



Bram van Berlo

Creative, embedded and
entrepreneurial technologist

Manifesto

I believe...

Fitness makes you sharper and stronger.

Team effort beats going solo.

My greatest enemy is stagnation.

Open dialog creates meaningful
interaction.

Production grows through daily small
improvements.

Tech skills plus business vision build
impactful digital systems.

Hard Skills

Based on 10.000 hours per skill...

Tensor graph
programming



- TensorFlow 1.13 until 2.19
- Keras Tuner
- Numpy
- Scikit-learn
- Matplotlib

Signal
processing



- Scipy

Summary

“ I am a PhD graduate from TU/e, where I researched machine learning applications in telecommunications with the IRIS group. My work focused on improving real-world communication systems, including using deep learning to predict signal path disruptions in 6G mobile millimeter-wave networks and leveraging Wi-Fi signals for unobtrusive activity monitoring in home care. I addressed challenges in AI/ML reliability by studying performance variability caused by measurement circumstances and achieving bounded domain generalization under different measurement circumstances. Beyond research, I contributed to teaching and optimized high-performance computing through better job scheduling and graph programming documentation. I bring leadership experience from serving three years on the board of a homeowners' association, coordinating shared space management, contractor relations, and the general assembly. I hold a dual EIT MSc degree in Embedded Systems Engineering from TU/e and KTH, combining technical depth with entrepreneurial training. My specialization in embedded networking and distributed systems supported degree projects like parking management and an energy trading platform. ”

Education

Ph.D. Candidate – Teaching Assistant
Eindhoven University of Technology – IRIS

2020 -
2025

Research: 1) Gained a deep understanding of domain factor influence among deep learning CNN and signal processing based models used together with unobtrusive radio based sensing. 2) Achieved bounded domain generalization in an unsupervised contrastive learning setting. 3) Considered millimeter wave and Wi-Fi signal channel state and FMCW radar intermediate frequency data for deep learning and signal processing. 4) Optimized model pipeline hardware utilization, and wrote tensor graph programming best practices for scheduling on a slurm-based high-performance computer cluster.

Teaching assistance: I have provided assistance for the bachelor program course “networks” and master program courses “architecture of distributed systems” and “internet of things”. I have **designed assignments and grade rubrics** as part of the course **assessment plan**. I have provided assignment summative assessment and feedback to students. I have been involved as **practical co-supervisor** in 9 bachelor graduation projects and 4 master **graduation** projects.

- Custom linear system programming
- Signal CSI toolkit
- FMCW radar toolkit

Frontend web programming 

- HTML / CSS / jQuery

Web backend programming 

- Docker containers
- Nginx
- Scrapy
- Tensorflow serving
- Socks5 proxy utilization

App programming 

- Android Kotlin
- Cross-platform Flutter 2

Embedded programming 

- C
- MicroC OS
- Contiki OS
- Eclipse Leshan

Design 

- Adobe Photoshop
- Adobe Illustrator
- Adobe Firefly
- Adobe Premiere
- Autodesk Maya
- Industrial sketching

Hardware 

- Altera Cyclone v7
- Arduino
- Raspberry Pi

Code management 

- GitHub
- Private server archiving with data management plan

Company Essentials 

- Microsoft office 365 (word, excel, powerpoint, teams, outlook)

M.Sc. EIT Digital - Embedded Systems

Eindhoven University of Technology

2018 -
2019

Dual degree: TU/e exit university.

Average mark: 8 (Dutch grading system).

Thesis topic: Unsupervised feature learning in a federated setting for human activity detection

M.Sc. EIT Digital - Embedded Systems

KTH Royal Institute of Technology

2017 -
2018

Dual degree: KTH entry university.

Average mark: B (ECTS).

Pre-Master Embedded Systems

University of Twente

09/2016

-

02/2017

Preparation for M.Sc. Embedded Systems

Average mark: 7.5 (Dutch grading system).

B.Sc. Creative Technology

University of Twente

2014 -
2017

Average mark: 7.5 (Dutch grading system).

Thesis topic: A participatory sensing system for road quality data acquisition

Work history

Board member

Homeowner Association Gildehuys Eindhoven

2022 -
2025

Coordinating role including inviting construction companies and advisors, **closing** maintenance **contracts**, and preparing yearly **general assembly**.

Concept Developer

U-Approach

2013 -
2017

Implementing **gamification** in existing business templates for schools, businesses and innovation plans, executing **market research** in leisure economy website innovation.

Projects

Project HuzKollen

2020 -
2024

Senior digital **real estate assistant** for **house buyers & owners**. Provides answers to property specific questions, renovation needs, cost planning and recommends available renovation contractors.

Soft Skills

Decision-Making:
Managing homeowner association

Guiding Others:
Practical student supervision

Dealing with Change:
PhD research

Innovating and Thinking Ahead:
PhD research

Writing and Reporting:
Doctoral thesis

Presenting:
Conferences

Hobbies

Traveling: with a group visit distant lands in the Middle East, Africa, South America and the Arctic.

Fitness: systematic strength training following a 5x5 full body or split program. Les Mills HIIT circuit training.

Contact

 Eindhoven, the Netherlands.

Open to relocating.

 +31652549977

 bram_vanberlo@hotmail.com

 bramvanberlo.com

Project SMART 2018

Real-time market analysis for advertisement systems in the **OOH advertisement market**.

Project Auralux 2015

Android application development of **implicit street light** alteration system.

Publications – first author

MmWave Beam Path Blockage Prevention Through Codebook Value Prediction Under Domain Shift 2025

van Berlo, B.R.D.; Ozcelebi, Tanir; Meratnia, Nirvana. In: Elsevier Internet of Things, Vol. 31, No. 1, Art. 101584
Contribution to journal › Article › Academic › peer-review.

Three beam codebook value prediction pipelines were evaluated under artificial domain factor shifts, where specific domain factors were excluded from training data. Shapley value analysis was used to quantify input causation, revealing distinct signal region dependencies across pipelines: neural networks were influenced by amplitude variance and fast-time blocks, random convolutions by spatial antenna separation, and iterative signal component search by zero-masking sensitivity. Each pipeline exhibited unique feature extraction behaviors tied to their internal mechanisms, affecting prediction confidence and causation strength.

Mini-Batch Alignment: A Deep-Learning Model for Domain Factor-Independent Feature Extraction for Wi-Fi-CSI Data 2023

van Berlo, B.R.D.; Oerlemans, Camiel; Marogna, Francesca L. et al. In: MDPI Sensors, Vol. 23, No. 23, Art. 9534.

Contribution to journal › Article › Academic › peer-review

WiFi channel state information deep learning model that steers a feature-extraction model's training process such that it is unable to separate intermediate feature-probability density functions of input data batches seen previously from the current input data batch. Hypothesized to cause less domain factor influence.

- Use of Domain Labels during Pre-Training for Domain-Independent WiFi-CSI Gesture Recognition** 2023
- van Berlo, B.R.D.; Verhoeven, P.H.F.M.; Meratnia, Nirvana. In: MDPI Sensors, Vol. 23, No. 22, Art. 9233. Contribution to journal › Article › Academic › peer-review
- The authors integrated an adversarial domain classifier into the unsupervised pre-training phase of WiFi-CSI-based gesture recognition to reduce the negative impact of domain factors. They experimented with both single- and multi-label domain classification approaches and developed a domain-aware version of the baseline representation learning model. Additionally, they conducted extensive cross-validation using the Widar3 and SignFi datasets to evaluate the effectiveness of their domain generalization strategies. Bounded generalization was achieved with one of the domain aware versions of the baseline representation learning model.
- 26 GHz OFDM and 77 GHz FMCW Radar Dataset for Domain Shift Invariant Blockage Prediction** 2023
- van Berlo, B.R.D.; Miao, Yang; Hersyandika, Rizqi et al. Proc. IEEE International Symposium on Joint Communications & Sensing (JC&S). Chapter in Book/Report/Conference proceeding › Conference contribution › Academic › peer-review.
- Novel millimeter wave communication and radar sensing co-existing dataset. Contains frames for subject entering field-of-view at different angles/positions serving as domain factors. Factors cause different signature presence levels and doppler bin energy magnitudes/locations.
- Intelligent Blockage Recognition using Cellular mmWave Beamforming Data: Feasibility Study** 2023
- van Berlo, Bram; Miao, Yang; Hersyandika, Rizqi et al. Proc. IEEE Global Communications Conference (GLOBECOM) p. 4576-4582. Chapter in Book/Report/Conference proceeding › Conference contribution › Academic › peer-review.
- Insights on Mini-Batch Alignment for WiFi-CSI Data Domain Factor Independent Feature Extraction** 2022
- van Berlo, B.R.D.; Meratnia, Nirvana; Ozcelebi, Tanir. Proc. IEEE International Conference on Pervasive Computing and Communications Workshops and other Affiliated Events, PerCom Workshops. p. 527-532. Chapter in Book/Report/Conference proceeding › Conference contribution › Academic › peer-review.
- Millimeter Wave Sensing: A Review of Application Pipelines and Building Blocks** 2021
- van Berlo, B.R.D.; Elkelany, Amany; Ozcelebi, Tanir et al. In: IEEE Sensors Journal, Vol. 21, No. 9, p. 10332-10368. Contribution to journal › Review article › peer-review.
- This literature review covers millimeter wave sensing application pipelines by analyzing different basic application pipeline building blocks, including hardware, algorithms, analytical models, and model evaluation techniques. It also provides a future perspective for applications of millimeter wave as a sensing technology.
- Towards federated unsupervised representation learning** 2020
- van Berlo, B.R.D.; Saeed, Aaqib; Ozcelebi, Tanir. EdgeSys 20: Proc. Third ACM International Workshop on Edge Systems, Analytics and Networking. New York, NY, p. 31-36. Chapter in Book/Report/Conference proceeding › Conference contribution › Academic › peer-review.

Publications – co-author

Exception Analysis of Running Complex and Computation-intensive Deep Learning Models 2023

Verhoeven, P.H.F.M.; van Berlo, B.R.D.; Meratnia, Nirvana. Proc. IEEE 10th Int. Conf. Wireless Networks and Mobile Communications (WINCOM).

Chapter in Book/Report/Conference proceeding › Conference contribution › Academic › peer-review.

2021

A Domain-Independent Generative Adversarial Network for Activity Recognition Using WiFi CSI Data

Zinys, Augustinas; van Berlo, B.R.D.; Meratnia, Nirvana. In: MDPI Sensors, Vol. 21, No. 23, Art. 7852.

Contribution to journal › Article › Academic › peer-review.