



**Maarten Sukel**

AI Lead @ City of Amsterdam (CTO)  
Phd researcher @ University of Amsterdam

## Amsterdam Intelligence

30 JUNE 2020



# Amsterdam intelligence Make AI work for citizens

“Artificial intelligence can help Amsterdam to achieve its ambitions as a **free, just and sustainable city**. Artificial intelligence can also **help to make the lives of all residents more pleasant**.”

We do not intend to waste time. I am keen to ensure that artificial intelligence **benefits everyone in Amsterdam as soon as possible.** “



# City of Amsterdam AI team



**Maarten Sukel**

AI Lead @ Gemeente Amst.  
Phd Candidate @UVA



**Guido Hobeijn**

Manager & AI Translator  
@Gemeente Amsterdam



**Iva Gornishka**

AI Specialist  
@Gemeente Amsterdam



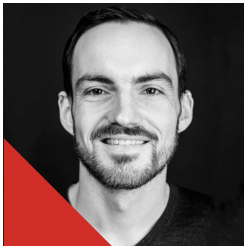
**Laurens Samson**

Machine Learning Engineer  
@Gemeente Amsterdam



**Chris Eijgenstein**

Data Engineer  
@Gemeente Amsterdam



**Daan Bloembergen**

AI Researcher  
@Gemeente Amsterdam



**Lino Miltenburg**

AI Specialist  
@Gemeente Amsterdam



**Claudia Pinhao**

UX/UI Designer  
@Gemeente Amsterdam



**Thomas Brockmeier**

Backend Developer  
@Gemeente Amsterdam



**Nirav Malsattar**

Researcher/Developer  
@TU Delft and G. Amsterdam

# Our Partners



Gemeente  
Amsterdam



UNIVERSITEIT VAN AMSTERDAM



AMS  
AMSTERDAM INSTITUTE FOR  
ADVANCED METROPOLITAN SOLUTIONS



ICAI Innovation Center for  
Artificial Intelligence



AI  
for  
people



Amsterdam  
Data Science



Veiligheidsregio  
Amsterdam-Amstelland



VNG



Gemeente Utrecht



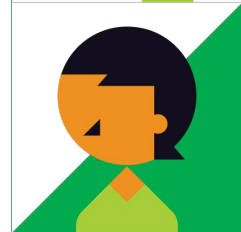
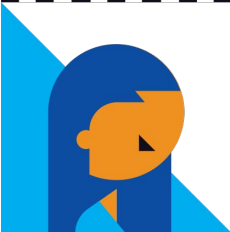
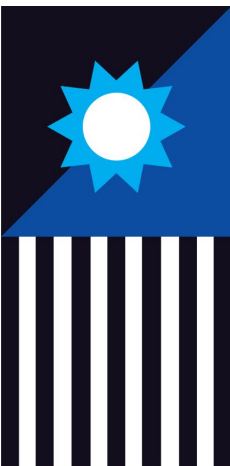
Gemeente Rotterdam



Code for NL



World Enabled



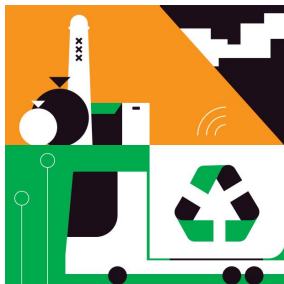
# Using state-of-the-art AI research today to increase livability of the cities of tomorrow

Amsterdam Intelligence

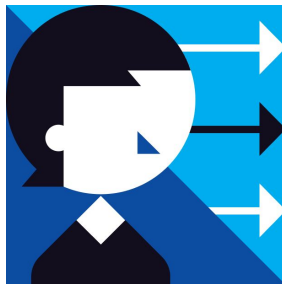
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## Our Projects

Our projects reflect our ideologies and here we share our progress, research and ideas with you. We want to be transparent in every step. We want to collaborate and evolve together. This is from Amsterdam to Amsterdammers, but also to other municipalities and who knows - to the world. Let's make 'AI for good' together!



**Object Detection Kit**



**1,5 Meter Monitor**



**Privacy blur**



**3D Point Cloud**







ACTION

Tanger

JUN

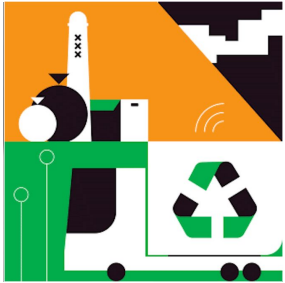






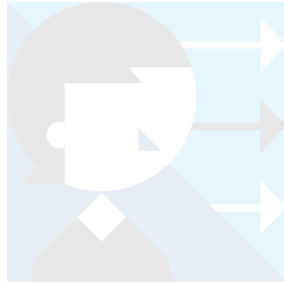
# One step towards the future

Our projects reflect our ideologies and here we share our progress, research and ideas with you. We want to be transparent in every step. We want to collaborate and evolve together. This is from Amsterdam to Amsterdammers, but also to other municipalities and who knows - to the world. Let's make 'AI for good' together!



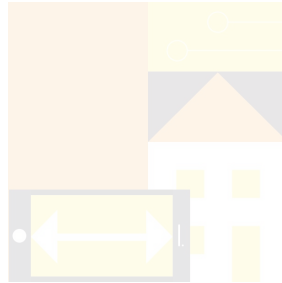
**Object Detection Kit**

Maarten Sukel



**1,5 Meter Monitor**

Iva Gornishka



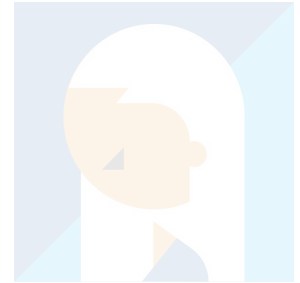
**Privacy blur**

Laurens Samson



**3D Point Cloud**

Daan Bloembergen



**AI for citizens**

Guido Hobeijn

# The first creature with eyes

Lived approximately

# 514

million years ago





# Computer vision has advanced rapidly over the last years

And will eventually make it possible for the city to see and think on a whole new scale



## Cities of tomorrow



## Cities are changing:



Cities aim to reduce inequalities in cities



Cities are becoming more sustainable



The population is growing

# Urban garbage challenge

- 1 **Garbage on the street is a nuisance**
- 2 **Due to the dynamic nature we need up to date data**
- 3 **Service requests are helpful but have some challenges**
- 4 **Imbalance on cleanliness across the city**



# Beschrijf uw melding

Waar gaat het om?

Beschrijf uw melding

## Hoofdrubriek

1. afval 91%
2. wegen-verkeer-straatmeubilair 6%
3. overlast-op-het-water 2%
4. overlast-in-de-openbare-ruimte 1%
5. openbaar-groen-en-water 1%

## Subrubriek

1. veeg-zwerfvuil 40%
2. grofvuil 37%
3. huisafval 4%
4. dode-dieren 3%
5. onderhoud-stoep-straat-en-fietspad 3%
6. puin-sloopafval 3%



# Automatically route service requests

## Signalen

*Working together for quality of life*

Signalen is an open source process and task system for governments, which automatically categorizes and routes reports about public space for processing by the appropriate handler.

[More information on Signalen](https://signalen.org/en/)

- 1 Open source
- 2 Route service requests with machine learning
- 3 More info? <https://signalen.org/en/>



person

potted plant

garment

garment

potted plant

potted plant

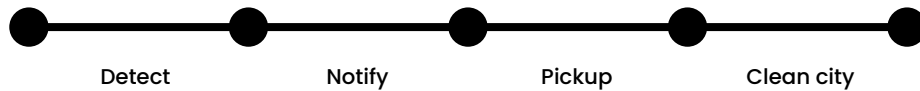
bench

tree

garment

garment







# Object Detection Kit

- 1 Scan the street using smartphones
- 2 Works in real time
- 3 Collect resources separately so they can be recycled
- 4 Alignment with city processes



## We work on a high quality dataset that tackles these problems that we will make public

1

### Annotate data once

We have a dataset that is diverse enough and will have it annotated once.

2

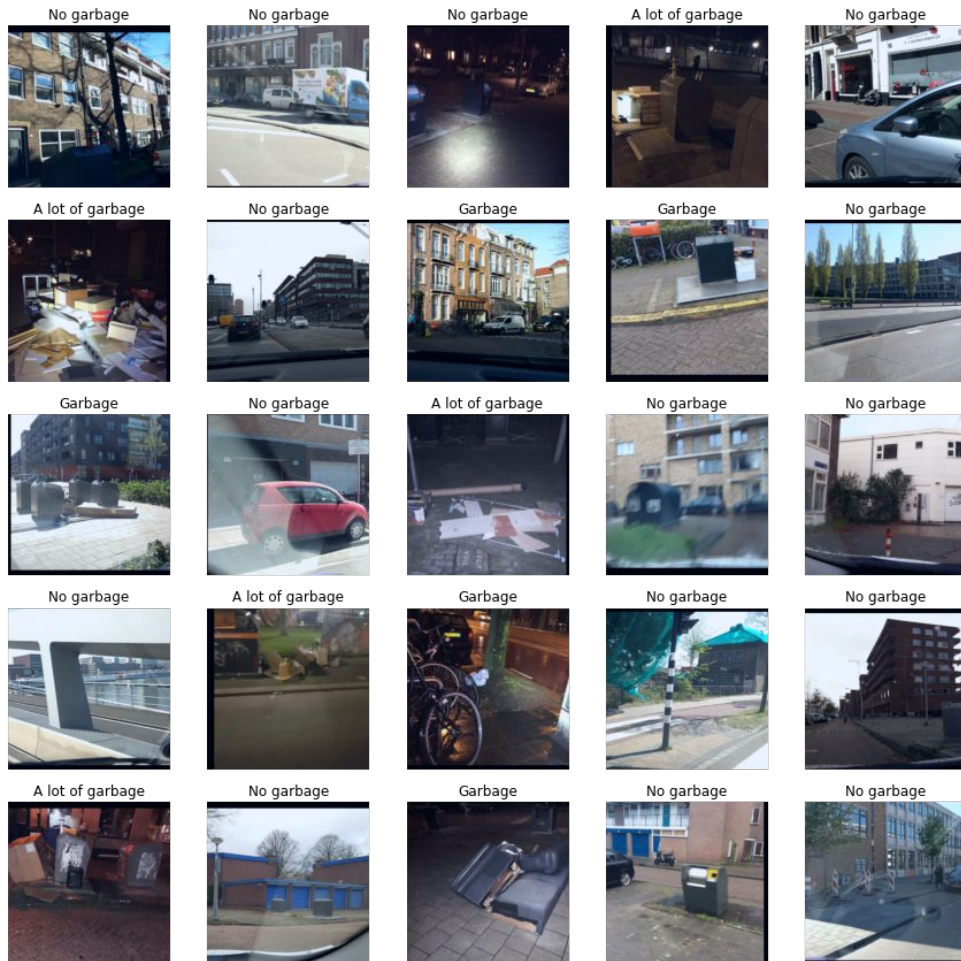
### Annotation guidelines

The guidelines we use are made together with the experts that know how a city is cleaned.

3

### Allow for research on the dataset

By making the dataset public, after removing privacy sensitive information, we allow for more research on this interesting and challenging data.



# Get to know ODK better

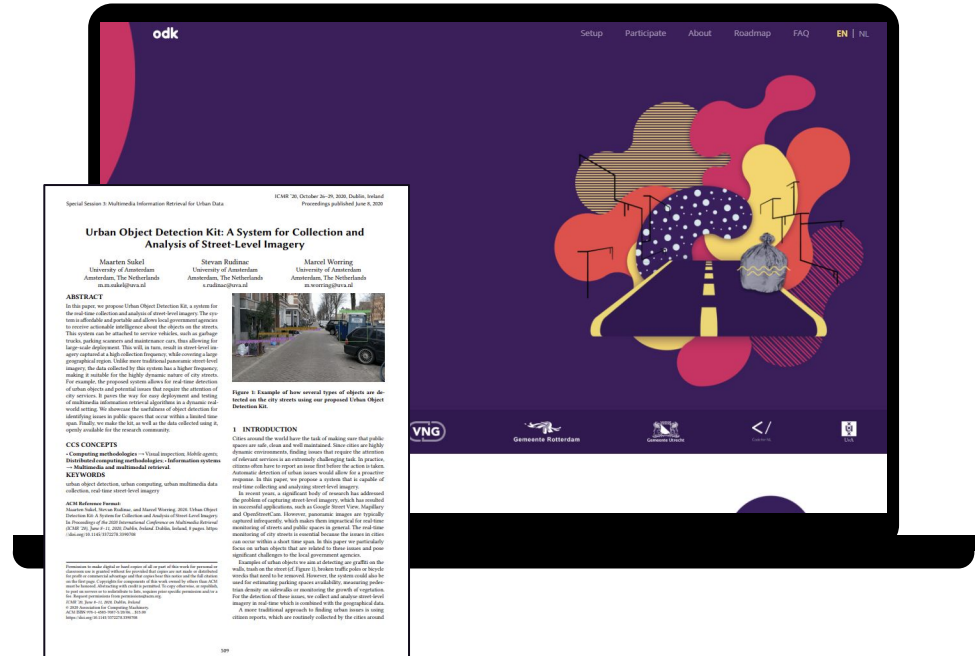
For more information check:

**ODK website**

[www.odk.ai](http://www.odk.ai)

**ICMR 2020**

Urban Object Detection Kit: A System for Collection and Analysis of Street-Level Imagery





[amsterdamintelligence.com](https://amsterdamintelligence.com)

# Algoritme register

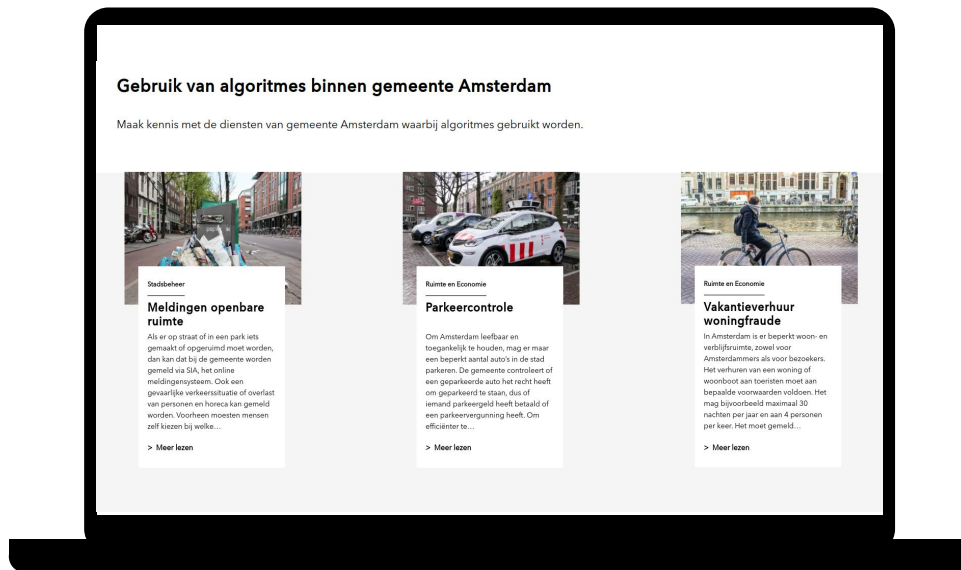
AI can help us solving many different challenges, but have to be transparent about the it is used.

As a first step to be accountable we created the algoritme register

For more information check:

**Website**

<https://algoritmeregister.amsterdam.nl>





# Let's share our ideas!

For more info contact:

[m.sukel@amsterdam.nl](mailto:m.sukel@amsterdam.nl)

<https://www.linkedin.com/in/maarten-sukel-78427b58/>



**Latest posts**

- How to capture better images?** - 10 Nov 2020
- How to guarantee good test results?** - 10 Nov 2020
- Test in 3D on a Lanner** - 10 Nov 2020
- Public experiment in front of a smart?** - 10 Nov 2020
- Social distancing monitor explained** - 10 Nov 2020
- Current 3D model from Amsterdam** - 10 Nov 2020
- Prototypes for 3D** - 10 Nov 2020
- The social distance monitor has a new face** - 10 Nov 2020
- Are citizens aware and compliant with distancing?** - 10 Nov 2020

We want to offer competitive, ethical, scalable and sustainable solutions to our citizens.

All our products ensure responsible applications, promote educational and innovative cooperation between professionals. Together, we as a fully committed partner in Amsterdam's free, just and sustainable city.

- Competitive**  
Create value for all stakeholders for whom we build solutions, from citizens to our clients.
- Ethical and inclusive**  
Focus on ethics, social responsibility, diversity, inclusivity and customer loyalty to embrace their needs.
- Scalable**  
Provide the best framework for the entire city. Scale results with other cities for wider adoption.
- Sustainable**  
Provide the most efficient and environmental applications that fight the technological risks.



## Keeping distance during Black Friday

Maarten Suijs | August 2, 2020

Artificial Intelligence | Machine Learning | Computer Vision



Last Friday was Black Friday, the day when everyone runs for sales and get their favourite items with a great discount. However, this year the reality is that we should avoid getting too close to the streets and should keep distance between ourselves.

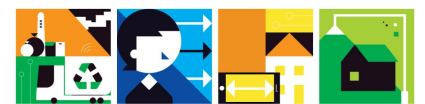
We used the 1.5 distance meter in Dam Square to alert people to keep this distance.

Above you can see the video recorded by Fides.

Artificial Intelligence | Machine Learning | Computer Vision

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Maarten Suijs  
AI Lead @ City of Amsterdam | PhD Candidate @UvA

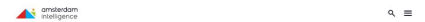


**Object Detection Kit**  
City of Amsterdam is looking for municipalities to identify different types of objects in the streets.

**1.5 Meter Monitor**  
1.5 Meter Monitor is used to alert citizens, helping them to comply with distancing regulations.

**Stratified Population Insights**  
Population Insights are relevant to add information to 3D models, determine the conditions of assets and housing.

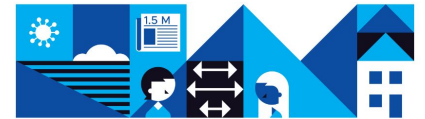
**3D Point Cloud**  
3D Point Cloud, rather than photos, provides a 3D model from the whole city to accelerate local assets.



## 1.5 Meter Monitor

Urban | Public Dataset

COVID-19 brought new challenges and new ways of living. One of the most influential and important new regulation is to keep 1.5 meters distance from each other. We have created the 1.5 meter monitor to help and remind citizens to keep this distance. This project was aware awareness of the possibilities and potential of using AI in solutions.



### Project Partners



### Blog posts

- ARTICLES**  
**Social distancing monitor explained**  
Larsen Bakken - 1 Jul 20
- USE CASES**  
**Public experiment in Dam Square**  
Larsen Bakken - 10 Jul 2020
- UPDATES**  
**The social distance monitor has a new face**  
Maarten Suijs - 03 Oct 2020

### Videos

- How 400+ reached in our experiment in the Bijlmer**  
Maarten Suijs - 1 Sep 20, 2020
- Testing social distancing monitor**  
Maarten Suijs - 1 Aug 20, 2020
- Results for traffic about our experiment**  
Maarten Suijs - 09 Oct 2020
- Keeping distance during Black Friday**  
Maarten Suijs - 1 Aug 2020



## From the city to the citizens

We are a team of AI experts from Gemeente Amsterdam, who are focused on how and why to translate the way AI is currently implemented. We are passionate about innovative use technology but without forgetting what really matters - our citizens. We want to not only generate the insight through AI, but also show them real life examples of how it can affect our solutions.



### 6 Tada principles

We at Amsterdam Intelligence support the Tada principles, written by professionals from the Amsterdam region, to consider on a ethical and responsible use of data. The principles are ranked below as from [Tada.Life](#)

#### Inclusive

Our digital city is inclusive. We take into account the differences between individuals and groups, without it being right or wrong.

#### Control

Data and technology should contribute to the freedom of people. Data is meant to serve the people. To be used as tools to try to make it better for them. To gather information, develop knowledge, that have to generate themselves. People stay in control over their data.

#### Tailored to the people

Data and algorithms do not have the final say. Only they should control that. We have to be transparent. People have the right to be rightly together, so that there is always an opportunity for a fresh start.

#### Legitimate and monitored

Citizens and users have control over the design of our digital city. The government, civil society organizations and companies like Data Life. They monitor the development process and the resulting code consequences.

#### Open and transparent

What types of data are collected? For what purposes? And what are the outcomes and results? We will always be transparent about those aspects.

#### From everyone - for everyone

Data that government, civil society organizations and other organizations generate in the city are collected at the city are made in common. Everyone can use it. Everyone can benefit from them. We make mutual agreements about this.

## Data engineer internship

We are passionate about data products and want to have a positive impact in Amsterdam. You want to develop and maintain data storage and processing infrastructure to support that. We can offer you an interesting with real world experiences that allow you to apply what you have been learning.



## The perks of becoming a civil servant.



Once you become employed by Gemeente Amsterdam you have a very special task in society: being committed to the rights and well-being of all citizens of Amsterdam. This is an honor and a great responsibility that comes together with a set of other benefits.

#### Flexibility

Possibility to work from home and organize your working hours. We believe in a great balance between work and private life.

#### Great work locations

Access to different fantastic work locations across Amsterdam. We are currently based at AAIJ building, as part of the Marine terrace innovation community, result of our collaboration with Gemeente Amsterdam.

#### Benefits

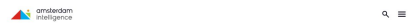
Access to AAIJ pension fund and a monthly contribution to your health insurance.

Amsterdam Intelligence

Useful Links: Projects, Careers, Policy, Privacy Policy, About, Contact

Latest Posts: How to capture better images?, Social Distance experiment in Amsterdam Bijlmer, Joris Gouff, Amsterdam government

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## Contact us

We are happy to answer your questions and collaborate with your organization. Feel free to contact us. Please be aware that we currently have a limited capacity to exchange messages, so we kindly ask you to explain and clarify as much as possible your request. Thank you!



Name \*  
Company name

Email address \*  
Phone number

Message \*  
We will send your message to us as described on your card.

Send >



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