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2022

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EM- (k-means).

Fuzzy c-means

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: Java Agent Development Framework (Jade), ABLE, REPAST.

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1		8	1	2	5
2		8	1	2	5
3		8	1	2	5
4		8	1	2	5
5		9	2	2	5
6	.	8	1	2	5
7		9	2	2	5
8		9	2	2	5
9		9	2	2	5
10		9	2	2	5
11		8	1	2	5
12		7	1	2	4
13		7	1	2	4
14		10	2	4	4
15		27			27
		144	20	30	67+27

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2. **(ROC curve).**

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EM- (k-means).

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- **dataset Titanic:** test.csv train.csv (https://russianblogs.com/article/49401398867/).

test.csv train.csv

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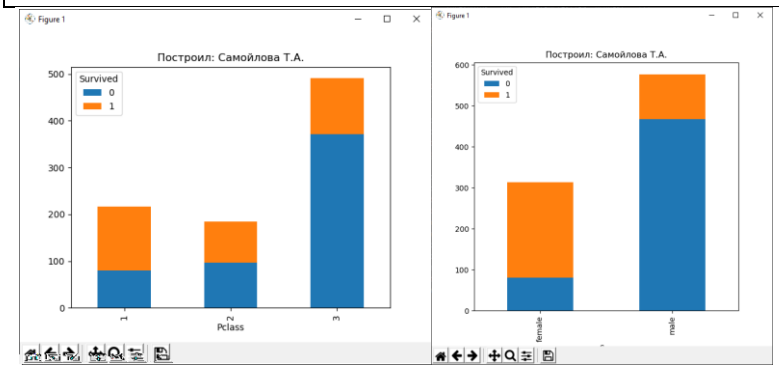
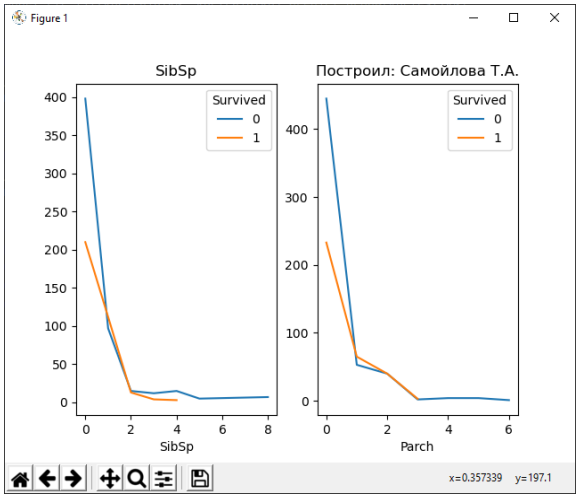
```
   Survived  Pclass     Sex  SibSp  Parch     Fare Embarked
0         0       3    male      1      0   7.2500        S
1         1       1  female      1      0  71.2833        C
2         1       3  female      0      0   7.9250        S
3         1       1  female      1      0  53.1000        S
4         0       3    male      0      0   8.0500        S
   Survived  Pclass  Sex  SibSp  Parch     Fare  Embarked
0         0       3    1      1      0   7.2500         2
1         1       1    0      1      0  71.2833         0
2         1       3    0      0      0   7.9250         2
3         1       1    0      1      0  53.1000         2
4         0       3    1      0      0   8.0500         2
```





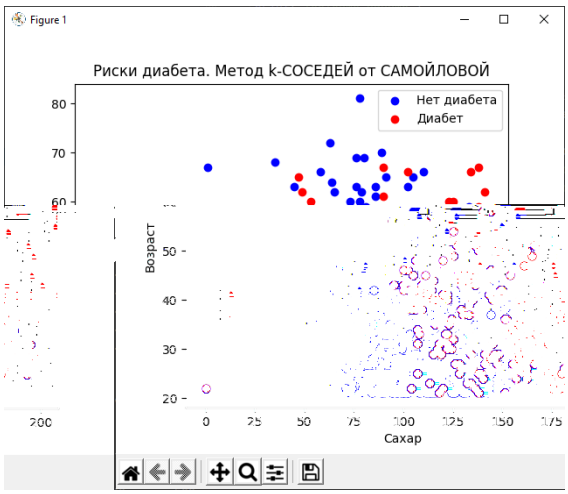
python-

```
age,salary,house,class
18,25,1,1
22,100,1,1
30,10,0,0
32,120,0,1
24,15,1,0
25,22,1,1
32,20,0,0
19,15,1,0
52,135,0,1
..............
```

2 .

F-

: UCI Machine Learning Repository http://archive.ics.uci.edu/ml/



ID

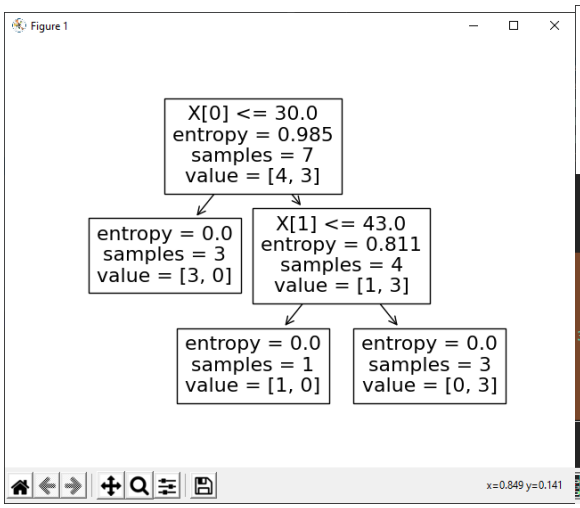


Figure 1
X[0] <= 30.0
entropy = 0.985
samples = 7
value = [4, 3]
entropy = 0.0
samples = 3
value = [3, 0]
X[1] <= 43.0
entropy = 0.811
samples = 4
value = [1, 3]
entropy = 0.0
samples = 1
value = [1, 0]
entropy = 0.0
samples = 3
value = [0, 3]
x=0.849 y=0.141

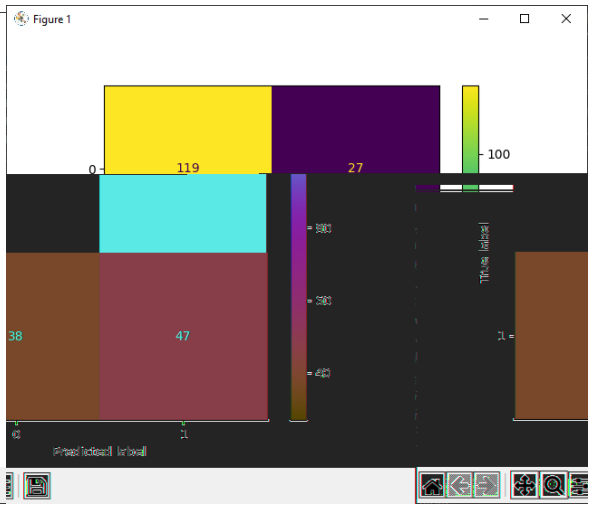


Figure 1
119
27
100
38
47

C CART.

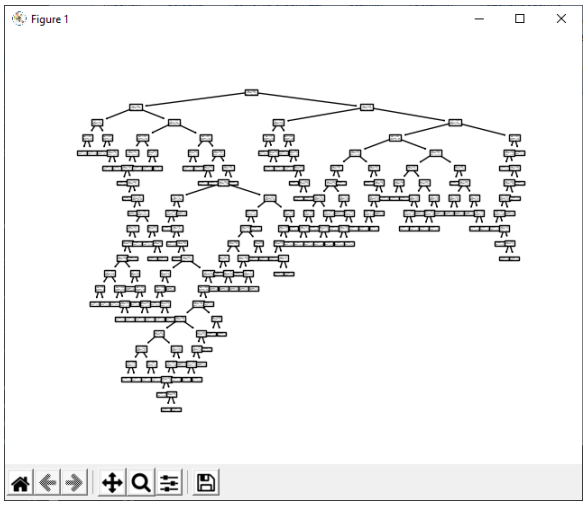


Figure 1

f-

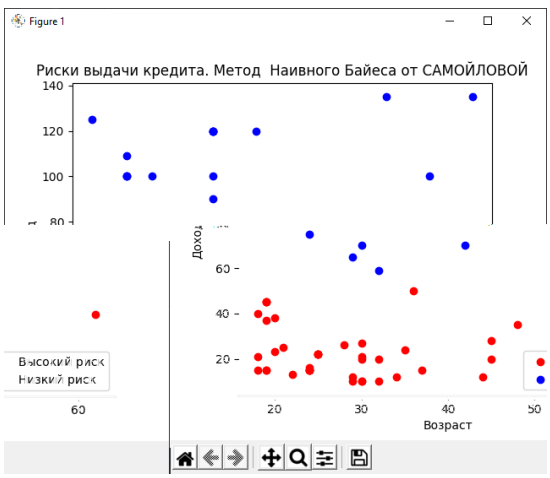


Figure 1
Риски выдачи кредита. Метод Наивного Байеса от САМОЙЛОВОЙ
Высокий риск
Низкий риск
Возраст

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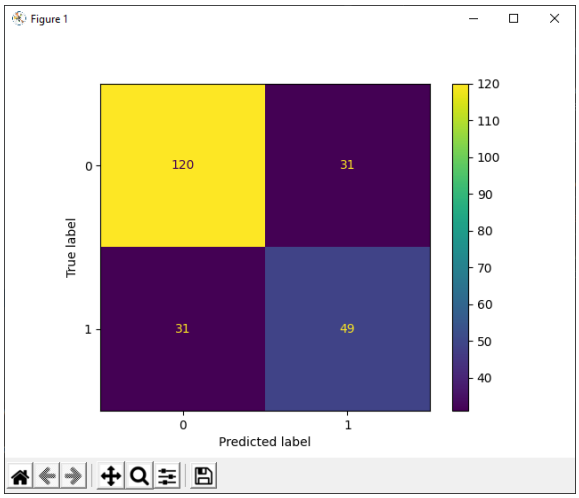
Figure 1
120
31
31
49
True label
Predicted label
0
1
120
110
100
90
80
70
60
50
40

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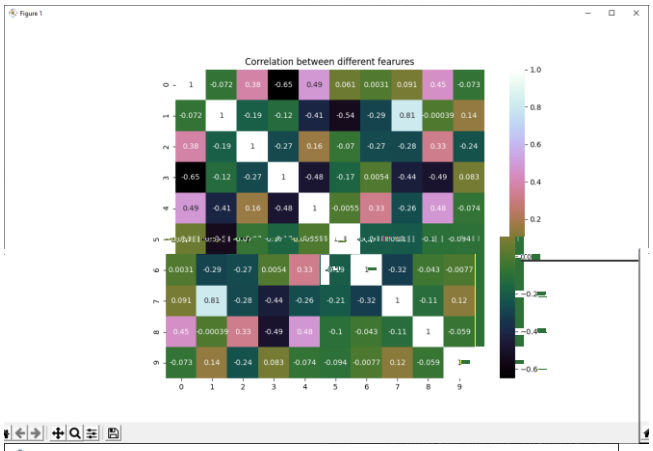

Correlation between different fearures

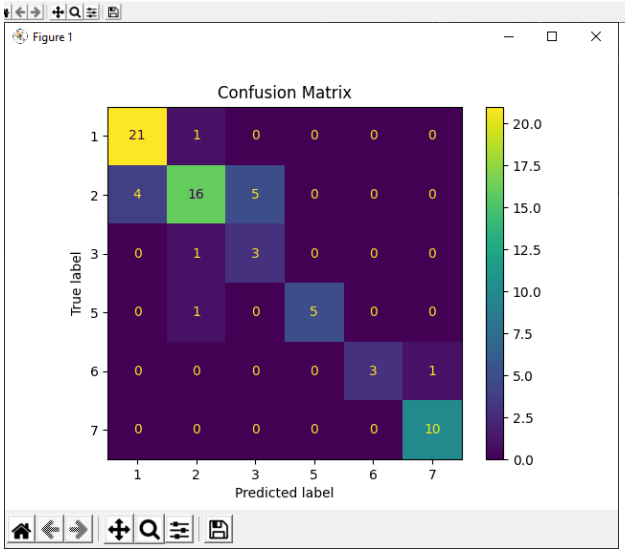
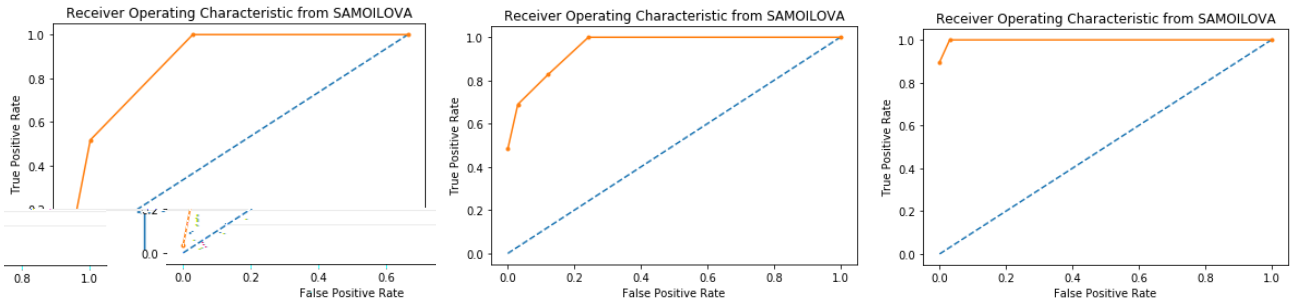
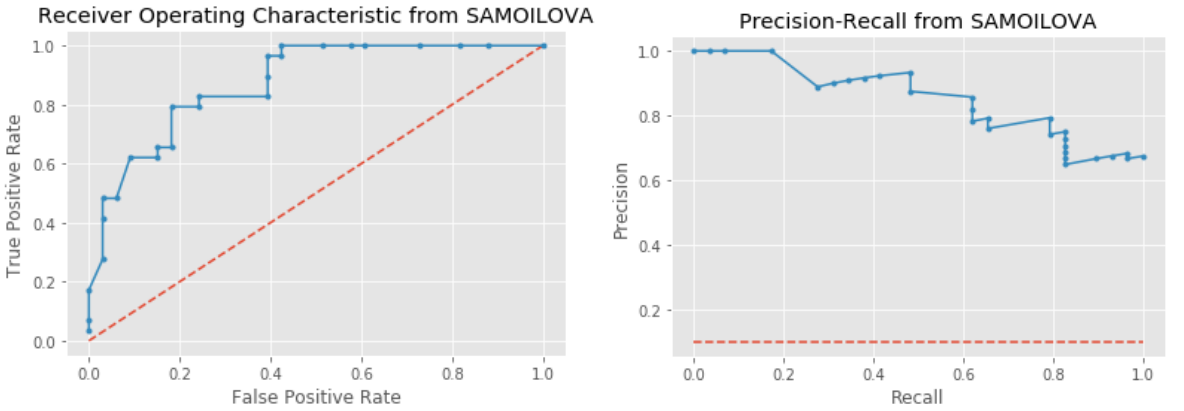


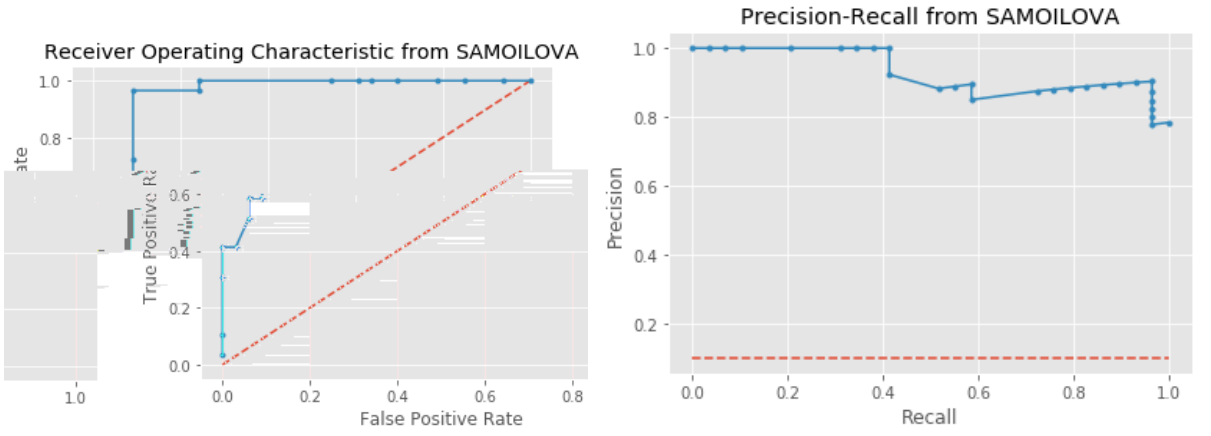
Figure 1
Confusion Matrix
True label
Predicted label
20.0
17.5
15.0
12.5
10.0
7.5
5.0
2.5
0.0

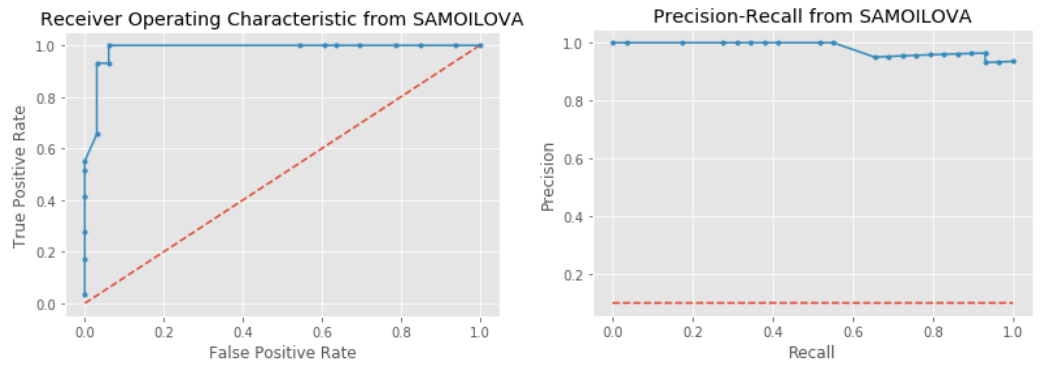
ROC

f- -









ROC-

ROC -

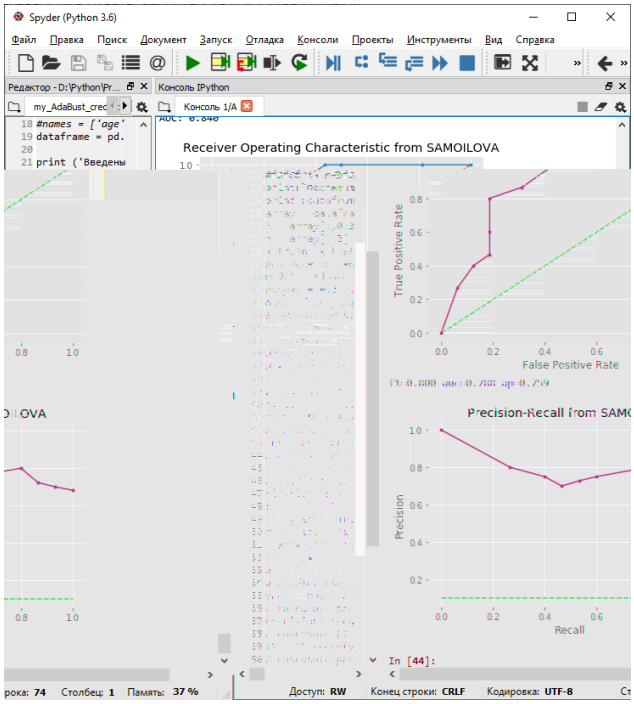
PR-

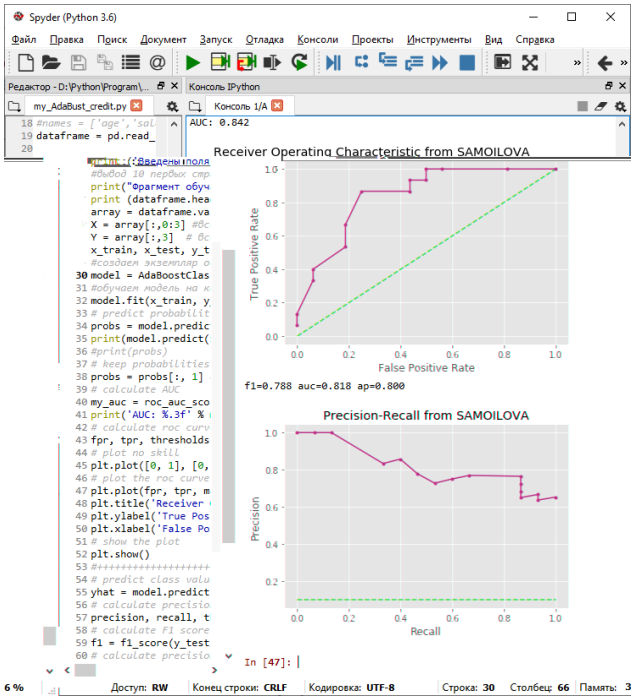
:

. AdaBoostClassifier

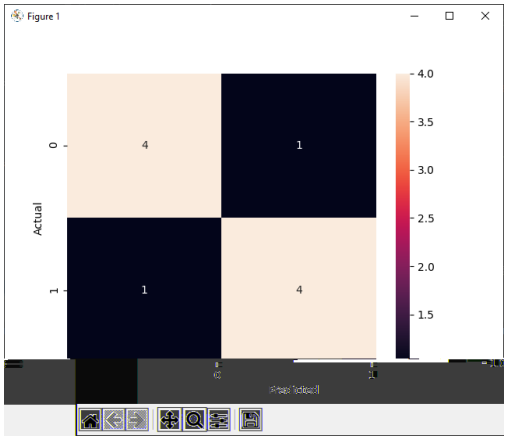
csv

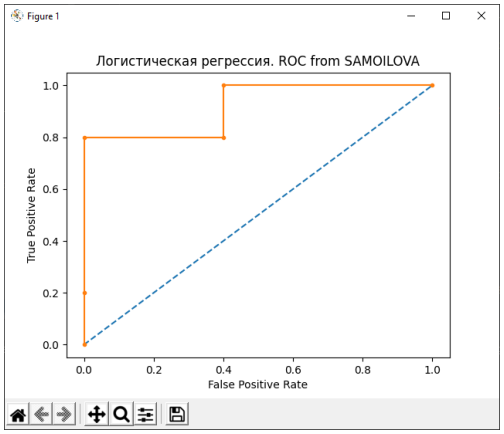
f- ROC AUC.





f- ROC AUC.





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```
[[0.3018346  0.6981654 ]
 [0.69176147 0.30823853]
 [0.05322031 0.94677969]
 [0.20417163 0.79582837]
 [0.58169393 0.41830607]
 [0.88906961 0.11093039]
 [0.02920068 0.97079932]
 [0.11033348 0.88966652]
 [0.67029328 0.32970672]
 [0.12638422 0.87361578]]
Accuracy:  0.8
              precision    recall  f1-score   support
           0       0.80      0.80      0.80         5
```

```
           1       0.80      0.80      0.80         5
    accuracy                           0.80        10
   macro avg       0.80      0.80      0.80        10
weighted avg       0.80      0.80      0.80        10
AUC: 0.920
```

2

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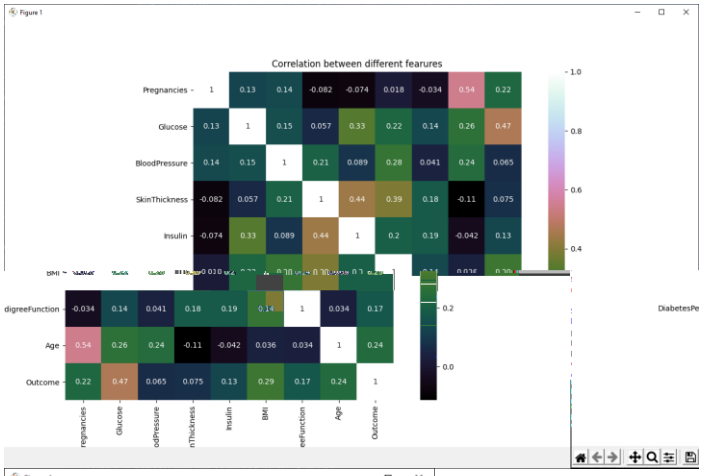

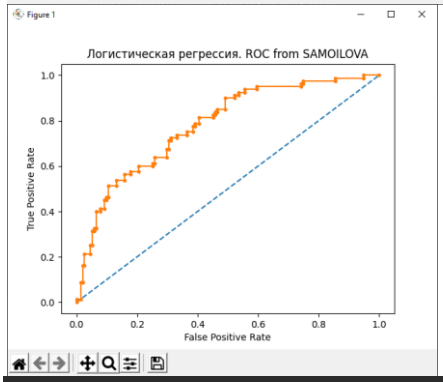


```
Name: Outcome, Length: 537, dtype: int64
     Pregnancies  Glucose  Insulin   BMI  Age
334            1       95       58  23.9   22
139            5      105      325  36.9   28
485            0      135      250  42.3   24
547            4      131      166  33.1   28
18             1      103       83  43.3   33
..           ...      ...      ...   ...  ...
71             5      139      140  28.6   26
106            1       96        0  22.4   27
270           10      101        0  45.6   38
435            0      141        0  42.4   29
102            0      125        0  22.5   21
[537 rows x 5 columns]

              precision    recall  f1-score   support
           0       0.76      0.87      0.81       151
           1       0.66      0.49      0.56        80
    accuracy                           0.74       231
   macro avg       0.71      0.68      0.69       231
```

```
weighted avg       0.73      0.74      0.72       231
```

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LinearRegression. -

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https://archive.ics.uci.edu/ml/datasets/Auto+MPG

('cylinders', 'displacement', 'horsepower', 'weight', 'acceleration', 'model_year', 'origin', 'car_name'):

1.
2.
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4.
5.
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7.
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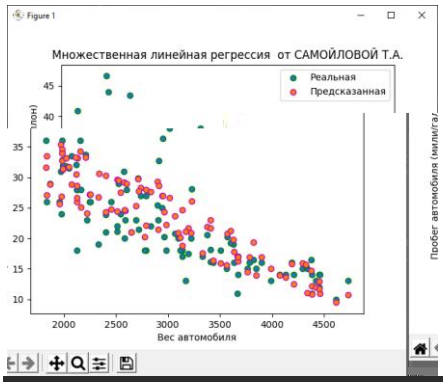


```
G:/PyCharm_tatsamoilova/sklearn_simple/REGR/My_Auto_Lin_Regr.py
RMSE= 4.069215579662049


Process finished with exit code 0
```

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LinearRegression,

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DataFrame: wallsMaterial, floorNumber, floorsTotal, totalArea, kitchenArea, latitude, longitude, price

DataFrame: floorNumber, floorsTotal, totalArea, kitchenArea.

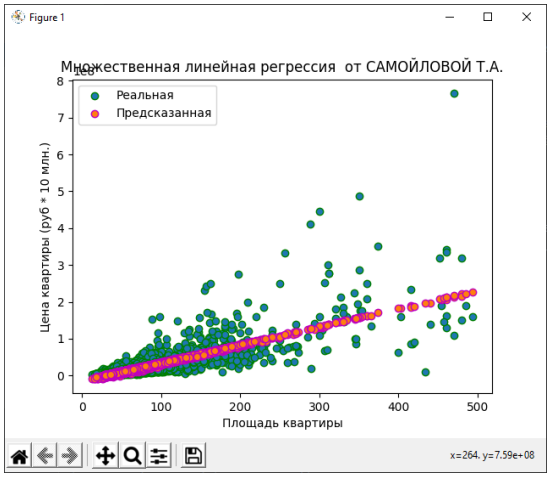
price

moscow_dataset_2020.csv

-2019.

-

-



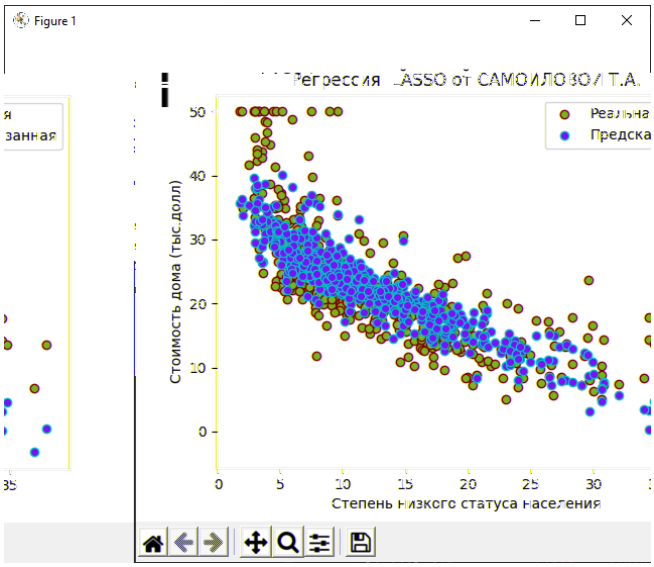
	wallsMaterial	floorNumber	floorsTotal	...	latitude	longitude	price
0	brick	1	5.0	...	55.723379	37.628577	5600000
1	brick	1	5.0	...	55.725980	37.671031	4650000
2	brick	1	5.0	...	55.735976	37.657817	2990000
3	brick	1	7.0	...	55.786698	37.595321	4390000
4	brick	2	5.0	...	55.767894	37.665920	4890000

[5 rows x 8 columns]

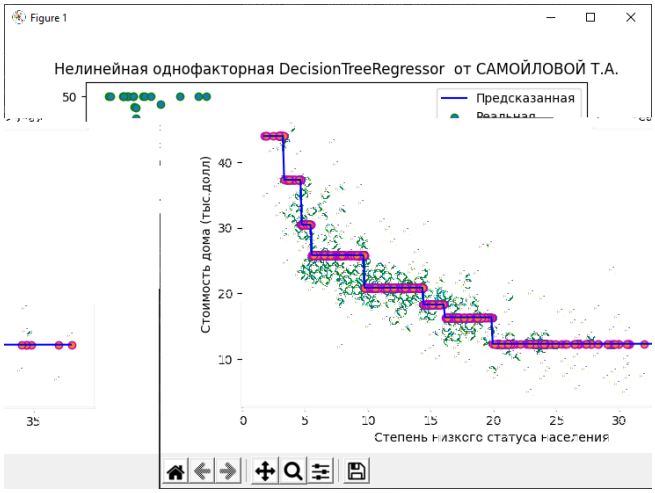
RMSE= 16059592.911492676

3. -

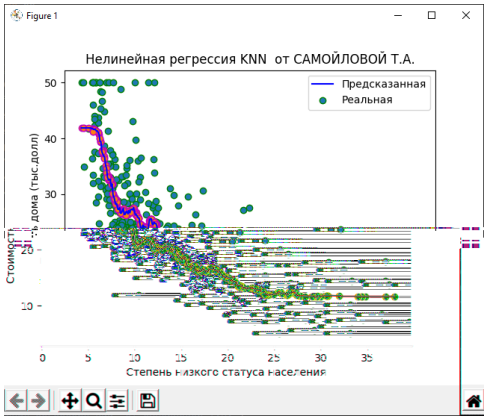
LassoCV



4

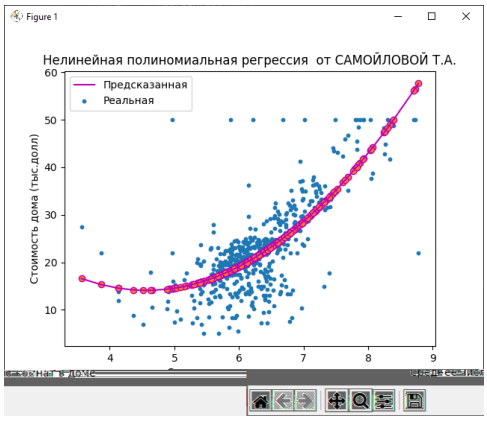


5
KNeighborsRegressor




```
rmse= 5.089057644349284
                        - r2 0.6932172724449991
```

6
LinearRegression



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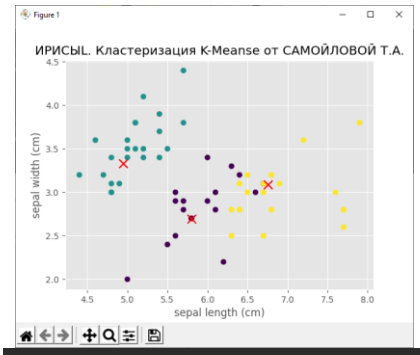
Machine Learning Repository - http://archive.ics.uci.edu/ml/

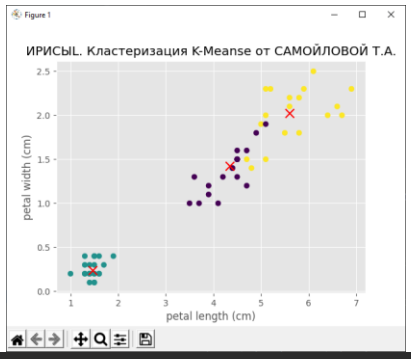
- mean_squared_error

(MSE), r2_score

1 K-Meanse

-





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1 1 1 0 0 2 1 1 0 2 2 0 2 0 2 0 1 2 0 1 1 1 0]

2 2 2 2 1 1 1 1 0 1 1 2 0

1 1 1 2 0 0 1 1 0 2 2 0 2 0 2 0 1 2 0 1 1 1 0]

-

- accuracy_score = 0.9333333333333333

- - F- - -

	precision	recall	f1-score	support
0	0.89	0.89	0.89	19
1	1.00	1.00	1.00	23
2	0.89	0.89	0.89	18
accuracy			0.93	60
macro avg	0.93	0.93	0.93	60
weighted avg	0.93	0.93	0.93	60

. -

Spending Score (1- :

```
CustomerID,Genre,Age,Annual Income (k$),Spending Score (1-100)
0001,Male,19,15,39
0002,Male,21,15,81
0003,Female,20,16,6
0004,Female,23,16,77
```

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-

.

```
Num,Customer Id,Age,Edu,Years Employed,Income,Card Debt,Other
Debt,Defaulted,DebtIncomeRatio
0,1,41,2,6,19,0.124,1.073,0.0,6.3
1,2,47,1,26,100,4.582,8.218,0.0,12.8
2,3,33,2,10,57,6.111000000000001,5.8020000000000005,1.0,20.9
3,4,29,2,4,19,0.6809999999999999,0.516,0.0,6.3
4,5,47,1,31,253,9.308,8.908,0.0,7.2
```

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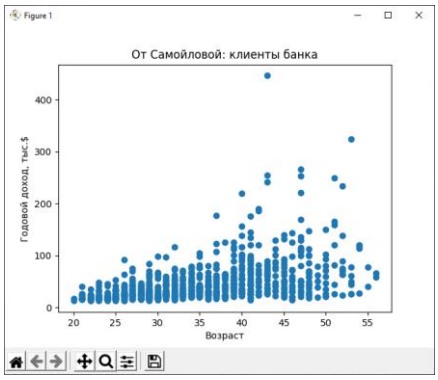
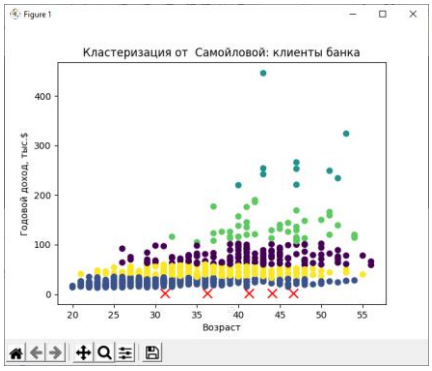
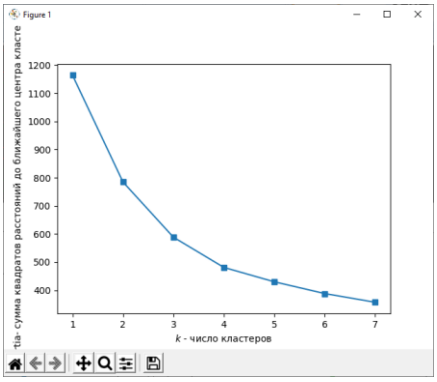
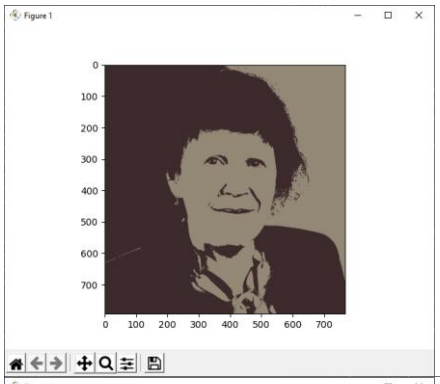
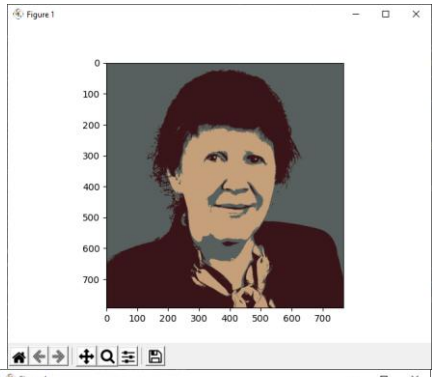


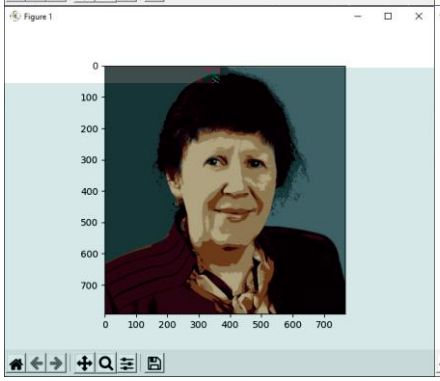


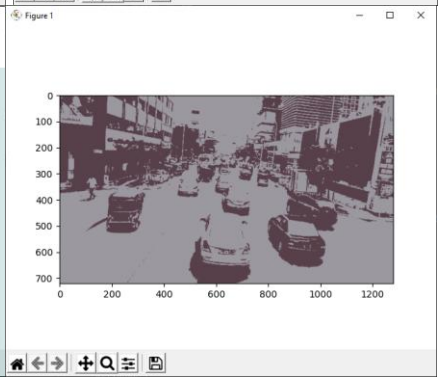


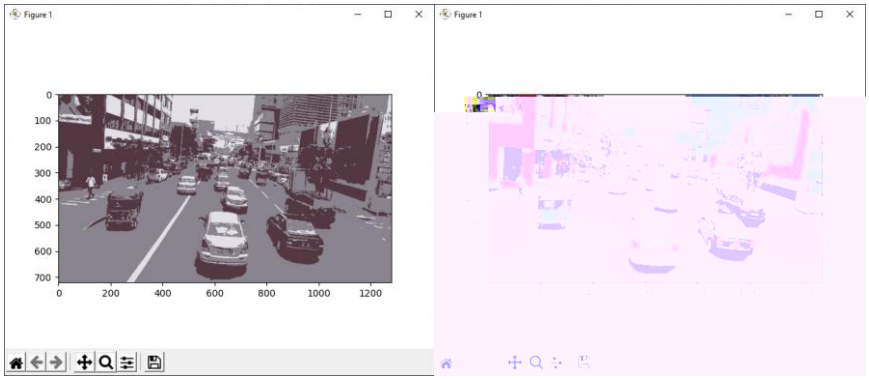
5 **K-Meanse** CV



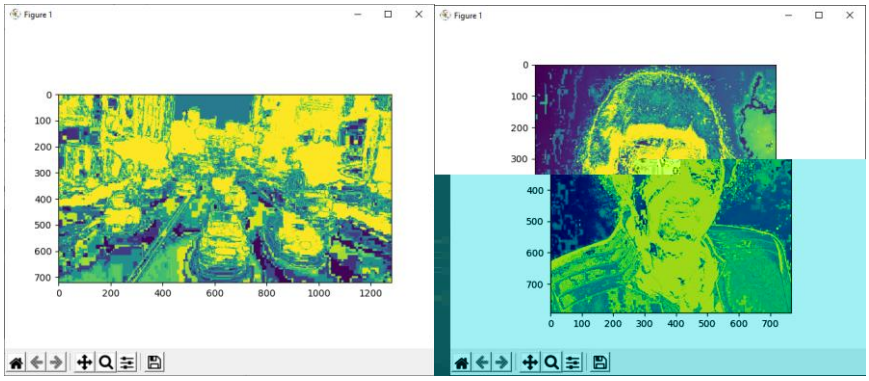








DBSCAN sklern.claster



7. -

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8

. python-
keras TensorFlow.
https://archive.ics.uci.edu/ml/datasets/diabetas

2.

5. 2-

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https://archive.ics.uci.edu/ml/datasets/Auto+MPG

('cylinders', 'displacement', 'horsepower', 'weight', 'acceleration', 'model_year', 'origin', 'car_name'):

1.
2.
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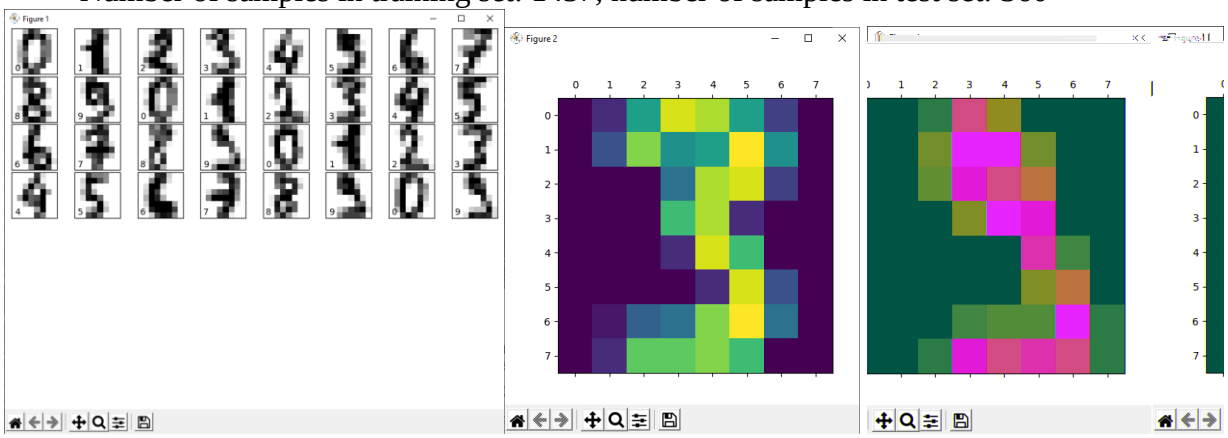
-

. MLPClassifier

-

MNIST -

We have 1797 samples
Number of samples in training set: 1437, number of samples in test set: 360



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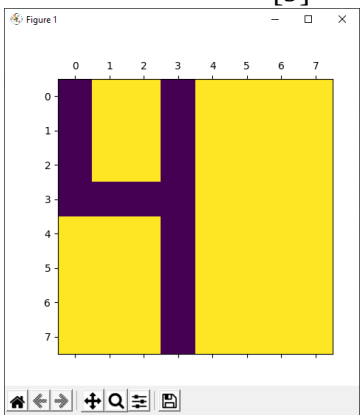
- [9]

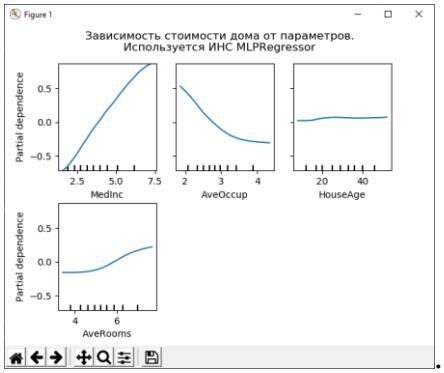


- [4]

4. MLPClassifier

https://scikit-learn.org/stable/auto_examples/inspection/plot_partial_dependence.html#california-housing-data-preprocessing

MedInc, HouseAge, AveRooms, AveBedrms, Population, AveOccup, Latitude Longitude.
Target -



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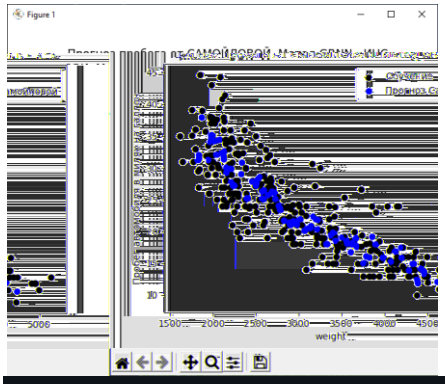


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 [15.98118317]

[21.34850449]
 [12.45185296]]
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WindowsForm -

Chart

Accord .NET Accord.Genetic

Excel

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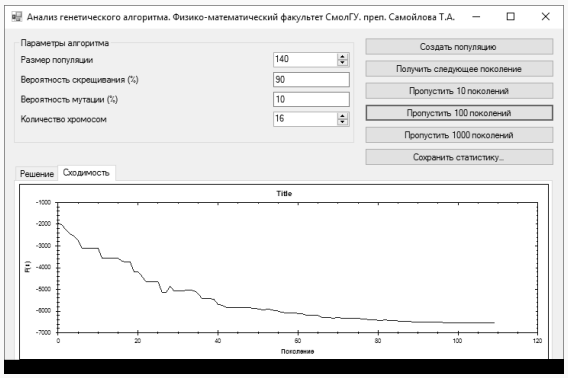

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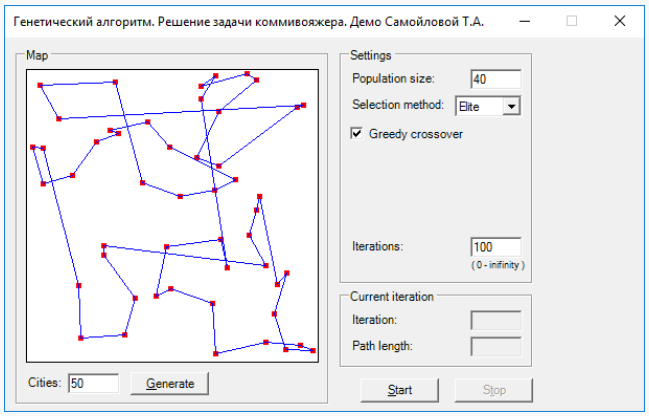

. scikit-fuzzy

Fuzzy C-Meanse

Fuzzy partition coefficient (FPC).

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  2 K-Meanse scikit-fuzzy

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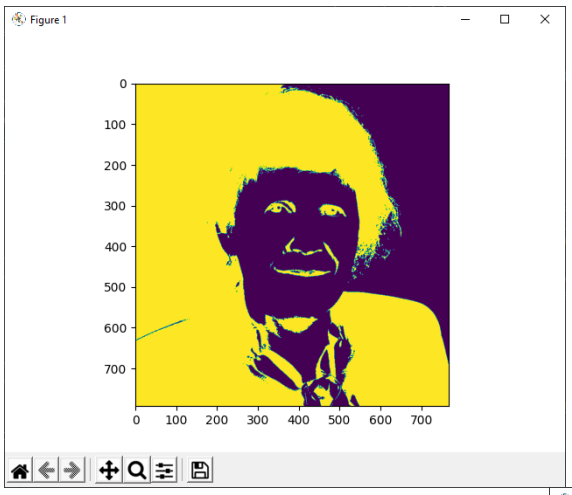

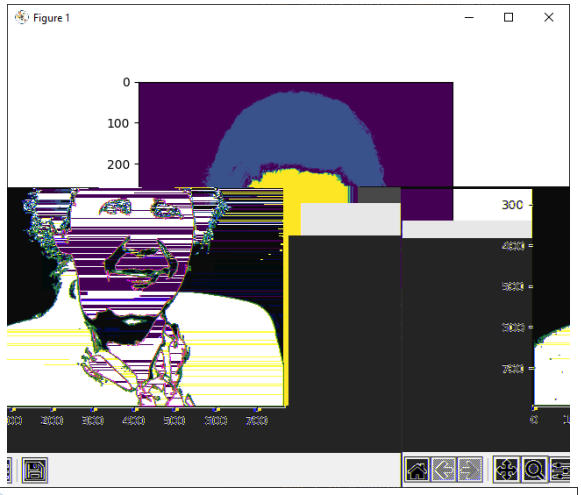

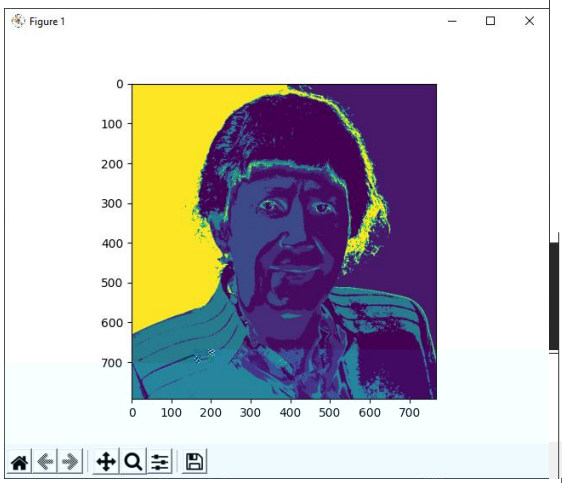

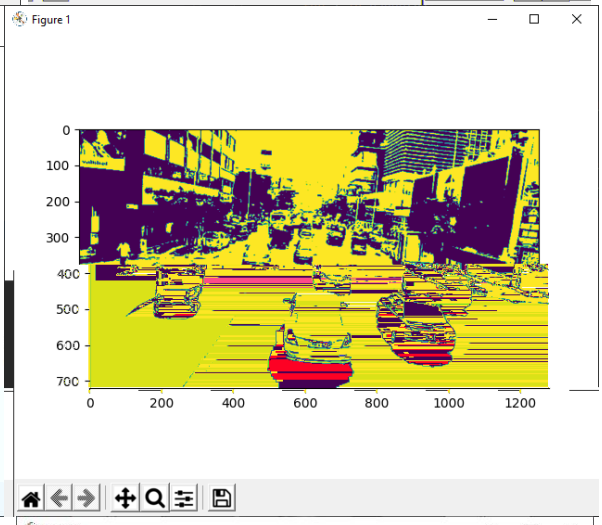

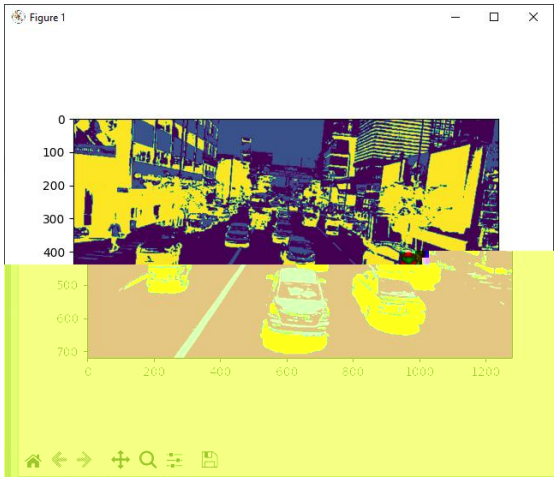

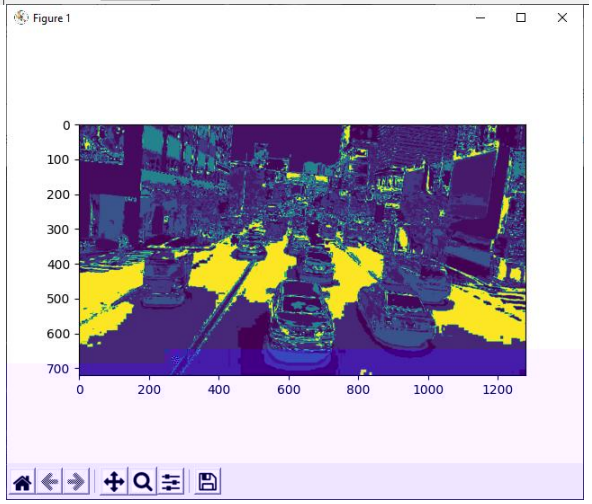

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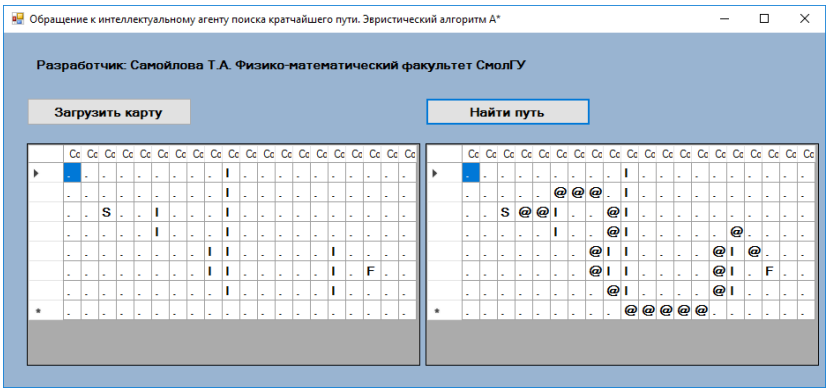

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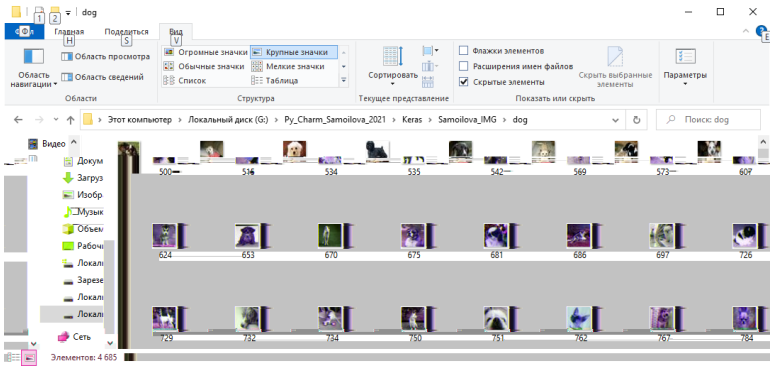

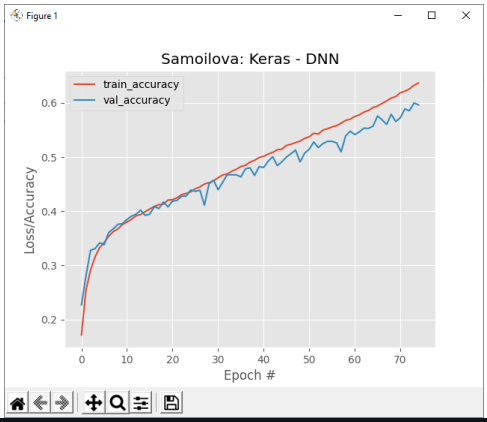


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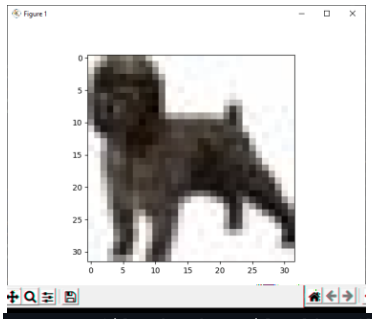

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. Python- OpenCV

- XML -

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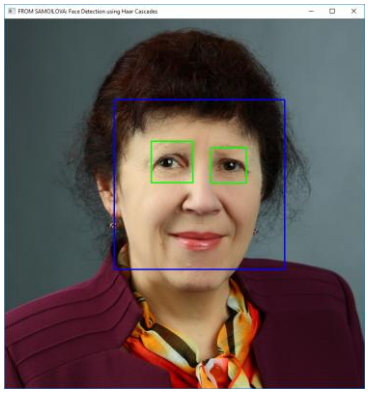

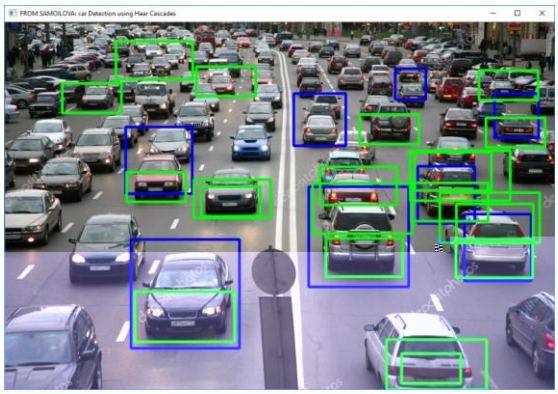

. Python-

- XML -

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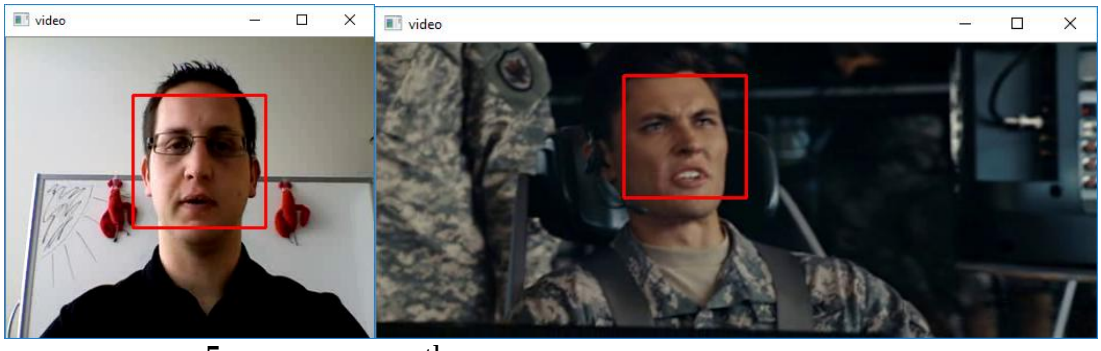

5. python- opencv HOG,

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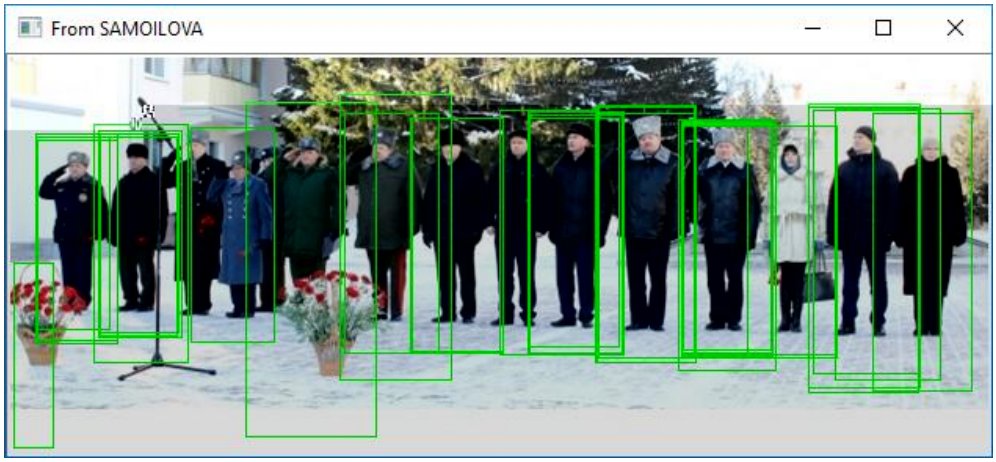

. Python- ImageAI

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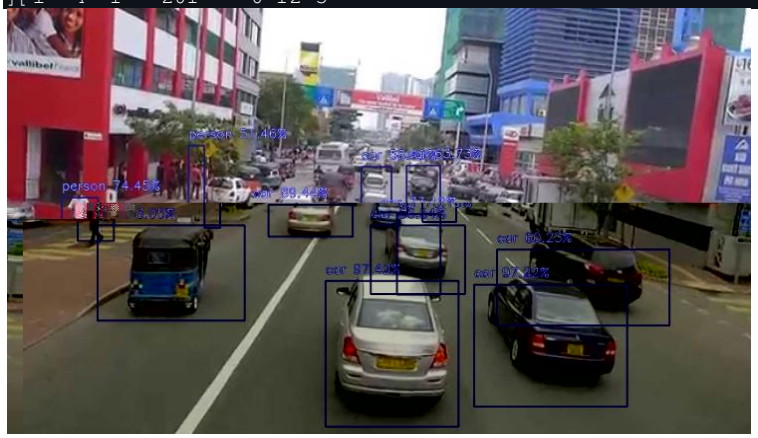

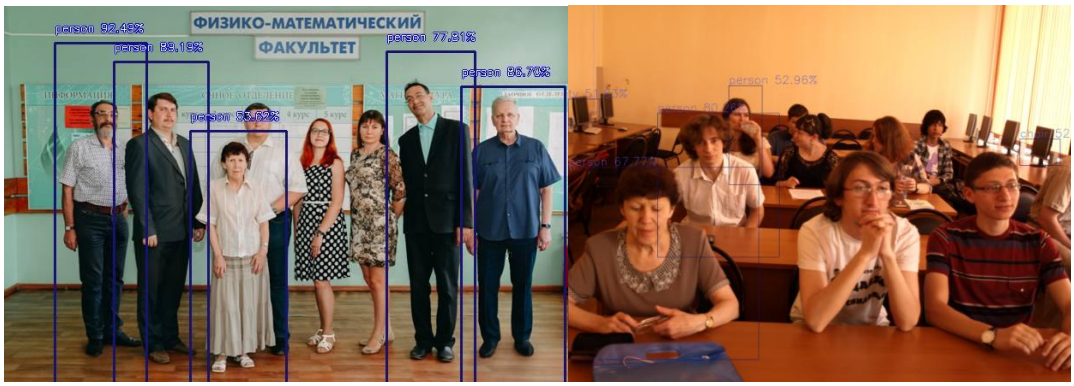

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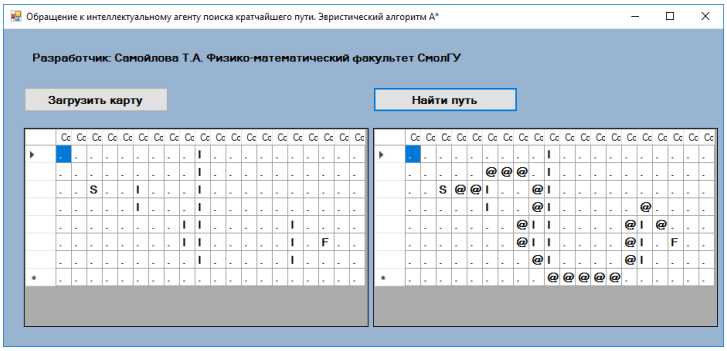

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85 ISBN 978-5-534-15561-7.
URL: https://urait.ru/bcode/508804
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ISBN 978-5-534-13619-7. URL: https://urait.ru/bcode/497448
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https://urait.ru/bcode/495988

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FB6-161215-133553-1-6231.

Microsoft Open License, 49463448 : Microsoft Windows Professional 7 Russian; Microsoft Office 2010 Russian.

9 Python 3.9;
PyCharm Pro.

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ЭЛЕКТРОННОЙ ПОДПИСЬЮ

Сертификат: 03B6A3C600B7ADA9B742A1E041DE7D81B0