Laravel and SOLR

How to build a powerful search combination

- Peter Steenbergen

Who am I?


beepRoger
Web & App


3WS.nl
Internet Oplossingen


virtio.


Handels
prijzen.nl


DBK
MASTERS IN
ONLINE BUSINESS


PuurlDee
creatieve communicatie

What I am about to cover

- The meaning of the term powerful
- MySQL Drawbacks
- Why SOLR
- Usage of tools
- Setting up / starting with SOLR Server
- Starting with SOLR
- Integrate SOLR with Laravel
- Laravel and SOLR Searching

What I do NOT cover

- Front-End implementation
  - No Angular, VueJS or React integration (recommend VueJS though)
- Authentication
- Internals of SOLR / Elasticsearch
  - Talk of Elze Kool in the summer
    https://bitbucket.org/elzekool/talk-solr-elasticsearch-internals/src

What do I mean by “powerful search”?

- Fast
  Search in milliseconds, not in seconds.

- Relevant
  If you search for a Hotel in California, don’t return Hotels in Groningen. Or a black Audi, you don’t want to see a white Peugeot 107.

- Scalable
  If your data grows, then you need more resources. It could mean by vertical scaling or (better) horizontal scaling of capacity.

MySQL Drawbacks for searching through text

- LIKE %%
  - Fast? No, try searching for millions of records with multiple joins to combine all the information needed.
  - Relevant? No, Try search for “PHP programmeur” or “PHP developer”, or “Audi A8 zwart” or “zwarte Audi A8“.
  - Scalable? Could be, but with much hassle in configurations in production and backing up.
- Counts – How many Audi’s? How many black cars? Takes multiple query’s for the calculation of those counts.

NB: FULL TEXT not noted here, gave a bit better result but not great.

Why I started with SOLR

- Providers send vehicle updates daily between 06:00 and 22:00 more than 25.000 vehicles are changed throughout the day.

- Encountered MySQL limitations
  - Speed – With JOINS for additional data.
  - Table LOCK during write actions.
  - Relevancy was not great.

- A temporary solution was creating a flat table, that contains all the data to be shown at the searchoverview pages.

Why I started with SOLR

Handelsprijzen.nl

Thats why I started with SOLR

After changing the search from MySQL to SOLR

- Search time decreased from seconds to milliseconds.
- Relevancy went up since the search internals work differently.
- Costs went down, less resources needed.
- Organic traffic went up since the improved loading times.
- Visitors viewed more paged since better performance.

Statistics: 17.k daily visitors, 160k vehicles, 25k-30k changes

Next up: coverage of the following tools

- MySQL (for main storage)
- SOLR
- Docker (Optionaly)
- Laravel

Let the fun stuff begin!

Setting up / Starting MySQL on OSX

```
brew install mariadb
```

```
brew services start mariadb
```

- Default credentials

  User: root

  Password: <empty>

  Port: 3301

Setting up / starting SOLR on OSX

https://github.com/petericebear/solr-configsets

http://brew.sh

```
brew install solr
```

```
solr start
```

```
/usr/local/opt/solr/bin/solr create_core -c CORE_NAME -d CONFIG_SET_FOLDER_NAME
```

```
http://localhost:8983/solr/
```

Setting up / starting SOLR with docker

https://github.com/petericebear/solr-configsets

```
docker build -t solr_configsets .
```

```
docker run -d -p 8983:8983 --name solrserver solr_configsets
```

```
docker exec -it --user=solr solrserver bin/solr create_core -c collection1 -d bare_minimal
```

```
http://DOCKER_MACHINEIP:8983/solr/
```

Where to begin with SOLR - schema.xml

- Fields
  1. Type
     What kind of field is it?
  2. Indexed
     Do you want to search in it?
  3. Stored
     Return the data in results?
  4. Multivalued
     Can it contain more than 1 value?

- Fieldtypes
  - String
  - Integer
  - Float
  - Boolean
  - Date
  - Location (Latitude/Longitude)
  - ..

Where to begin with SOLR - additional

Copy contents of a field to another field

```
<copyField source="place" dest="topograph"/>
<copyField source="province" dest="topograph"/>
<copyField source="county" dest="topograph"/>
<copyField source="country" dest="topograph"/>
```

Add analyzer to a fieldtype – remove stop words “de, het, een, op, in, naar” etc.

```
<fieldType name="text" class="solr.TextField" positionIncrementGap="100">
    <analyzer>
        <tokenizer class="solr.StandardTokenizerFactory"/>
        <filter class="solr.LowerCaseFilterFactory"/>
        <filter class="solr.StopFilterFactory" ignoreCase="true" words="lang/stopwords_nl.txt" format="snowball"/>
        <filter class="solr.StemmerOverrideFilterFactory" dictionary="lang/stemdict_nl.txt" ignoreCase="false"/>
        <filter class="solr.HunspellStemFilterFactory" dictionary="lang/nl_NL.dic" affix="lang/nl_NL.aff" ignoreCase="true"/>
    </analyzer>
</fieldType>
```

het bestaande stroomnet naar alle kanten van het huis. Een Starter Kit van 2 adapters is eenvoudig uit te breiden met losse adapters.

Meer: Advies over powerline-adapters | Powerline adapters met wifi | Top-10 Powerline-adapters

Snelheid via lichtnet
- 2000 Mbps (1)
- 1800 Mbps (1)
- 1200 Mbps (14)
- 1000 Mbps (6)
- 600 Mbps (1)
- 500 Mbps (36)

Merk
- D-Link (6)
- Devolo (19)
- Netgear (4)
- Sitecom (3)
- TP-Link (17)

Toon meer

Coolblue's keuze
- Ja (3)

Wifi
- Ja (27)
- Nee (32)

Adapters in doos
- 3-pack (6)

Onze keuze voor gamen & downloaden

Devolo dLAN 1200+ WiFi Starter Kit

313 reviews

179,-

Morgen in huis

- 1200 Mbps
- Wifi
- 2 adapters

Toevoegen aan vergelijking

TP-Link TL-WPA4226KIT

67 reviews

66,-

Morgen in huis

- 500 Mbps
- Wifi
- 2 adapters

Tweedekans **van 61,-**

Toevoegen aan vergelijking

TP-Link TL-PA4010P Starter Kit

101 reviews

46,-

Morgen in huis

- 500 Mbps
- Geen wifi
- 2 adapters

Toevoegen aan vergelijking

Zoeken in aanbod

Zoekopdracht
Frankrijk
Les 3 Vallées
Alle dorpen
Aankomstdatum
Aantal overnachtingen
Reisgezelschap
Reisgezelschap in 1 kamer / appartement

Filter aanbod op:

Type
- Appartement
- Chalet
- Gasthof
- Hotel
- Pension
- Studio

Ligging
- Aan de piste
- Centraal gelegen
- Privacy

Voorzieningen
- All Inclusive
- Fitnessruimte
- Hammam
- Jacuzzi
- Sauna
- Zwembad

103 resultaten gevonden in aanbod

Sorteer op: Populariteit

Actieve filters: Les-3-vallees ✖ Frankrijk ✖

Chalet-appartement Montagnettes Le Hameau Du

- Aan de piste
- Kindvriendelijk
- WiFi
- Zwembad
- Frankrijk, Val Thorens

Vanaf € **465,-**

Direct boeken ›

Chalet-appartement Montagnettes Le Hameau De La

- Aan de piste
- WiFi
- Sauna
- Jacuzzi
- Frankrijk, Les Menuires

Vanaf € **255,-**

Direct boeken ›

Résidence Village Montana

- Aan de piste
- Kindvriendelijk
- WiFi
- Sauna
- Frankrijk, Val Thorens

Vanaf € **308,-**

Direct boeken ›

Résidence Le Cheval Blanc

- Aan de piste
- Kindvriendelijk
- WiFi
- Sauna
- Frankrijk, Val Thorens

Vanaf € **242,-**

Chalet-appartement Montagnettes Oxalys

- Aan de piste
- WiFi
- Zwembad
- Sauna
- Frankrijk, Val Thorens

Vanaf € **349,-**

Chalet-appartement Les Chalets Du Soleil

- Aan de piste
- WiFi
- Frankrijk, Les Menuires

Vanaf € **225,-**

Doorzoek onze vacatures

Functie of trefwoord

Plaats

+ 30 km

Zoek

Filter resultaten

Regio

Vakgebied

- ICT

Carrièreniveau

- Student / scholier
- 0 - 2 jaar werkervaring
- 3 - 5 jaar werkervaring
- 6 jaar of meer werkervaring

Aantal uren

Opleiding

- HAVO
- HBO
- MBO
- Universitair
- VMBO, LBO
- VWO

Alle vacatures

2322 vacatures

TOP VACATURE

Coördinator project en onderhoud - Startbonus €350

VECOS Europe BV

Team VECOS zoekt held Coordinator projecten en onderhoud Ben jij een energiek organisatietalent? Met een hands-on mentaliteit? Wil je werken bij...

Eindhoven 32 - 40 uur HBO Bekijk vacature

TOP VACATURE

Software Engineer - €350 Startbonus

Personato

Bedrijfsprofiel Royal SMIT Transformers is een grote speler in de energiemarkt welke zich richt op het ontwerpen en produceren van transformatoren voor...

Nijmegen 32 - 40 uur HBO Bekijk vacature

TOP VACATURE

.Net Software Lead - €350 Startbonus

Firstfocus

Job Description FirstFocus bv is looking for a .NET Software Lead to support our development team. You will be working on various web-based projects,...

Nieuwegein 32 - 40 uur HBO Bekijk vacature

TOP VACATURE

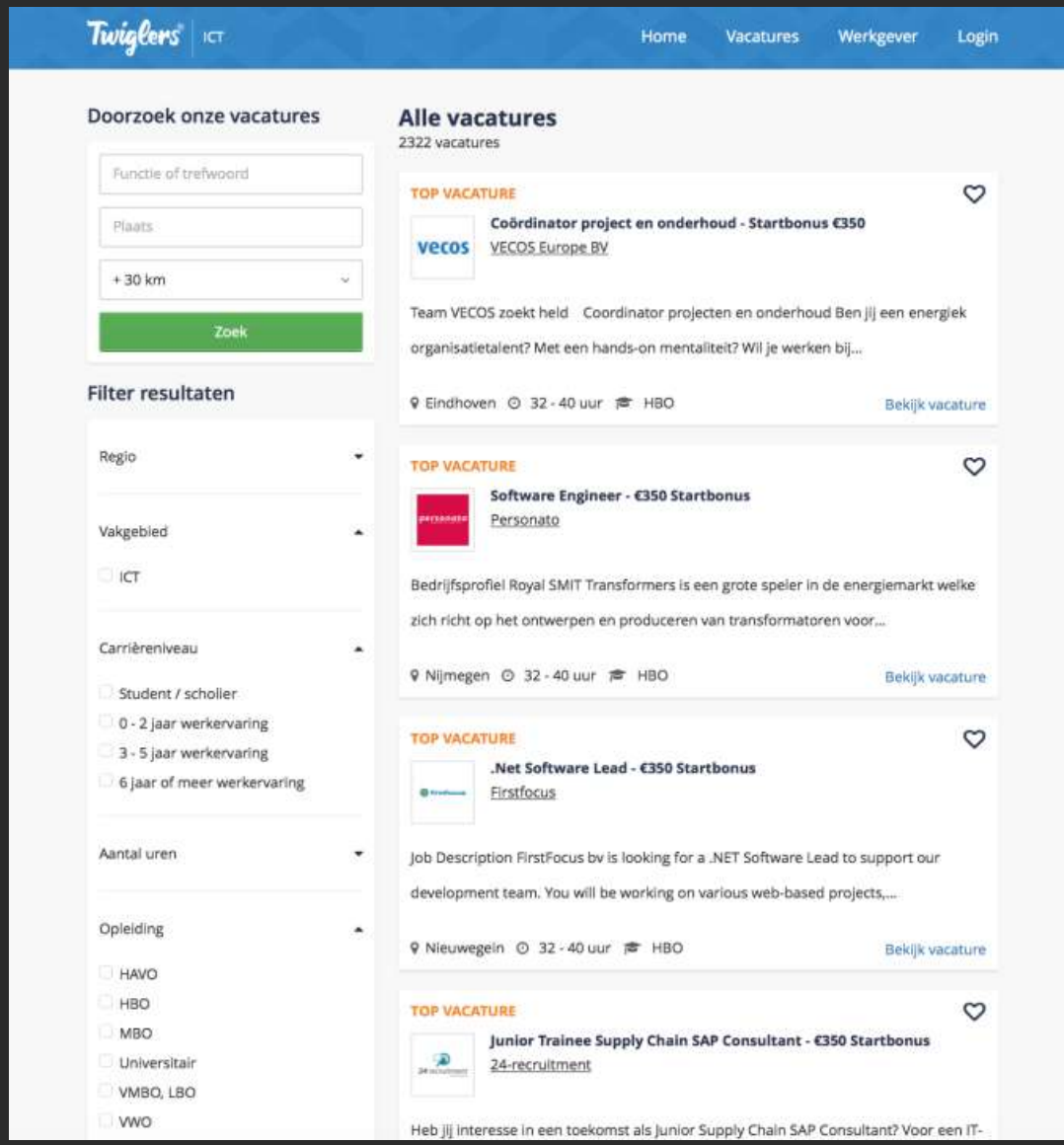
Junior Trainee Supply Chain SAP Consultant - €350 Startbonus

24-recruitment

Heb jij interesse in een toekomst als Junior Supply Chain SAP Consultant? Voor een IT-

schema

```
    <fields>
        <field name="id" type="int" indexed="true" stored="true" required="true"/>
        <field name="slug" type="string" indexed="true" stored="true"/>
        <field name="websiteId" type="int" indexed="true" stored="false" multiValued="true"/>
        <field name="text" type="text" indexed="true" stored="false" multiValued="true"/>
        <field name="title" type="text" indexed="true" stored="false" multiValued="true"/>
        <field name="jobTitle" type="string" indexed="true" stored="true"/>
        <field name="jobDescription" type="text" indexed="true" stored="true"/>
        <field name="company" type="string" indexed="true" stored="true"/>
        <field name="companyLogo" type="string" indexed="false" stored="true"/>
        <field name="degree" type="string" indexed="true" stored="true" multiValued="true"/>
        <field name="competence" type="string" indexed="true" stored="true" multiValued="true"/>
        <field name="branche" type="string" indexed="true" stored="true" multiValued="true"/>
        <field name="salaryGroup" type="string" indexed="true" stored="false" multiValued="true"/>
        <field name="salaryText" type="string" indexed="false" stored="true"/>
        <field name="hoursGroup" type="string" indexed="true" stored="false" multiValued="true"/>
        <field name="hoursText" type="string" indexed="false" stored="true"/>
        <field name="isTopJob" type="boolean" indexed="true" stored="true"/>
        <field name="jobPlaced" type="date" indexed="true" stored="true"/>
        <field name="jobType" type="string" indexed="true" stored="true" multiValued="true"/>
        <field name="website" type="string" indexed="false" stored="true"/>
        <field name="phone" type="string" indexed="true" stored="true"/>
        <field name="email" type="string" indexed="false" stored="true"/>
        <field name="street" type="string" indexed="false" stored="true"/>
        <field name="houseNumber" type="string" indexed="false" stored="true"/>
        <field name="zip" type="string" indexed="false" stored="true"/>
        <field name="place" type="string" indexed="true" stored="true"/>
        <field name="province" type="string" indexed="true" stored="true"/>
        <field name="county" type="string" indexed="true" stored="true"/>
        <field name="country" type="string" indexed="true" stored="true"/>
        <field name="topograph" type="text" indexed="true" stored="false" multiValued="true"/>
        <field name="location" type="location" indexed="true" stored="true"/>
    </fields>
    <uniqueKey>id</uniqueKey>
    <copyField source="place" dest="topograph"/>
    <copyField source="province" dest="topograph"/>
    <copyField source="county" dest="topograph"/>
    <copyField source="country" dest="topograph"/>
    <copyField source="jobTitle" dest="text"/>
    <copyField source="jobDescription" dest="text"/>
    <copyField source="company" dest="text"/>
    <copyField source="degree" dest="text"/>
    <copyField source="competence" dest="text"/>
    <copyField source="branche" dest="text"/>
    <copyField source="topograph" dest="text"/>
</schema>
```



Installing laravel

- We use composer for the installation
  - If you don’t have it, get it from here: https://getcomposer.org

Run the following in your terminal:

```
composer create-project --prefer-dist laravel/laravel solrmeeting
```

Communicating with SOLR

- https://github.com/solariumphp/solarium
  - Over 1.2million downloads

Run the following in your terminal:

```
composer require solarium/solarium
```

Adding a configuration

- config/solarium.php

```php
<?php

return [
    'endpoint' => [
        'localhost' => [
            'host' => env('SOLR_HOST', '127.0.0.1'),
            'port' => env('SOLR_PORT', '8983'),
            'path' => env('SOLR_PATH', '/solr/'),
            'core' => env('SOLR_CORE', 'collection1')
        ]
    ]
];
```

Add ServiceProvider

When the application needs the Solarium\Client class, it will inject the created configuration to its Client. This way you will never have to touch the code when something changes to the server or core setting.

Notice the $defer setting. When true this ServiceProvider only will autoload when the Client is needed and NOT with evry request.

```
php artisan make:provider SolariumServiceProvider
```

```php
<?php

namespace App\Providers;

use Illuminate\Support\ServiceProvider;
use Solarium\Client;

class SolariumServiceProvider extends ServiceProvider
{
    protected $defer = true;

    /**
     * Register any application services.
     *
     * @return  void
     */
    public function register()
    {
        $this->app->bind(Client::class, function ($app) {
            return new Client($app['config']['solarium']);
        });
    }

    public function provides()
    {
        return [Client::class];
    }
}
```

Activate ServiceProvider

To make use of the new ServiceProvider in your application you must add it in config/app.php and add it to the list of providers.

```
return [
    'providers' => [
        // List off others providers...
        App\Providers\SolariumServiceProvider::class,
    ]
];
```

Testing the connection with SOLR

```
php artisan make:controller SolariumController
```

```
// SOLR Ping route
Route::get('/', 'SolrController@ping');
```

```php
<?php

namespace App\Http\Controllers;

class SolariumController extends Controller
{
    protected $client;

    public function __construct(\Solarium\Client $client)
    {
        $this->client = $client;
    }

    public function ping()
    {
        // create a ping query
        $ping = $this->client->createPing();

        // execute the ping query
        try {
            $this->client->ping($ping);
            return response()->json('OK');
        } catch (\Solarium\Exception $e) {
            return response()->json('ERROR', 500);
        }
    }
}
```

Adding contents to SOLR

Can contain single or multiple documents. Basic object for setting the data.

```php
class SolrController extends Controller
{
    protected $client;

    public function __construct(Client $client)
    {
        $this->client = $client;
    }

    public function addDocuments()
    {
        // get an update query instance
        $update = $this->client->createUpdate();

        // create a new document for the data
        $doc1 = $update->createDocument();
        $doc1->id = 123;
        $doc1->name = 'testdoc-1';
        $doc1->price = 364;

        // and a second one
        $doc2 = $update->createDocument();
        $doc2->id = 124;
        $doc2->name = 'testdoc-2';
        $doc2->price = 340;

        // add the documents and a commit command to the update query
        $update->addDocuments(array($doc1, $doc2));
        $update->addCommit();

        // this executes the query and returns the result
        $result = $this->client->update($update);

        echo '<b>Update query executed</b><br/>';
        echo 'Query status: ' . $result->getStatus(). '<br/>';
        echo 'Query time: ' . $result->getQueryTime();
    }
}
```

Removing a document from SOLR

```php
class SolrController extends Controller
{
    protected $client;

    public function __construct(Client $client)
    {
        $this->client = $client;
    }

    public function solr_delete_by_id($id)
    {
        // get an update query instance
        $update = $this->client->createUpdate();

        // add the delete id and a commit command to the update query
        $update->addDeleteById($id);
        $update->addCommit();

        // this executes the query and returns the result
        $result = $this->client->update($update);
        return $result;
    }
}
```

Basic search with SOLR

```php
public function search()
{
    // get a select query instance
    $query = $this->client->createSelect();

    // create a filterquery
    $query->createFilterQuery('name')->setQuery('name:php programmer');

    // this executes the query and returns the result
    $resultset = $this->client->select($query);
    // display the total number of documents found by solr
    echo 'NumFound: '.$resultset->getNumFound();
    // show documents using the resultset iterator
    foreach ($resultset as $document) {
        echo '<hr/><table>';
        echo '<tr><th>id</th><td>' . $document->id . '</td></tr>';
        echo '<tr><th>name</th><td>' . $document->name . '</td></tr>';
        echo '<tr><th>price</th><td>' . $document->price . '</td></tr>';
        echo '</table>';
    }
}
```

Facets query

inStock possible values

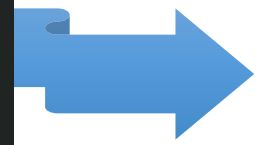
True [200]

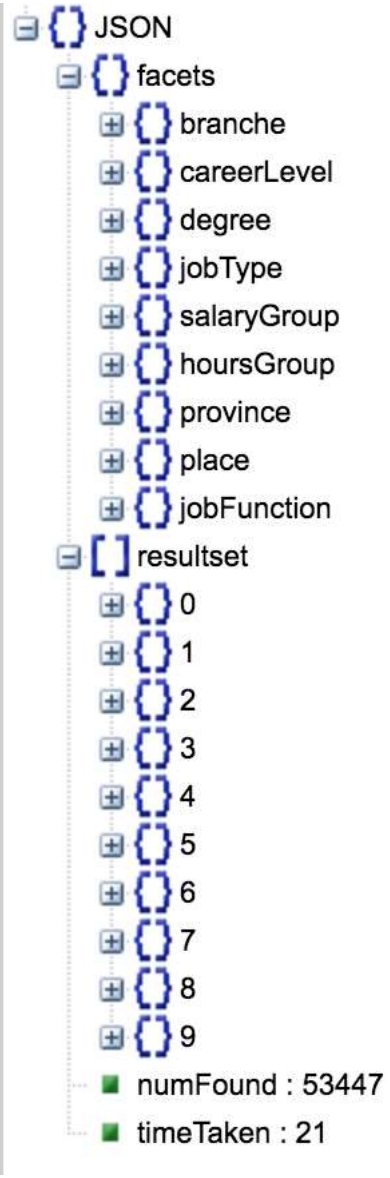
False [100]

```php
public function facet_search()
{
    // get a select query instance
    $query = $this->client->createSelect();
    // get the facetset component
    $facetSet = $query->getFacetSet();

    // create a facet field instance and set options
    $facetSet->createFacetField('stock')->setField('inStock');

    // this executes the query and returns the result
    $resultset = $this->client->select($query);
    // display the total number of documents found by solr
    echo 'NumFound: '.$resultset->getNumFound();

    // display facet counts
    echo '<hr/>Facet counts for field "inStock":<br/>';
    $facet = $resultset->getFacetSet()->getFacet('stock');
    foreach ($facet as $value => $count) {
        echo $value . ' [' . $count . ']<br/>';
    }

    // show documents using the resultset iterator
    foreach ($resultset as $document) {
        echo '<hr/><table>';
        echo '<tr><th>id</th><td>' . $document->id . '</td></tr>';
        echo '<tr><th>name</th><td>' . $document->name . '</td></tr>';
        echo '<tr><th>price</th><td>' . $document->price . '</td></tr>';
        echo '</table>';
    }
}
```

Combine for API endpoint

```php
public function search()
{
    // get a select query instance
    $query = $this->client->createSelect();
    $query->createFilterQuery('jobTitle')->setQuery('jobTitle:php programmer');

    // get the facetset component
    $facetSet = $query->getFacetSet();

    // create a facet field instance and set options
    $facetSet->createFacetField('place')->setField('place');
    $facetSet->createFacetField('degree')->setField('degree');

    // this executes the query and returns the result
    $resultset = $this->client->select($query);

    $result = new stdClass();
    $result->facets = $resultset->getFacetSet();
    $result->resultset = $resultset->getDocuments();
    $result->numFound = $resultset->getNumFound();
    $result->timeTaken = $resultset->getQueryTime();

    return $result;
}
```





More examples

- https://github.com/solariumphp/solarium/tree/master/examples
  - Well documented examples
- http://petericebear.github.io/
  - Personal blog with more SOLR integrations

Questions?

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