

```
In [1]: import sys
sys.path.append("../")
from ortho_lib import *
import pandas as pd
import os
```

```
In [2]: data_dir = 'transformed_data'
category = 'Category_1'
exercise = '/AB1'
path1 = '../transformed_data/Category_1/'
path2 = '../transformed_data/Category_2/'
path3 = '../transformed_data/Category_3/'
path4 = '../transformed_data/Category_4/'

df= pd.DataFrame()

patientID1 = os.listdir(path1)
patientID2 = os.listdir(path2)
patientID3 = os.listdir(path3)
patientID4 = os.listdir(path4)
```

```
In [3]: def patients_to_df(df, patientID, path):
    print(patientID)
    for patient in patientID:
        pathex = path + patient + exercise + '.txt'
        try:
            df_patient = exercise_to_df(pathex)
        except FileNotFoundError:
            print(patient + "file not found")
        df_patient['patientID'] = patient
        df = df.append([df_patient])
        df['sensor'] = df['sensor'].astype(int)
    return df
```

```
In [4]: df_cat1 = patients_to_df(df,patientID1, path1)
df_cat2 = patients_to_df(df,patientID2, path2)
df_cat3 = patients_to_df(df,patientID3, path3)
df_cat4 = patients_to_df(df,patientID4, path4)

#df_cat2['sensor'] = df_cat2['sensor'].astype(int)

['8', '3', '1', '22', '17', '15', '6', '11', '13', '7', '29', '23', '21', '9', '20', '19', '26', '12', '10', '30', '16', '27',
'5', '2', '4', '28', '24']
['35', '8', '3', '1', '36', '40', '14', '34', '22', '33', '38', '15', '31', '6', '11', '13', '7', '29', '23', '21', '9', '20',
'19', '32', '26', '39', '10', '30', '16', '27', '5', '2', '18', '4', '28', '24']
['35', '8', '3', '36', '40', '14', '34', '22', '17', '33', '38', '15', '31', '6', '11', '13', '7', '29', '23', '21', '9', '20',
'37', '19', '25', '32', '26', '12', '27', '5', '18', '4', '28', '24']
['35', '8', '3', '1', '36', '14', '34', '22', '33', '38', '31', '6', '41', '11', '7', '29', '23', '21', '9', '25', '26', '39',
'12', '10', '30', '27', '5', '2', '4', '24']
```

```
In [5]: df_cat1 = df_cat1.set_index(['patientID', 'frame'], drop=True, inplace=False, verify_integrity=False)
df_cat2 = df_cat2.set_index(['patientID', 'frame'], drop=True, inplace=False, verify_integrity=False)
df_cat3 = df_cat3.set_index(['patientID', 'frame'], drop=True, inplace=False, verify_integrity=False)
df_cat4 = df_cat4.set_index(['patientID', 'frame'], drop=True, inplace=False, verify_integrity=False)
```

```
In [6]: df_cat1 = df_cat1[df_cat1['sensor'] != 2]
df_cat1 = df_cat1[df_cat1['sensor'] != 5]
df_cat1 = df_cat1[df_cat1['sensor'] != 6]
df_cat1 = df_cat1[df_cat1['sensor'] != 8]
df_cat1 = df_cat1[df_cat1['sensor'] != 9]
df_cat1 = df_cat1[df_cat1['sensor'] != 3]
```

```
In [7]: df_cat2 = df_cat2[df_cat2['sensor'] != 2]
df_cat2 = df_cat2[df_cat2['sensor'] != 5]
df_cat2 = df_cat2[df_cat2['sensor'] != 6]
df_cat2 = df_cat2[df_cat2['sensor'] != 8]
df_cat2 = df_cat2[df_cat2['sensor'] != 9]
df_cat2 = df_cat2[df_cat2['sensor'] != 3]
```

```
In [8]: df_cat3 = df_cat3[df_cat3['sensor'] != 2]
df_cat3 = df_cat3[df_cat3['sensor'] != 5]
df_cat3 = df_cat3[df_cat3['sensor'] != 6]
df_cat3 = df_cat3[df_cat3['sensor'] != 8]
df_cat3 = df_cat3[df_cat3['sensor'] != 9]
df_cat3 = df_cat3[df_cat3['sensor'] != 3]
```

```
In [9]: df_cat4 = df_cat4[df_cat4['sensor'] != 2]
df_cat4 = df_cat4[df_cat4['sensor'] != 5]
df_cat4 = df_cat4[df_cat4['sensor'] != 6]
df_cat4 = df_cat4[df_cat4['sensor'] != 8]
df_cat4 = df_cat4[df_cat4['sensor'] != 9]
df_cat4 = df_cat4[df_cat4['sensor'] != 3]
```

```
In [10]: df_cat1_sensor4 = df_cat1[df_cat1['sensor'] != 7]
df_cat1_sensor4 = df_cat1_sensor4.groupby('patientID')['z'].agg(['min', 'max'])

df_cat1_sensor7 = df_cat1[df_cat1['sensor'] != 4]
df_cat1_sensor7 = df_cat1_sensor7.groupby('patientID')['z'].agg(['min', 'max'])
```

```
In [11]: df_cat2_sensor4 = df_cat2[df_cat2['sensor'] != 7]
df_cat2_sensor4 = df_cat2_sensor4.groupby('patientID')['z'].agg(['min', 'max'])

df_cat2_sensor7 = df_cat2[df_cat2['sensor'] != 4]
df_cat2_sensor7 = df_cat2_sensor7.groupby('patientID')['z'].agg(['min', 'max'])
```

```
In [12]: df_cat3_sensor4 = df_cat3[df_cat3['sensor'] != 7]
df_cat3_sensor4 = df_cat3_sensor4.groupby('patientID')['z'].agg(['min', 'max'])

df_cat3_sensor7 = df_cat3[df_cat3['sensor'] != 4]
df_cat3_sensor7 = df_cat3_sensor7.groupby('patientID')['z'].agg(['min', 'max'])
```

```
In [13]: df_cat4_sensor4 = df_cat4[df_cat4['sensor'] != 7]
df_cat4_sensor4 = df_cat4_sensor4.groupby('patientID')['z'].agg(['min', 'max'])

df_cat4_sensor7 = df_cat4[df_cat4['sensor'] != 4]
df_cat4_sensor7 = df_cat4_sensor7.groupby('patientID')['z'].agg(['min', 'max'])
```

```
In [14]: df_cat1_sensor4 = df_cat1_sensor4.rename(columns={"min": "minimun sensor 4", "max": "maximun sensor 4"})
```

```
In [15]: df_cat2_sensor4 = df_cat2_sensor4.rename(columns={"min": "minimun sensor 4", "max": "maximun sensor 4"})
```

```
In [16]: df_cat3_sensor4 = df_cat3_sensor4.rename(columns={"min": "minimun sensor 4", "max": "maximun sensor 4"})
```

```
In [17]: df_cat4_sensor4 = df_cat4_sensor4.rename(columns={"min": "minimun sensor 4", "max": "maximun sensor 4"})
```

```
In [18]: df_cat1_sensor7 = df_cat1_sensor7.rename(columns={"min": "minimun sensor 7", "max": "maximun sensor 7"})
```

```
In [19]: df_cat2_sensor7 = df_cat2_sensor7.rename(columns={"min": "minimun sensor 7", "max": "maximun sensor 7"})
```

```
In [20]: df_cat3_sensor7 = df_cat3_sensor7.rename(columns={"min": "minimun sensor 7", "max": "maximun sensor 7"})
```

```
In [21]: df_cat4_sensor7 = df_cat4_sensor7.rename(columns={"min": "minimun sensor 7", "max": "maximun sensor 7"})
```

```
In [22]: df_cat1_minmax = df_cat1_sensor7.join(df_cat1_sensor4)
df_cat2_minmax = df_cat2_sensor7.join(df_cat2_sensor4)
df_cat3_minmax = df_cat3_sensor7.join(df_cat3_sensor4)
df_cat4_minmax = df_cat4_sensor7.join(df_cat4_sensor4)
```

```
In [23]: df_cat1_minmax['category'] = 1
df_cat2_minmax['category'] = 2
df_cat3_minmax['category'] = 3
df_cat4_minmax['category'] = 4
```

```
In [24]: print(df_cat1_minmax.shape)
print(df_cat2_minmax.shape)
print(df_cat3_minmax.shape)
print(df_cat4_minmax.shape)

(27, 5)
(36, 5)
(34, 5)
(30, 5)
```

```
In [25]: df_compleet = df_cat1_minmax.append([df_cat2_minmax, df_cat3_minmax, df_cat4_minmax])
```

```
In [26]: df_compleet
```

```
Out[26]:
```

	minimun sensor 7	maximun sensor 7	minimun sensor 4	maximun sensor 4	category
patientID					
1	0.240697	0.423737	0.214854	0.413801	1
10	0.267327	0.474825	0.252380	0.433710	1
11	0.192215	0.415062	0.148019	0.362331	1
12	0.158407	0.291863	0.158444	0.321893	1
13	0.396830	0.480915	0.323682	0.416940	1
...
5	0.498283	0.659888	0.399524	0.631158	4
6	0.302798	0.427144	0.309442	0.422398	4
7	0.305564	0.475819	0.378146	0.475819	4
8	0.395574	0.488341	0.361443	0.529474	4
9	0.460956	0.561790	0.488865	0.607706	4

127 rows × 5 columns

```
In [27]: df_compleet = df_compleet.set_index(['category'], drop=True, inplace=False, verify_integrity=False)
```

```
In [28]: df_compleet.groupby('category').plot(kind='bar', title=' max heighth of sensor 4 and 7', ylabel='height', xlabel='cat')
plt.show()
```

