



# Remco Royen, PhD

RESEARCH SCIENTIST - (3D) COMPUTER VISION ENGINEER - MACHINE LEARNING ENGINEER

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“Towards seamless interactions between the digital and physical world through 3D processing”

## Experience

### Vrije Universiteit Brussel

POSTDOCTORAL COMPUTER VISION RESEARCHER

Brussels, Belgium

Jun. 2024 - current

Conduct & supervise **state-of-the-art 3D computer vision** research.

**Teaching assistant** and writing of academic funding projects.

### VoxelSensors (research project)

COMPUTER VISION RESEARCHER

Brussels, Belgium

Jan. 2023 - Jun. 2024

Achieved a **61% reduction in processing time** for 3D sensors.

Developed & implemented novel solutions, resulting in a **patent**.

### Xenomatrix (research project)

COMPUTER VISION RESEARCHER

Leuven, Belgium

Nov. 2019 - Dec. 2021

Created a rapid, highly-accurate simulator for a real-world LiDAR.

Performed **precise semantic segmentation** on a **real-world LiDAR**.

### Macq SA/NV

MACHINE LEARNING INTERNSHIP

Brussels, Belgium

Jul. 2018 - Sep. 2018

Created highly-accurate synthetic license plate data.

**Increased robustness** of a YOLO for OCR on traffic cameras.

## Education

### Vrije Universiteit Brussel

PHD IN ENGINEERING SCIENCES - 3D COMPUTER VISION (SUMMA CUM LAUDE)

Brussels, Belgium

Nov. 2019 - Jun. 2024

- Thesis title: "Addressing labelling, complexity, latency, and scalability in deep learning-based processing of point clouds".

- Awarded with a PhD fellowship strategic basic research at Research Foundation Flanders (FWO).

### Vrije Universiteit Brussel & Université Libre de Bruxelles

M.SC IN ELECTRICAL ENGINEERING (SUMMA CUM LAUDE (88%))

Brussels, Belgium

Sep. 2017 - Jun. 2019

### Sapienza Università di Roma

M.SC IN ARTIFICIAL INTELLIGENCE AND ROBOTICS (ERASMUS+ EXCHANGE PROGRAM)

Rome, Italy

Sep. 2018 - Jan. 2019

## Skills

#### Programming

Python (PyTorch, TensorFlow, OpenCV, Numpy, etc.), Git, Matlab, Java, Assembly

#### Machine Learning

3D Computer Vision, Deep Learning, Point Cloud Segmentation, 6D Pose Estimation, Gaussian Splatting

#### Soft Skills

Team player, Hard-working, Curious, Creative, Problem-solver, Communicator

#### Languages

Dutch (C2), English (C1), French (C1), German (A2 - learning), Italian (A2)

## Selected journal articles

### W6dnet: Weakly-supervised domain adaptation for monocular vehicle 6d pose estimation with 3d priors and synthetic data

Y. Lyu, R. Royen, and A. Munteanu

2024 IEEE Transactions on Instrumentation and Measurement

### Joint prototype and coefficient prediction for 3d instance segmentation

R. Royen, L. Denis, and A. Munteanu

2024 IET Electronics Letters

### Masklayer: Enabling scalable deep learning solutions by training embedded feature sets

R. Royen, L. Denis, Q. Bolsee, P. Hu, and A. Munteanu

2021 Neural Networks (IF 9.7)

## Selected conference proceedings

### RT-GS2: Real-Time Generalizable Semantic Segmentation for 3D Gaussian Representations of Radiance Fields (under review)

R. Royen, M.B. Jurca, I. Giosan, and A. Munteanu

2024 British Machine Vision Conference (BMVC)

### RESSCAL3D: Resolution scalable 3d semantic segmentation of point clouds

R. Royen and A. Munteanu

2023 IEEE International Conference on Image Processing (ICIP)

### Mono6d: Monocular vehicle 6d pose estimation with 3d priors

Y. Lyu, R. Royen, and A. Munteanu

2022 IEEE International Conference on Image Processing (ICIP)

## Patents

### Not yet disclosable patent title

R. Royen, A. Munteanu, and W. van der Tempel

JULY 10, 2024

## Extra

### Hobbies

Theater, hiking, running and traveling

### Peer-reviewer

CVPR, TIP, ICIP, ACIVS, BMVC, DSP