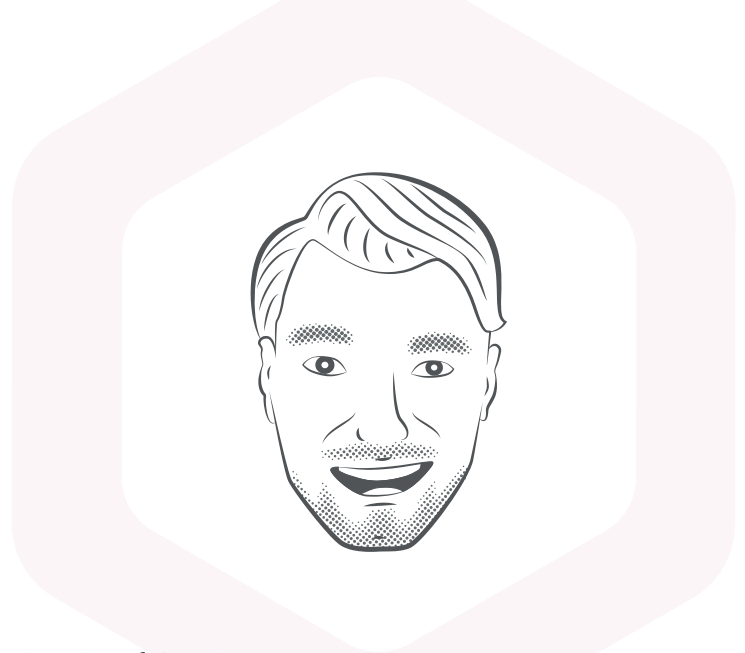


# Ben Wolf, PhD

Artificial Intelligence, Robotics & Flow Sensing



## PERSONAL

Berend Jan Wolf

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## EDUCATION

PhD degree  
mar 2016 - mar 2020

○ Bernoulli Institute - University of Groningen  
Project: H2020 large scale hydrodynamic imaging of ocean floor (Lakhsmi).  
Thesis: Hydrodynamic Imaging with Artificial Intelligence: *detecting submerged objects at a distance using a 2D-sensitive flow sensor array and neural networks.*  
Awarded with 'cum laude' - top 5% in the field and 'UoG best AI thesis 2020'

Master degree  
sep 2013 - feb 2016

○ Artificial Intelligence - University of Groningen  
Specialization: Computational Intelligence and Robotics.  
Thesis: Strain based 2D flow sensors bio-inspired by lateral line neuromasts.

Bachelor degree  
sep 2009 - aug 2013

○ Kunstmatige Intelligentie - University of Groningen  
Specialization: Artificial Intelligence.

## ACADEMIC APPOINTMENTS

TU Delft  
jan 2021 - (jan 2023)

● Researcher 4 - Delft Center for Systems and Control  
Postdoc AI-based Classification and Control for Cleaning Marine Waste

University of Groningen  
apr 2020 - dec 2020

○ Researcher 4 - Bernoulli Institute  
Postdoc AI and flow sensing for object detection  
Employed PhD candidate

mar 2016 - mar 2020

○ Bernoulli Institute of Mathematics, Computing Science and Artificial Intelligence.  
Co-supervised 5 × MSc final projects (45ECTS) and 20 × BSc final projects (15ECTS).

apr 2016 - july 2019

○ Teaching Assistant Auditory Biophysics  
3× grading and feedback on minilectures presented by MSc students.

oct 2014 - feb 2017

○ Teaching Assistant Robotics Lab  
3× Instructed students in a BSc course on programming nao robots for soccer.  
3× Instructed students in a MSc course on behavior modeling and speech recognition to control a mobile platform robot through speech commands.

## RELEVANT SKILLS

Dutch  
English

Native proficiency.  
Professional working proficiency, fluent in reading, writing, and speaking.

Programming

C/C++  
Python  
Matlab  
R

Completed 3-part 'Brokken' course. Object oriented and imperative programming.  
Image processing, Theano/Tensorflow deep neural networks, ROS.  
Interface with measurement equipment, machine learning, and signal processing.  
Limited experience for statistical analysis.



## PUBLICATIONS

### Patent application

S.M. van Netten, B.J. Wolf, W.N. MacPherson, (2017). Sensor element and method for measuring of near-field, large-scale hydrodynamic characteristics. EP3399320 (A1).

### Chapter

B.J. Wolf, S.M. van Netten, (2020). 7.08 - Biophysics of the Lateral Line and Applications. In B. Fritsch (Ed.), *The Senses: A Comprehensive Reference (second Edition)* p. 116-132. Elsevier

### Journal articles

B.J. Wolf, J. van de Wolfshaar, S.M. van Netten, (2020). Three-dimensional multi-source localization of underwater objects using convolutional neural networks for artificial lateral lines. *J. R. Soc. Interface* 17(162) p. 20190616.

B.J. Wolf, P. Pirih, M. Kruusmaa, S.M. van Netten, (2020). Shape classification using hydrodynamic detection via a sparse large-scale 2D-sensitive artificial lateral line. *IEEE Access* 8(1) p. 11393-11404.

B.J. Wolf, S. Warmelink, S.M. van Netten, (2019). Recurrent neural networks for hydrodynamic imaging using a 2D-sensitive artificial lateral line. *Bioinspiration & Biomimetics* 14(5) p. 055001.

B.J. Wolf, J.A.S. Morton, W.M. macPherson, S.M. van Netten, (2018). Bio-inspired all-optical artificial neuromast for 2D flow sensing. *Bioinspiration & Biomimetics* 13(2) p. 026013.

L.H. Boulogne, B.J. Wolf, M.A. Wiering, S.M. van Netten, (2017). Performance of neural networks for localizing moving objects with an artificial lateral line. *Bioinspiration & Biomimetics* 12(5) p. 056009.

### Presented conference papers

B.J. Wolf, S.M. van Netten, (2019). Hydrodynamic Imaging using an all-optical 2D Artificial Lateral Line. *2019 IEEE Sensors Applications Symposium (SAS)* p. 1-6. awarded student travel grant award

B.J. Wolf, S.M. van Netten, (2019). Training Submerged Source Detection for a 2D Fluid Flow Sensor Array with Extreme Learning Machines. *Proc. SPIE 11041, Eleventh International Conference on Machine Vision (ICMV 2018)* p. 1104126. awarded best oral presentation

### Poster presentations

B.J. Wolf, (2019). Tracking water flow and water traffic without sight and sound: combining AI and novel fluid flow sensing. *UG XL meetup*.

P. van der Meulen, B.J. Wolf, P. Pirih, S.M. van Netten, (2018). Performance of Neural Networks in Source Localization using Artificial Lateral Line Sensor Configurations. *ICT.OPEN2018*.



## OTHER ACTIVITIES AND INTERESTS

**Study Association  
Cover for AI & CS**  
oct 2009 - sep 2020



Held a position in the advisory board for several years. Besides being president of the association in '11 - '12, helped organising two study trips in Europe and organized various lectures, company visits, and social events.

**Robocup@Home**  
feb 2014 - apr 2016



Team leader for competition demonstrations of a domestic service robot *Alice*. Responsible for offline speech interaction and action selection.

**And:** graphic and layout design, puzzles, deep and shallow machine learning, and Oxford commas.