipy
Collecting scipy
  Downloading scipy-1.7.1-cp39-cp39-win_amd64.whl (33.8 MB)
     |████████████████████████████████| 33.8 MB 2.2 MB/s
Requirement already satisfied: numpy<1.23.0,>=1.16.5 in c:\users\usuario\appdata\local\programs\python\python39\lib\site-packages (from scipy) (1.21.2)
Installing collected packages: scipy
Successfully installed scipy-1.7.1
```

Comando: pip install scipy

Feitos os downloads com sucesso, voltamos para a pasta com os arquivos copiados do Github, selecionando a pasta “Encontro 4”, onde se encontra o código (kveball.py) para a execução da reconstrução 3D.



Clicando no espaço em branco da pasta com o direito do mouse e selecionando “git bash here”, abrirá uma nova janela do Git, onde será executado o seguinte comando:



Comando: python kvelball.py c1.txt c2.txt c1cal.txt c2cal.txt calibrador_ref.txt teste

Executando este comando, será gerado um gráfico e reconstrução do chute em 3D.