

Deelscooterdata

Van hobbyproject tot onderwijsmateriaal

...

Ronnie Lassche & Leon van der Meulen
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Ronnie Lassche
Merkator BV

Leon van der Meulen
Geodienst RUG



Aanleiding

Deelscooters op de campus en in de stad & api beschikbaar

Presentatie van Crunchy Data over python binnen postgresql

Kunnen we data uit externe online bronnen gemakkelijk en stabiel periodiek ophalen?

Van hobbyproject ...

Plpython functie die json data teruggeeft vanuit een api/url

```
CREATE OR REPLACE FUNCTION live_import.fn_get_json(fn_url text)
RETURNS jsonb LANGUAGE plpython3u
AS $$
```

```
    import requests
    headers = {'cache-control': "no-cache"}
    response = requests.get(url= fn_url, headers = headers)
    return response.text
```

```
$$;
```

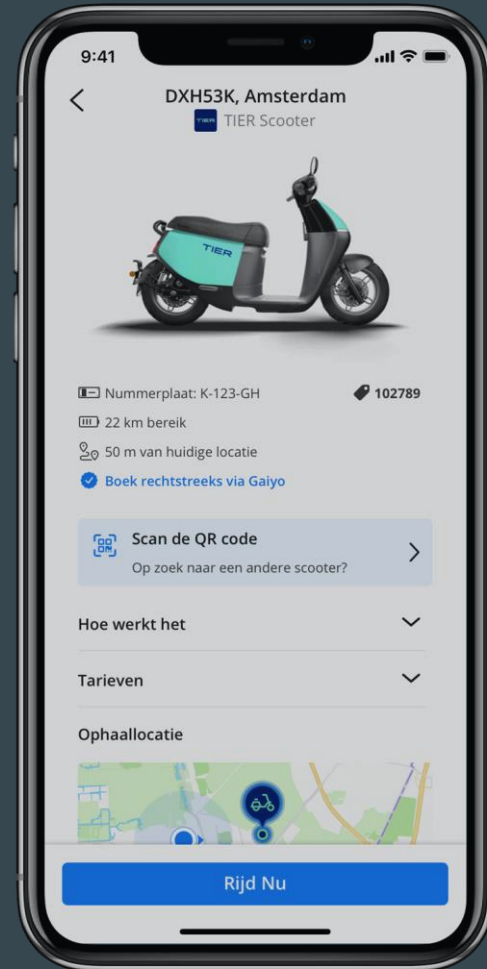
Procedure die de data uit die functie opslaat in een jsonb-kolom

```
CREATE OR REPLACE PROCEDURE live_import.fn_fill_scooters()
LANGUAGE sql
AS $$
insert into live_import.scooters_json
select
    now() as import_time,
    *
from
    live_import.fn_get_json('https://deelscooteraanbieder.com/api') as j
$$;
```

Cron job die elke 2 minuten de procedure aanroept

```
* / 2 * * * * psql -d geowerk -c "call
live_import.fn_fill_scooters();"

```



View die de json import “leesbaar” maakt

```
create or replace view live_import.scooters as  
select
```

```
import_time,
```

```
j->>'carId' as carid,
```

```
j->>'pricingTime' as pricingtime,
```

```
j->>'pricingParking' as pricingparking,
```

```
j->>'isClean' as isclean,
```

```
j->>'serviceType' as servicetype,
```

```
j->>'fuelLevel' as fuellevel,
```

```
j->>'isDamaged' as isdamaged,
```

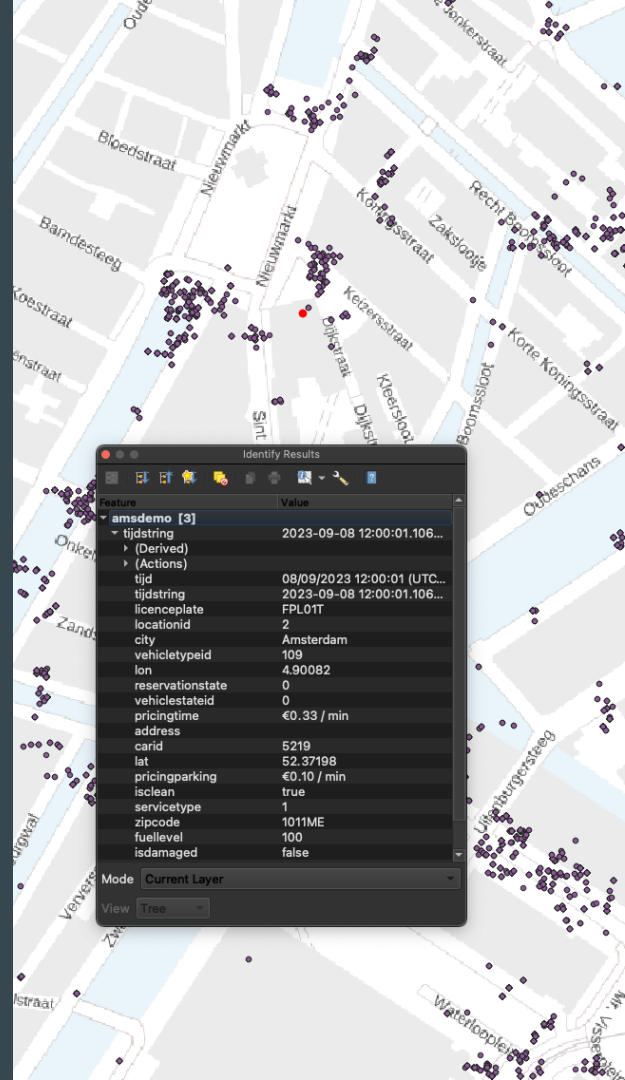
```
st_setsrid(st_point((j->>'lon')::numeric,(j->>'lat')::numeric),4326)
```

```
as geom
```

```
from
```

```
(select import_time, jsonb_array_elements(j) j from
```

```
live_import.scooters_json) a;
```



2 jaar later

Probleem: database werkt 's ochtends traag

Tabel live_import.scooter 120 GigaByte

Oplossing: Maar één record opslaan per parkeeractie.

Parkeeractie: locatie is minder dan 50 meter van vorige locatie

Procedure die per parkeeractie één record opslaat in tabel .

```
CREATE OR REPLACE PROCEDURE live_import.fn_scooter_points(nrDays INTEGER)
LANGUAGE plpgsql
AS $$
    haal met behulp van de view records op gesorteerd per scooter en tijd
    indien nieuwe scooter insert scooter record
    check volgend record
        < 50 meter doe niets
        > 50 meter update eindtijd in record en insert nieuw record
$$;
```

Aanroep (nu nog handmatig) `CALL live_import.fn_scooter_points(10)`

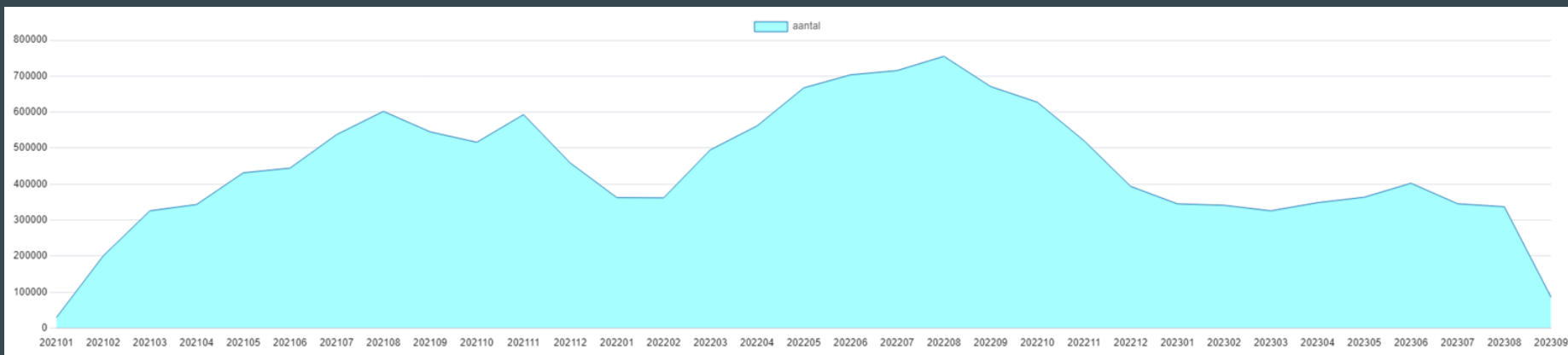
Tabel live_import.scooters

```
CREATE TABLE IF NOT EXISTS live_import.scooters
(
  car_id          integer,
  isdamaged       integer,
  min_fuellevel   integer,
  max_fuellevel   integer,
  start_time      timestamp with time zone,
  end_time        timestamp with time zone,
  pricingtime     text ,
  geom            geometry
)
```

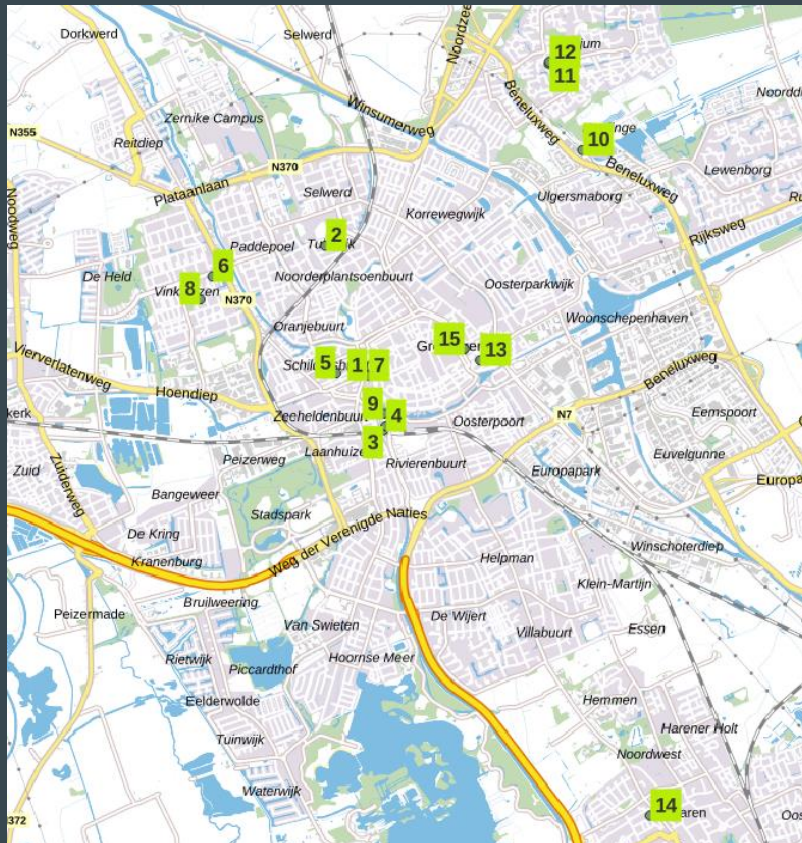
Resultaat

Tussen 28-01-2021 en 07-09-2023 in totaal 14.759.764 records

Tabel plus indexes nu 4 GigaByte

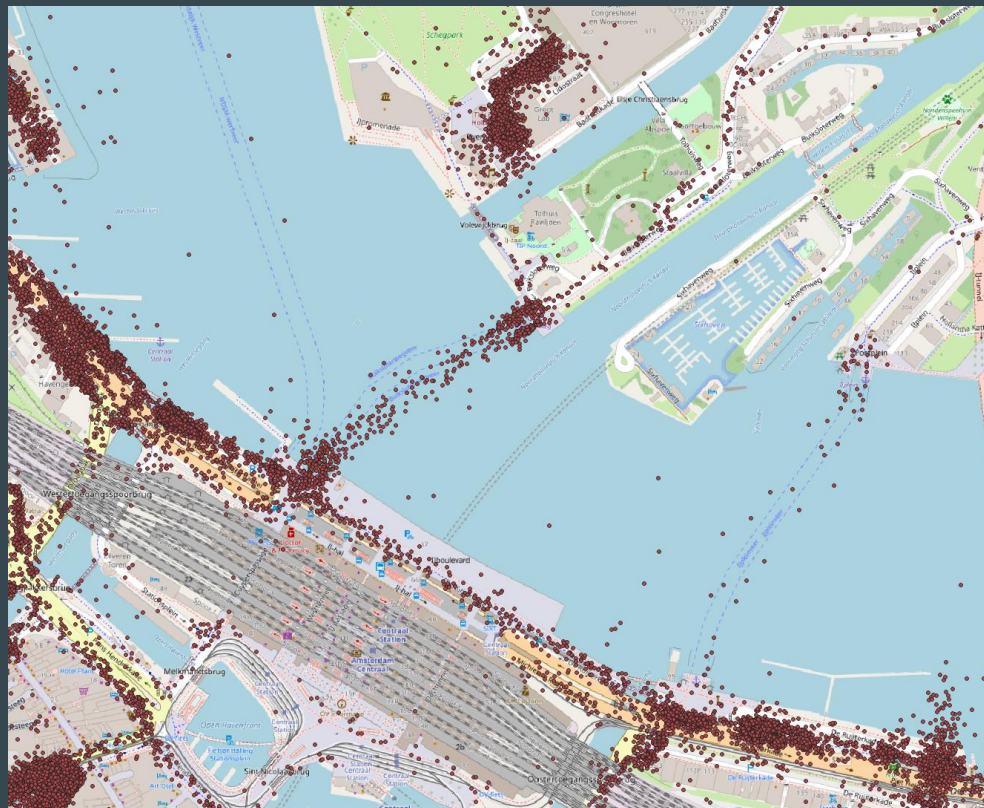


Uitkomsten: Volg die scooter



	start_date	start_time	end_date	end_time
1	1-9-2023	21:02	1-9-2023	21:04
2	1-9-2023	21:12	1-9-2023	21:40
3	1-9-2023	22:02	2-9-2023	11:50
4	2-9-2023	12:14	2-9-2023	15:42
5	2-9-2023	15:50	2-9-2023	16:24
6	2-9-2023	16:38	2-9-2023	20:38
7	2-9-2023	20:46	2-9-2023	21:18
8	2-9-2023	21:30	3-9-2023	12:00
9	3-9-2023	12:14	3-9-2023	13:54
10	3-9-2023	14:18	4-9-2023	17:10
11	4-9-2023	17:20	5-9-2023	12:52
12	5-9-2023	12:54	7-9-2023	16:40
13	7-9-2023	17:08	7-9-2023	19:52
14	7-9-2023	20:10	7-9-2023	20:52
15	7-9-2023	21:16	7-9-2023	21:16

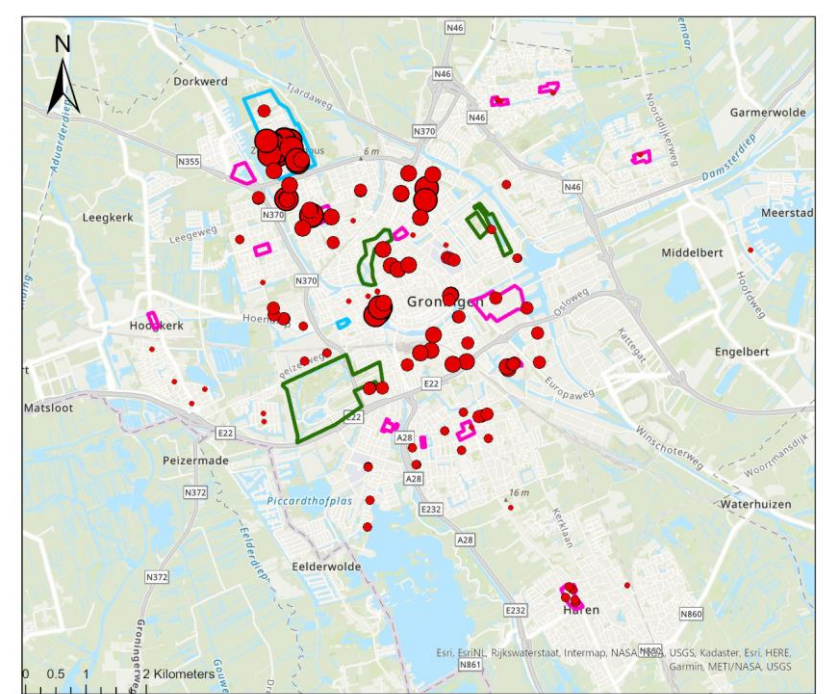
Uitkomsten: Parkeren op de pont



.. tot onderwijsmateriaal

Spatio-Temporal Movement Patterns cursus

Analyse van druk bezochte plekken



Density of Parked Scooters in Groningen Thursday Morning