

Analiza i Bazy Danych

Laboratorium 14 – Pytest

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Funkcja tworząca macierz Frobeniusa w oparciu o zadane współczynniki wielomianu charakterystycznego:

```
def Frobenius_mtx(coeff: np.ndarray):  
  
    if not isinstance(coeff, np.ndarray):  
        return None  
    else:  
  
        n = coeff.shape[0] - 1  
        frob_mtx = np.zeros(shape=(n, n))  
  
        for i in range(n - 1):  
            frob_mtx[i][i+1] = 1  
            frob_mtx[-1] = -1*coeff[::-1][:-1]  
  
        return frob_mtx
```

Test sparametryzowany, sprawdzający poprawne działanie funkcji:

```
frob_test_data = [  
    (np.array([4,2,3,4]), np.array([[0, 1, 0], [0, 0, 1], [-4,-3,-2]])),  
    (np.array([10,12,3,4,5]), np.array([[0, 1, 0, 0], [0, 0, 1,0], [0, 0, 0,  
1], [-5,-4,-3,-12]])),  
    (np.array([1,2,3,4,-7,-3]), np.array([[0, 1, 0, 0, 0], [0, 0, 1, 0, 0],  
[0, 0, 0, 1, 0],[0, 0, 0, 0, 1], [3, 7, -4, -3,-2]])),  
    ([1,2,3], None)  
]  
  
@pytest.mark.parametrize('sample_coeffs, matrix', frob_test_data)  
def test_Frobenius_mtx(sample_coeffs, matrix):  
  
    frob_result = Frobenius_mtx(sample_coeffs)  
  
    if isinstance(matrix, np.ndarray):  
        assert (matrix == frob_result).all()  
    else:  
        assert matrix == frob_result
```

Wynik procedury testu – wywołany komendą „pytest -vv” (szczegółowe wyniki):

```
(abd_env) C:\Users\kacpe\OneDrive - Akademia Górniczo-Hutnicza im. Stanisława Staszica w Krakowie\Studia\W Semestr AiR\ABiD\ABiD_AiR_2021\Lab14>pytest -vv
===== test session starts =====
platform win32 -- Python 3.9.4, pytest-6.2.3, py-1.10.0, pluggy-0.13.1 -- C:\ProgramData\Anaconda3\envs\abd_env\python.exe
cachedir: .pytest_cache
rootdir: C:\Users\kacpe\OneDrive - Akademia Górniczo-Hutnicza im. Stanisława Staszica w Krakowie\Studia\W Semestr AiR\ABiD\ABiD_AiR_2021\Lab14
plugins: anyio-2.2.0
collected 4 items

test/test_app.py::test_Frobenius_mtx[sample_coeffs0-matrix0] PASSED [ 25%]
test/test_app.py::test_Frobenius_mtx[sample_coeffs1-matrix1] PASSED [ 50%]
test/test_app.py::test_Frobenius_mtx[sample_coeffs2-matrix2] PASSED [ 75%]
test/test_app.py::test_Frobenius_mtx[sample_coeffs3-None] PASSED [100%]

===== warnings summary =====
..\..\..\..\..\ProgramData\Anaconda3\envs\abd_env\lib\site-packages\pyreadline\py3k_compat.py:8
  C:\ProgramData\Anaconda3\envs\abd_env\lib\site-packages\pyreadline\py3k_compat.py:8: DeprecationWarning: Using or importing the ABCs from 'collections' instead of from 'collections.abc' is deprecated since
  Python 3.3, and in 3.10 it will stop working
    return isinstance(x, collections.Callable)

..\..\..\..\..\ProgramData\Anaconda3\envs\abd_env\lib\site-packages\win32\lib\pywintypes.py:2
  C:\ProgramData\Anaconda3\envs\abd_env\lib\site-packages\win32\lib\pywintypes.py:2: DeprecationWarning: the imp module is deprecated in favour of importlib; see the module's documentation for alternative us
  es
    import imp, sys, os

-- Docs: https://docs.pytest.org/en/stable/warnings.html
===== 4 passed, 2 warnings in 3.18s =====

(abd_env) C:\Users\kacpe\OneDrive - Akademia Górniczo-Hutnicza im. Stanisława Staszica w Krakowie\Studia\W Semestr AiR\ABiD\ABiD_AiR_2021\Lab14>
```

Link do repozytorium zawierającego zawarty powyższy kod:

https://github.com/kmozdzierz/ABiD_AiR_2021/tree/main/Lab14