Sieci neuronowe i sztuczna inteligencja – laboratorium 6

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Kod:

```python
# calculate a confusion matrix
def confusion_matrix(actual, predicted):
    unique = set(actual)
    matrix = [list() for x in range(len(unique))]

    for i in range(len(unique)):
        matrix[i] = [0 for x in range(len(unique))]
    lookup = dict()

    for i, value in enumerate(unique):
        lookup[value] = i

    for i in range(len(actual)):
        x = lookup[actual[i]]
        y = lookup[predicted[i]]
        matrix[y][x] += 1
    return unique, matrix


# pretty print a confusion matrix
def print_confusion_matrix(unique, matrix):
    print('(A)' + maxlen(unique, ' ', -2) + '| ' + ' '.join(str(x) for x in unique))
    print('(P)' + maxlen(unique, ' ', -2) + '| ' + ''.join(['-' for _ in range(0, len(''.join(unique)) + 1)]))
    for i, x in enumerate(unique):
        print("%s | %s" % (pad(unique, str(x)),''.join(mpad(str(x), i, idx, matrix) + maxlen(unique, ' ', 0) for idx, x in enumerate(matrix[i]))))

#change style of view matrix
def pad(unique: set, x: str):
    ulen: int = len(max(map(str, unique), key=len))
    xlen = len(x)

    if xlen == ulen:
        return x

    www = x + ''.join([' ' for i in range(0, ulen-xlen)])
    return www
```

```
37
38 def mpad(x: str, i: int, j:int, matrix: list[list]):
39     tmp = [x[j] for x in matrix ]
40     return pad(set(tmp), x)
41
42 def maxlen(array, char, mod):
43     xlen = len(max(map(str, array), key=len))
44     return ''.join([char for _ in range(0, xlen + mod)])
45
46 # Test confusion matrix with text
47 actual1 = ["asdasd", "ddddddddddddd", "asdasd", "
   ddddddddddddd", "ddddddddddddd", "asdasd", "asdasd", "
   asdasd", "asdasd", "asdasd", "asdasd", "asdasd", "asdasd"
   , "asdasd", "asdasd", "asdasd", "asdasd", "asdasd", "
   asdasd"]
48 predicted1 = ["ddddddddddddd", "asdasd", "asdasd", "
   ddddddddddddd", "asdasd", "asdasd", "asdasd", "asdasd", "
   asdasd", "asdasd", "asdasd", "asdasd", "asdasd", "asdasd"
   , "asdasd", "asdasd", "asdasd", "asdasd", "asdasd"]
49
50 # unique, matrix = confusion_matrix(actual, predicted)
51 unique1, matrix1 = confusion_matrix(actual1, predicted1)
52
53 print_confusion_matrix(unique1, matrix1)
54 # print_confusion_matrix(unique, matrix)
55
```

Analizując kod, zauważono, że dla wartości wieloznakowe i wieloliczbowe były wyświetlane niepoprawnie, były nieczytelne. Poprawiono kod w celu lepszego wyświetlania wartości. Napisano 3 dodatkowe metody formatujące sposób wyświetlania wartości.

Poniżej przedstawiono wyniki dla różnych wartości:

```
C:\Users\Mo\AppData\Local\Microsoft\WindowsApps\python3.10.exe C:\Users\Mo\Documents\Studia\SN_lab\SN\PWR_2023_SN\lab7\matrix.py
(A)           | ddddddddddddd asdasd
(P)           | --------------------
ddddddddddddd | 1             1
asdasd        | 2             15

Process finished with exit code 0
```

```
C:\Users\Mo\AppData\Local\Microsoft\WindowsApps\python3.10.exe C:\Users\Mo\Documents\Studia\SN_lab\SN\PWR_2023_SN\lab7\matrix.py
(A)   | 22 11111
(P)   | --------
22    | 15     2
11111 | 1      1

Process finished with exit code 0
```