

**ПІДХІД ДО ОПТИМІЗАЦІЇ  
ПРОГРАМНОГО ЗАБЕЗПЕЧЕННЯ  
ДЛЯ АНАЛІЗУ ВЕЛИКИХ ДАНИХ**

...

1000000

[1, 2];

$T$ ,  $C$

$Q$

python

(churn pre-  
d ct)

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.....

$$T = T_0 + \Delta T, C = C_0 + \Delta C, \quad T, C \quad Q = \text{const:} \quad (1)$$

$\Delta T > 1, \Delta C > 1.$

[3]

[4].

python, pandas, numpy, sklearn

python sklearn  
numpy, numpy+mkl, (web-application)  
django python  
Jupyter notebook (1).



. 1.

...

$$T = T_0 + \Delta T_1, C = C_0 + \Delta C_1, \tag{2}$$

$$\Delta T_1 < \Delta T, \Delta C_1 < \Delta C, Q = \text{const}, \Delta T_1 \Rightarrow 0, \Delta C_1 \Rightarrow 0.$$

[5, 6].

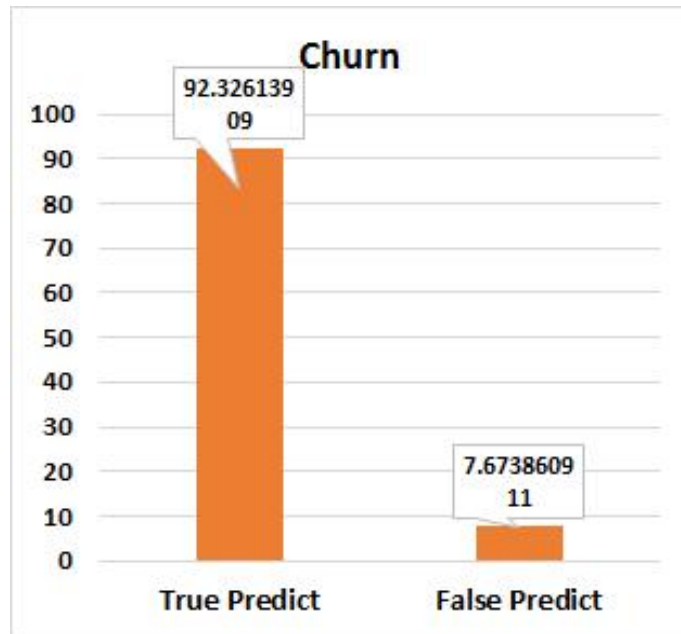
sklearn

churn pred ct  
Support Vector Machines

(T) (C)

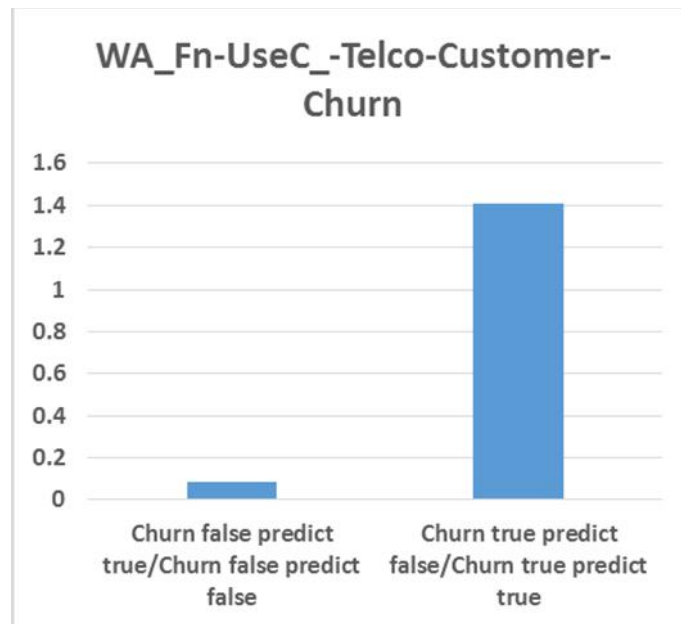
(Total Cost of Ownership, TCO)

- . 1.
- 1. python
- 2. (desktop app)
- 3. python.
- ( )



. 2.

- churn.csv



. 3.

wa\_fn-usec\_-Telco-Customer-Curn.csv

python

python

(churn predict)

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AN APPROACH TO SOFTWARE OPTIMIZATION FOR TELECOMMUNICATION COMPANY BIG DATA ANALYSIS

Using optimal architecture development for software created with the help of Python programming language, we find the solution of a BIG DATA analysis problem for telecommunication company churn prediction. We demonstrate creation of a decision-making system with a flexible modular structure and software development time and resource cost optimization.

1. *Telco* Customer Churn data set. <https://www.kaggle.com/watson-analytcs/blog/predict-telecom-the-telco-customer-churn-data-set/>.
2. *Mach ne* Learning Repos itory. [http://archive.cs.uc.edu/ml/?cm\\_mc\\_uid=15134185542514827482720&cm\\_mc\\_sd\\_50200000=1485174656](http://archive.cs.uc.edu/ml/?cm_mc_uid=15134185542514827482720&cm_mc_sd_50200000=1485174656).
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4. ... 3D ... 2014. 1. 69 – 75.
5. *M.*, ... , *GEO-UA 2016*.
6. Google Earth Engine. ... , *GEO-UA 2016*. 2016. P. 20 – 21.

10.03.2017

**Про авторів:**

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