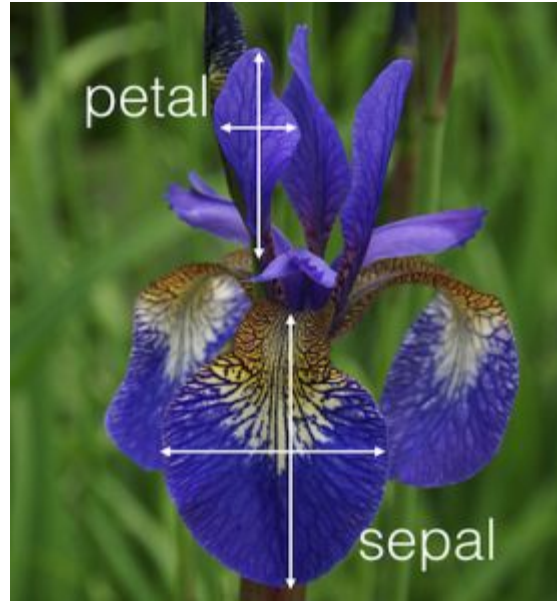


Machine Learning

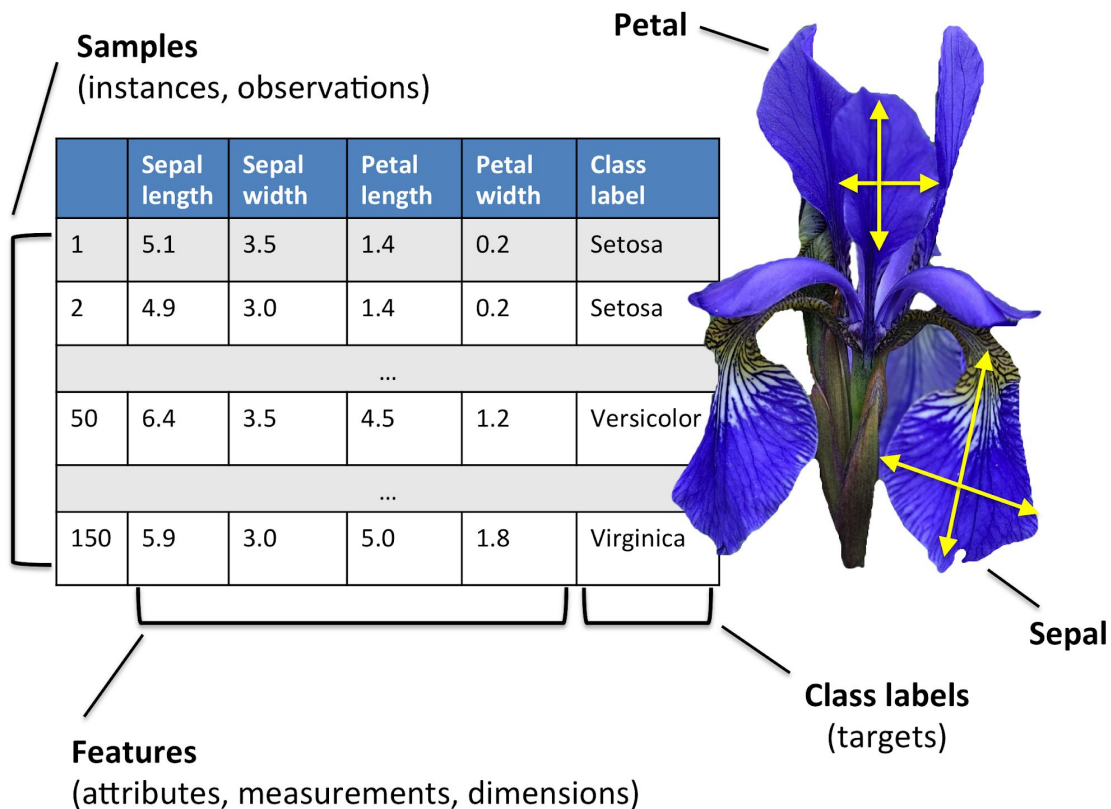
In PHP

CoderConf

What is Data Mining and Machine Learning



It's All About Feature Extraction



Type Of Machine Learning

Classification: KNN, SVM, MLP, C4.5, RandomForest

Clustering: KMeans, DBSCAN, OPTICS



How many of you, Love PHP?

PHP



How many of you, ,Hate?

PHP



Source: [4]

Data Mining Is About to Matrix



A Benchmark, PHP VS Python

Problem: Find All Prime Number Below 10000

PHP	1.39
Python	1.84

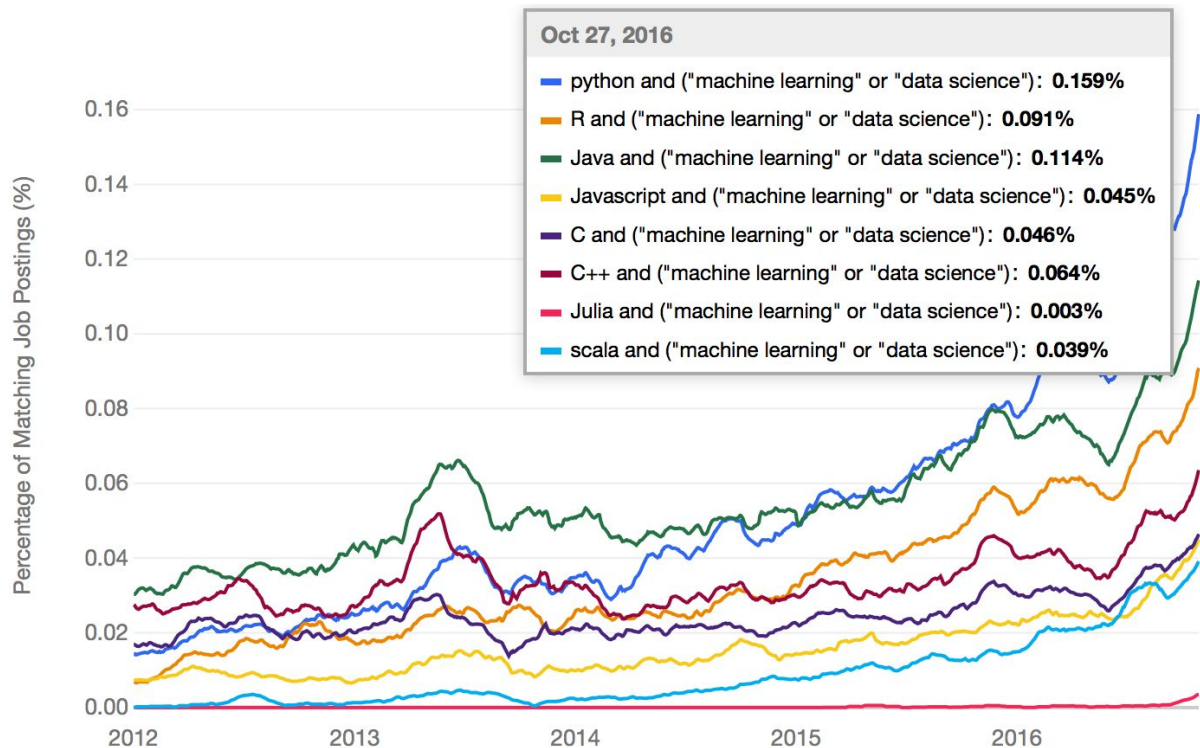
Another Benchmark, PHP VS Python

Problem2: 2000000 Time Calculating MD5(N+N)

PHP5	21.43
Python	9.87

> So, PHP5 Is Not Good For Computation

Languages that Companies Used Fro ML



Any Q Bro?

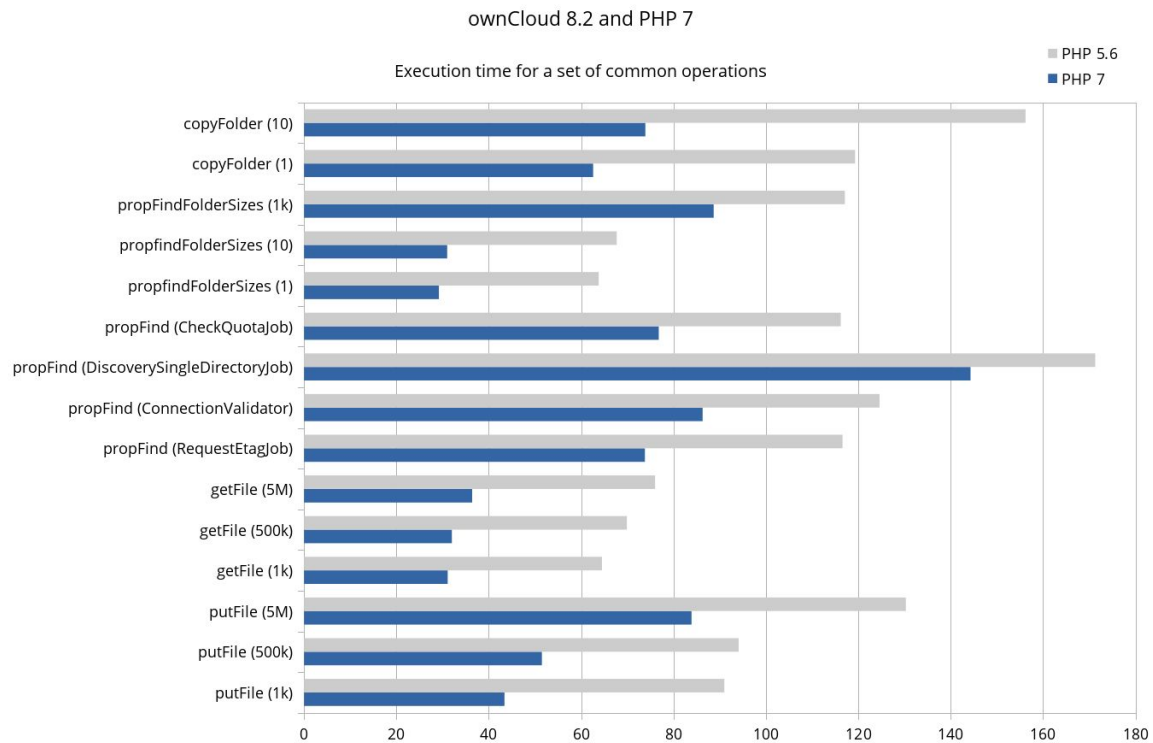


But Wait, Something Change these days

PHP



Comparison



A Little About Optimization

> You Want to Optimize IO?

1. High Level Optimization \Rightarrow Disk IO

2. Low Level Optimization \Rightarrow RAM IO



We Focus On Low Level Optimization

> You Want to Optimize IO?

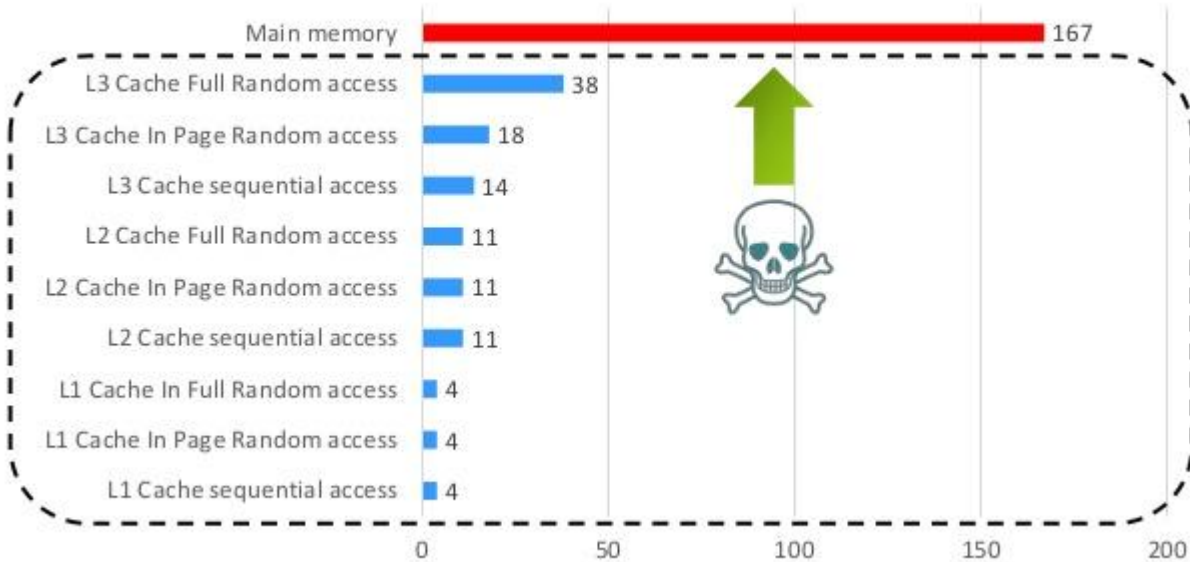
1. High Level Optimization \Rightarrow Disk IO

2. Low Level Optimization \Rightarrow RAM IO



Cache Vs RAM Access Time

The CPU Cache Hierarchy Latencies In CPU Cycles



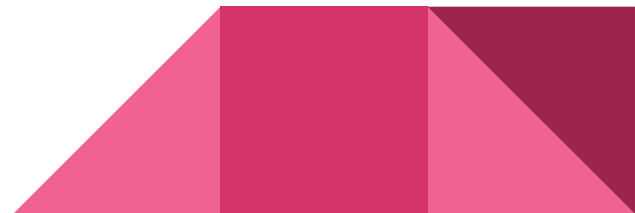
We must Optimize these 3:

1. Memory Allocation
2. Memory Usage
3. Memory Indirection



Something Improved IN PHP7

- > **Ints, Floats**
- > **Objects**
- > **Strings**
- > **Arrays → HashTables**



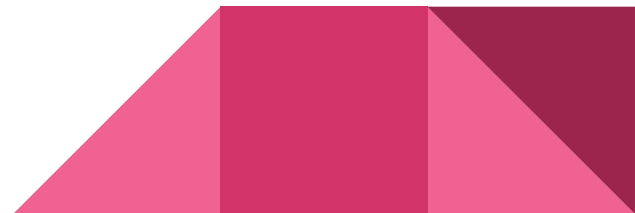
Something Improved IN PHP7

> Ints, Floats

> Objects

> Strings

> **Arrays** → **HashTables**



PHP 5(Core Variables)

Behind All PHP Variables There is a **ZVAL C struct**:

```
typedef union _zvalue_value {  
    long lval;  
    double dval;  
    struct {  
        char *val;  
        int len;  
    } str;  
    HashTable *ht;  
    zend_object_value obj;  
} zvalue_value;
```

PHP 7(Core Variables)

Behind All PHP Variables There is a **ZVAL C struct**:

```
typedef union _zend_value {
    zend_long      lval;
    double         dval;
    zend_refcounted *counted;
    zend_string    *str;
    zend_array     *arr;
    zend_object    *obj;
    zend_resource  *res;
    zend_reference *ref;
    zend_ast_ref   *ast;
    zval           *zv;
    void           *ptr;
    zend_class_entry *ce;
    zend_function  *func;
    struct {
        uint32_t w1;
        uint32_t w2;
    } ww;
} zend_value;
```

What is The Difference In Arrays(5 vs 7)?

	PHP5	PHP7
Allocations:	2 + 2 per element	2 + 0 per element
Size:	72 + 112 per element	56 + 36 per element

Now, What tools to use?

<https://github.com/gburtini/Learning-Library-for-PHP>

Fork: 74

Star: 246

DBScan, Kmeans, KNN, Markov Chain, Naive Bayes and ...

Learning Library for PHP

Some machine learning/artificial intelligence/natural language processing algorithms implemented in PHP. Note that in almost all cases, PHP as it stands today is the wrong tool for most machine learning jobs. This library provides a pedagogical introduction to these tools more than it is a recommendation that it is used for day-to-day development.

Copyright (C) 2011-2015 Giuseppe Burtini joe@truephp.com and contributors as appropriate.



A Better Tool

<https://github.com/php-ai/php-ml> > Only For PHP 7

Fork: 493 Star: 3988

SVC, KNN, KMean, Naive Bayes, SVR, Least Square and ...

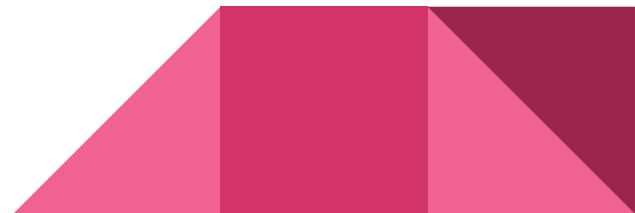
Cross Validation, Normalization, TF-IDf, Metrics and ...



Hybrid Approaches

Use PHP with these services:

- > Amazon Machine Learning
- > Python Core with Tensorflow, Scikit and ...
- > Google Cloud Prediction API
- > IBM Watson



Any Question Again?



Images and Contents Sources

[1] <http://blog.kaggle.com/2015/04/22/scikit-learn-video-3-machine-learning-first-steps-with-the-iris-dataset/>

[2] http://sebastianraschka.com/Articles/2015_pca_in_3_steps.html

[3] <http://www.designbolts.com/>

[4] <https://openclipart.org/detail/213226/broken-heart-icon>

[5] <http://beirutpress.net/article/311667>

[6] <http://www.hurricanesoftwares.com/php-vs-python-analysis/>

[7] <http://www.bartarinha.ir/fa/news/332320/%D8%A7%D9%87%D9%85%DB%8C%D8%AA-%D8%A7%D8%B5%D8%BA%D8%B1-%D9%81%D8%B1%D9%87%D8%A7%D8%AF%DB%8C-%D8%A8%D9%88%D8%AF%D9%86>

[8] <https://owncloud.org/blog/php-7-is-here-and-owncloud-is-ready/>

[9] <https://www.slideshare.net/christadkin/sql-server-engine-cpu-cache-as-the-new-ram>

[10] <http://www.phpinternalsbook.com/>

[11] https://www.ibm.com/developerworks/community/blogs/jfp/entry/What_Language_Is_Best_For_Machine_Learning_And_Data_Science?lang=en

Where Am I:

Website: **MasoudKaviani.ir**

Telegram: **masoud_kaviani**

Instagram: **masoudkaviani**

Twitter: **masoud_kaviani**

