

Gwenn Englebienne

Zilverling ZI2098
Drienerlolaan 5
7522 NB Enschede
The Netherlands

Phone: +31 627 207 838
Fax: +32 9 384 7250
G.Englebienne@utwente.nl
<http://gwenn.dk>

Research interests

My main interests are:

- Modelling Human Behaviour, Human Activity Recognition
- Machine Learning and Pattern Recognition: Deep Learning, Bayesian methods, Approximate inference, Transfer learning, Information theory and Algorithms
- Machine Vision, Tracking, Sensor Fusion, Multimodal Sensor Input

Work experience

Assistant Professor 2015 – present
University of Twente. I focus developing machine-learning techniques for the analysis of unscripted human behaviour in a variety of settings, ranging from Human-Robot interactions to on-line behaviour in forums and texts. My focus is mainly on the development of deep representation-learning techniques and on the theoretical understanding of the properties of machine-learning algorithms, but is inspired by a real understanding of the nature of the data and the humans that generate it.

Postdoctoral researcher 2008 – 2015
University of Amsterdam. My research involves probabilistic modelling, mainly focusing on the analysis of human behaviour in its many forms. I have focused on facial expressions in video sequences and the corresponding audio, on distributed binary sensor networks, and on tracking people with single monocular cameras, distributed stereo cameras and multiple synchronised cameras.

Embedded Software developer, Scientific Atlanta 2000 – Sept 2003
Scientific Atlanta, now part of Cisco, is a major producer of head-end and digital service provider equipment. During my time there, I achieved a few notable successes:

- I introduced linux into the company culture, created our own embedded linux system, implemented kernel-mode device drivers and developed in-house development tools.
- I Designed and directed the implementation of embedded control software for PrismaGbE on x86- and PowerPC-based embedded systems under linux.
- I single-handedly developed and implemented, on a number of platforms, proprietary network layer protocols allowing the detection and automatic mapping of the complete network topology.
- During this time I gave multiple seminars on the development principles, tools and methodologies used for PrismaGbE. I also went to India to train the group of engineers that would take over the maintenance of the code.

Education

Ph.D. in Computer Science 2009
University of Manchester, United Kingdom
Supervisor: Dr. Magnus Rattray, *Advisor:* Tim Cootes
Thesis: Generating lip movements from speech
Won the Manchester Computer Science **Best Thesis Award, 2009**

Education (*cont.*)

M.Sc. in Advanced Computer Science **2004**

University of Manchester, United Kingdom. *With Distinction.*

Supervisor: Dr. Magnus Rattray

Thesis: Efficient Learning of Objects in Images.

Industrial Engineer [M.Sc.] in Electronics ICT **2000**

Hogeschool Gent, Belgium. *Cum laude.*

Supervisor: Dr. Håkan Guliksson

Thesis: Streaming video manipulation on research platforms and wearable computers, nominated for **Barco VIK award**.

Erasmus exchange, Umeå Universitet (University of Umeå), **Spring 2000**

Research Experience

Projects

- Tech4People Sept. 2016 – Oct. 2017
The long-term performance of a company depends on a good balance between innovation and exploitation of the developed material. Striking this balance is challenging, and requires good assessment of the company's activities. In this project, we use machine learning techniques to automatically assess how "explorative" or "exploitative" a project is, based on internal company documents. My role was the technical supervision of Shengfa Miao, the postdoc that was hired for this project.
- TERESA Sept. 2015 – May 2017
In this project, we look at how telepresence robots can be made autonomous and adjust their social behaviour, including their body pose and motion behaviour, to the conversation that they are channelling. This includes assessing the emotional content of the conversation, and reacting to the non-verbal social feedback of the participants in the conversation. My role was on developing "perception" modules and on supervising Jered Vroon, the Ph.D. student who researched social robot positioning in this context.
- MOnarCH Feb. 2013 – Feb. 2016
In this project I am responsible for the "perception" workpackage of a human-robot interaction project. We fuse the inputs from a variety of sensors to monitor the real-time location, behaviour and group activities of the people in a hospital ward. This includes children, parents and staff in a very cluttered environment, for which very accurate, online monitoring is required.
- Healthlab Mar. 2010 – Mar. 2013
In collaboration with the Vrije Universiteit (VU), AMSTA and the Hogeschool van Amsterdam In this project, I managed the technical and information-theoretical aspects of setting up of a "living lab" inside a home for elderly people, where we learned, monitored and coached their activities.
- SCAN Oct. 2011 – Oct. 2013
I supervised a postdoc researcher, Vijay John, for which I have obtained funding in the context of a project for automatic calibration of stereo cameras.
- Zorgen voor Morgen Sept. 2009 – Jun. 2011
In collaboration with Vivium Naarderheem and the Hogeschool van Amsterdam. I managed the installation of multiple large sensor networks in the house of elders living independently, and the collection and analysis of longitudinal datasets of unconstrained behaviour.
- Niccas Mar. 2009 – Feb. 2010
In collaboration with Eagle Vision n.v. In this project we used multiple stereo cameras without overlap to track people over large areas.

- Cogniron Nov. 2007 – Feb. 2009
In this project, we investigated machine learning techniques to recognise elders' activities from simple binary sensors. This project has resulted in highly cited papers and the Ph.D. thesis of Tim van Kasteren.

Teaching Experience

I teach the following M.Sc. courses at the University of Twente: Basic Machine Learning, Advanced Machine Learning, Natural Language Processing, Affective Computing. In addition, I help teaching the following bachelor courses: Pearls of Computer Science, Smart Spaces, Module 6 Artificial Intelligence.

I have defined the material and was the principal **lecturer of the master's course** "Machine learning: Pattern Recognition" at the University of Amsterdam. This 6 EC course has been very well received by the students, and is consistently rated very highly in the students' anonymous evaluations, even though the course contents are challenging.....2009 – 2014.

Moreover, during all three years of my Ph.D., I took the initiative to teach students. I was a full time **teaching assistant** for this whole period, which is uncommon in the UK. The courses I was responsible for were:

Operating Systems, Fall 2004
Subsymbolic Processing and Neural Networks, Fall 2004, Fall 2005, Fall 2006
Artificial Intelligence Fundamentals, Spring 2005, Spring 2006, Spring 2007
Foundations of Computer Science, Fall 2005, Spring 2006, Fall 2006
Object Oriented Programming with Java, Fall 2004, Spring 2005, Fall 2005, Spring 2006

Funding applications

I have participated in the writing of multiple research proposals, and have been the main writer for the for the following applications.

I have successfully obtained funding for a **postdoc researcher** for a period of two years in the SCAN project, a collaboration between the University of Amsterdam, Eagle Vision n.v. and Philips Research funded by **Point One**. I have supervised one postdoc, Vijay John, for the duration of this project.

Additionally, I have obtained funding for a **Ph.D. student** and a **postdoc researcher** (3 years) in the MONarCH project, a **FP7 STREP project**. In this project, we are responsible for a work-package focusing on active and passive perception for autonomous robots in a hospital environment.

Student supervision

Ph.D. Students I have supervised four Ph.D. students who recently defended successfully, **Jae-bok Kim**, **Ninghang Hu**, **Julian Kooij**, **Athanasios Noulas** and **Tim van Kasteren**. I am now supervising four more students: **Jered Vroon** together with Prof. Evers; **Saskia Robben** and **Ahmed Nait Aicha**, who are doing research on human activity recognition with ambient sensors; and **Deepak Viswanathan**, who is researching using deep neural networks for human tracking and interaction modelling, together with Prof. Kröse.

M.Sc. Students I have supervised the graduation project of > 20 M.Sc. students, both at the University of Amsterdam and at the University Twente.

Open Source Software

I have made contributions to multiple open source software projects. I also wrote *Yasmin*, a source-level emulator of the 80c51 microcontroller, and *rpc*, a convenient reverse polish notation calculator.

Other professional activities

I was publications chair of the International conference on Ambient Intelligence, 2011.

I have reviewed papers for the Machine Learning Journal, IEEE transactions on Pattern Analysis and Machine Intelligence, IEEE transactions on dependable and secure computing IEEE transactions on robotics, as well as the following conferences: ICML 2009, ICRA 2010, IROS 2010, AIA 2011, ICDS 2011, BNAIC 2011 (PC member), ICMI 2011, ICCV 2011.

I gave invited seminars on ambient intelligence at the university Carlos III, Madrid, in February 2012.

Scholarships

University of Manchester Departmental Scholarship 2004 – 2007
European Community Erasmus funding 2000

Skills

My native tongues are Dutch and French. I am fluent in English and have notions of Mandarin Chinese, which I have been, and am still, actively improving at the moment.

I am fluent in a variety of programming and scripting languages, including C, C++, Matlab, Java, Python, Perl, and shell scripting. I have extensively used Lisp, Prolog, Assembler (x86, PowerPC, 80c51), sed and awk. I am also familiar with various operating systems, including Linux, BSD, Solaris, DOS, Windows and various embedded systems.

I can learn fast, understand things deeply and explain them clearly. I am an independent thinker. I welcome new challenges in life and career.

I am curious, tenacious, idealistic and optimistic.

Interests

I enjoy hiking, rock climbing, squash and badminton, programming, playing guitar, long philosophical discussions, playing with the soldering iron and oscilloscope, woodcraft, and generally being constructive.

Publications

Journal publications

Continuous measuring of the indoor walking speed of older adults living alone.

Achmed Nait Aicha, Gwenn Englebienne, and B. Kröse.

Journal of ambient intelligence and humanized computing 9, no. 3 (2018): 589-599.

Towards Analyzing and Predicting the Experience of Live Performances with Wearable Sensing.

Ekin Gedik, Laura Cabrera-Quiros, Claudio Martella, Gwenn Englebienne, and Hayley Hung.

IEEE Transactions on Affective Computing (2018).

Continuous measuring of the indoor walking speed of older adults living alone

Ahmed Nait Aicha, Gwenn Englebienne, Ben Kröse

Journal of Ambient Intelligence and Humanized Computing, 2017, pp. 1-11

Unsupervised visit detection in smart homes

Ahmed Nait Aicha, Gwenn Englebienne, Ben Kröse

Pervasive and Mobile Computing 34 2017, pp. 157-167

Delta Features From Ambient Sensor Data are Good Predictors of Change in Functional Health

Saskia Robben, Gwenn Englebienne, Ben Kröse

IEEE Journal of Biomedical and Health Informatics (2016)

Mixture of Switching Linear Dynamics to Discover Behavior Patterns in Object Tracks

Julian Kooij, Gwenn Englebienne, Dariu Gavrilă

IEEE Transactions on Pattern Analysis and Machine Intelligence 2016, vol. 38, issue 2, pp. 322 - 334

Learning to Recognize Human Activities using Soft Labels

Ninghang Hu, Zhongyu Lou, Gwenn Englebienne, Ben Kröse

IEEE Transactions on Pattern Analysis and Machine Intelligence 2016, vol. 38, issue x, pp.

RARE: people detection in crowded passages by range image reconstruction

Tim van Oosterhout, Gwenn Englebienne, Ben J.A. Kröse

Machine Vision and Applications, 2015, Vol 26, 5, pp. 561 - 573

Learning latent structure for activity recognition

Ninghang Hu, Gwenn Englebienne, Zhongyu Lou, Ben Kröse

IEEE Transactions on Robotics 2015, Vol. 31, 6 pp. 1472 - 1482

Identifying multiple objects from their appearance in inaccurate detections

Julian Kooij, Gwenn Englebienne, Dariu Gavrilă

Computer Vision and Image Understanding 2015, Vol. 136, pp. 103-116

Behavior analysis of elderly using topic models

Kristin Rieping, Gwenn Englebienne, Ben Kröse

Pervasive and Mobile Computing 1574-1192, 2014

In-Home Activity Recognition: Bayesian Inference for Hidden Markov Models Francisco Javier Or-

donez, Gwenn Englebienne, Paula de Toledo, Tim van Kasteren, Araceli Sanchis, Ben Kröse

IEEE Pervasive Computing 2014, Vol. 13, 3, pp. 67-75

Multimodal Speaker Diarization

Athanasios K. Noulas, Gwenn Englebienne and Ben J. A. Kröse.

IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), January 2012.

An activity monitoring system for elderly care using generative and discriminative models.

Tim L. M. van Kasteren, Gwenn Englebienne and Ben J.A. Kröse

Journal of Personal and Ubiquitous Computing Volume 14 , Issue 6 (September 2010) pp. 489–498

Activity recognition using semi-Markov models on real world smart home datasets

Tim L.M. van Kasteren, Gwenn Englebienne and Ben J.A. Kröse

Journal of Ambient Intelligence and Smart Environments Volume 2, Number 3 / 2010 pp 311-325, IOS Press, ISSN 1876-1364.

Book

Ambient Intelligence, Proceedings of the Second International Joint Conference on AmI 2011

Lecture Notes in Computer Science Volume 7040, 2011,

David V. Keyson, Mary Lou Maher, Norbert Streitz, Adrian Cheok, Juan Carlos Augusto, Reiner Wichert, Gwenn Englebienne, Hamid Aghajan and Ben J.A. Kröse (Editors)

Book Chapter

Patroonherkenning en Gezondheidsmonitoring

Ben J. A. Kröse, Gwenn Englebienne

In *Zorgdomotica*, Joost van Hoof and Evelyne J.M. Wouters (editors), Bohn Stafleu van Loghum 2012.

Bayesian Methods for the Analysis of Human Behavior

Gwenn Englebienne.

In *Computer Analysis of Human Behavior*, Albert Ali Salah and Theo Gevers (editors). Springer Verlag, 2011. ISBN 978-0-85729-993-2

Human Activity Recognition from Wireless Sensor Network Data: Benchmark and Software

T. L. M. van Kasteren, G. Englebienne and B. J. A. Kröse

In *Activity Recognition in Pervasive Intelligent Environments*, Atlantis Ambient and Pervasive Intelligence, 2011, Volume 4, pp. 165–186

Peer reviewed conferences

The MULAI Corpus: Multimodal Recordings of Spontaneous Laughter in Dyadic Interaction.

Jansen, Michel-Pierre, Dirk KJ Heylen, Khiet Phuong Truong, Deniece Saniah Nazareth, and Gwenn Englebienne.

In Laughter Workshop 2018, pp. 58-63. 2018.

"I Would Like to Get Close to You": Making Robot Personal Space Invasion Less Intrusive with a Social Gaze Cue.

Stefan-Daniel Suvei, Jered Vroon, Vella V. Somoza Sánchez, Leon Bodenhausen, Gwenn Englebienne, Norbert Krüger, and Vanessa Evers.

In International Conference on Universal Access in Human-Computer Interaction, pp. 366-385. Springer, Cham, 2018.

Learning spectro-temporal features with 3D CNNs for speech emotion recognition.

Kim, Jaebok, Khiet P. Truong, Gwenn Englebienne, and Vanessa Evers.

In 2017 Seventh International Conference on Affective Computing and Intelligent Interaction (ACII), pp. 383-388. IEEE, 2017.

Towards Speech Emotion Recognition “in the wild” using Aggregated Corpora and Deep Multi-Task Learning

Jaebok Kim, Gwenn Englebienne, Khiet Truong and Vanessa Evers

Proceedings of INTERSPEECH, 2017, pp. 1113 – 1117.

Blame my telepresence robot joint effect of proxemics and attribution on interpersonal attraction.

Josca van Houwelingen-Snippe, Jered Vroon, Gwenn Englebienne, and Pim Haselager.

In 2017 26th IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN), pp. 162-168. IEEE, 2017.

Machine-based mapping of innovation portfolios.

Matthias de Visser, Shengfa Miao, Gwenn Englebienne, Anna Maria Sools, and Klaasjan Visscher.

In 18th International CINet Conference. 2017.

Deep temporal models using identity skip-connections for speech emotion recognition

Jaebok Kim, Gwenn Englebienne, Khiet P. Truong and Vanessa Evers.

In Proceedings of the 25th ACM international conference on Multimedia, pp. 1006-1013. ACM, 2017.

Incorporating perception uncertainty in human-aware navigation: A comparative study.

Zeynab Talebpour, Deepak Viswanathan, R. Ventura, Gwenn Englebienne, A. Martinoli.

25th IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN), 2016 pp. 570-577

Responsive social agents: Feedback-sensitive behavior generation for social interactions

Jered H. Vroon, Gwenn Englebienne, Vanessa Evers.

Proceedings of the 8th International Conference on Social Robotics, ICSR 2016 pp 126-137.

Human intent forecasting using intrinsic kinematic constraints

Ninghang Hu, Aaron Bestick, Gwenn Englebienne, Ruzena Bajscy, and Ben Kröse

2016 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), pp. 787-793.

Ariadne’s Thread: Interactive Navigation in a World of Networked Information Rob Koopman, Shenghui Wang, Andrea Scharnhorst, Gwenn Englebienne

Proceedings of the 33rd Annual ACM Conference extended abstracts on Human Factors in Computing Systems, 2015, pp. 1833 - 1838

Continuous Gait Velocity Analysis Using Ambient Sensors in a Smart Home

Ahmed Nait Aicha, Gwenn Englebienne, Ben Kröse

Ambient Intelligence, Lecture Notes in Computer Science vol 9425, 2015, pp. 219-235

How was it? Exploiting Smartphone Sensing to Measure Implicit Audience Responses to Live Performances

Claudio Martella, Ekin Gedik, Laura Cabrera-Quiros, Gwenn Englebienne, Hayley Hung

Proceedings of the 23rd ACM international conference on Multimedia, 2015, pp. 201 - 210

A hierarchical representation for human activity recognition with noisy labels

Ninghang Hu, Gwenn Englebienne, Zhongyu Lou, Ben Kröse

Proceedings of the International Conference on Intelligent Robots and Systems 2015, pp. 2517–2522

Dynamics of social positioning patterns in group-robot interactions

Jered Vroon, Michiel Joosse, Manja Lohse, Jan Kolkmeier, Jaebok Kim, Khiet Truong, Gwenn Englebienne, Dirk Heylen, Vanessa Evers

Proceedings of the 24th IEEE international Symposium on Robot and Human Interactive Communication 2015, pp. 394 - 399

TERESA: a socially intelligent semi-autonomous telepresence system

Kyriacos Shiarlis, Joao Messias, Maarten van Someren, Shimon Whiteson, Jaebok Kim, Jered Vroon, Gwenn Englebienne, Khiet Truong, Vanessa Evers, Noé Pérez-Higueras, Ignacio Pérez-Hurtado, Rafael Ramon-Vigo, Fernando Caballero, Luis Merino, Jie Shen, Stavros Petridis, Maja Pantic, Lasse Hedman, Marten Scherlund, Raphaël Koster, Hervé Michel

Workshop on Machine Learning for Social Robotics at ICRA-2015, 2015

A Two-layered Approach to Recognize High-level Human Activities

Ninghang Hu, Gwenn Englebienne, Ben Kröse

Proceedings of the IEEE International Symposium on Robot and Human Interactive Communication (ROMAN), 2014

Learning to Recognize Human Activities from Soft Labeled Data

Ninghang Hu, Zhongyu Lou, Gwenn Englebienne, Ben Kröse

Proceedings of Robotics: Science and Systems (RSS), 2014

Learning Latent Structure for Activity Recognition

Ninghang Hu, Gwenn Englebienne, Zhongyu Lou, Ben Kröse Proceedings of the IEEE International Conference on Robotics and Automation (ICRA), 2014

Posture recognition with a top-view camera

Ninghang Hu, Gwenn Englebienne, Ben Kröse

IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2013

How lonely is your grandma?: detecting the visits to assisted living elderly from wireless sensor network data

Ahmed Nait Aicha, Gwenn Englebienne, Ben Kröse

Proceedings of the 2013 ACM conference on Pervasive and ubiquitous computing adjunct publication

Systematic evaluation of social behaviour modelling with a single accelerometer

Hayley Hung, Gwenn Englebienne

Proceedings of the 2013 ACM conference on Pervasive and ubiquitous computing adjunct publication pp. 127–130

Classifying social actions with a single accelerometer

Hayley Hung, Gwenn Englebienne, Jeroen Kools

Proceedings of the 2013 ACM international joint conference on Pervasive and ubiquitous computing, pp. 207-210

Solving Person Re-identification in Non-overlapping Camera using Efficient Gibbs Sampling

Vijay John, Gwenn Englebienne, Ben Kröse

Proceedings of the British Machine Vision Conference, 2013

Person re-identification using height-based gait in colour depth camera

Vijay John, Gwenn Englebienne, Ben JA Kröse

20th IEEE conference on Image Processing (ICIP), 2013

Mining for Motivation: Using a single wearable accelerometer to detect people's interests
Gwenn Englebienne, Hayley Hung.
Proceedings of the 20th ACM MultiMedia, November 2012

A Non-parametric Hierarchical Model to Discover Behavior Dynamics from Tracks
Julian F. P. Kooij, Gwenn Englebienne, Dariu M. Gavrilă.
Proceedings of 12th European Conference on Computer Vision, October 2012

Relative Camera Localisation in Non-Overlapping Camera Networks using Multiple Trajectories
Vijay John, Gwenn Englebienne, Ben J.A. Kröse.
12th European Conference on Computer Vision ARTEMIS workshop, October 2012

Bayesian Fusion of Ceiling Mounted Camera and Laser Range Finder on a Mobile Robot for People Detection and Localization
Ninghang Hu, Gwenn Englebienne, Ben J.A. Kröse.
International Robots and Systems Conference, HBU 2012 workshop, October 2012

How is Grandma doing? Predicting Functional Health Status from Binary Ambient Sensor Data
Saskia Robben, Gwenn Englebienne, Margriet Pol, Ben Kröse.
Proceedings of AIII fall symposium for Gerontechnology, November 2012

Hierarchical Activity Recognition using Automatic Clustering of Actions
Tim L.M. van Kasteren, Gwenn Englebienne and Ben J. A. Kröse.
Proceedings of the International Conference on Ambient Intelligence, November 2011

Move, and I will tell you who you are: detecting deceptive roles in low-quality data
Nimrod Raiman, Hayley Hung, Gwenn Englebienne.
Proceedings of the ICMI 2011 (November 2011) pp. 201–204

Fast Bayesian People Detection
Gwenn Englebienne and Ben J. A. Kröse.
Proceedings of the 22nd benelux AI conference (BNAIC 2010)
Winner of the “**Best Original Paper**” award

Similarity Features, and their Role in Concept Alignment Learning.
Shenghui Wang, Gwenn Englebienne, Christophe Gueret, Stefan Schlobach, Antoine Isaac and Martijn Schut.
Fourth International Conference on Advances in Semantic Processing (SEMAPPRO2010).
Best paper award.

Transferring Knowledge of Activity Recognition across Sensor Networks
Tim L. M. van Kasteren, Gwenn Englebienne and Ben J. A. Kröse
Pervasive Computing, Lecture Notes in Computer Science, 2010, Volume 6030/2010, pp. 283–300

Tracking in Sparse Multi-Camera Setups using Stereo Vision
Gwenn Englebienne, T. van Oosterhout and Ben J. A. Kröse.
Proceedings of the Third ACM/IEEE International Conference on Distributed Smart Cameras (ICDSC 2009)

Recognizing Activities in Multiple Homes using Transfer Learning
Tim L. M. van Kasteren, Gwenn Englebienne and Ben J. A. Kröse.
Proceedings of Advanced School of Computing & Imaging Conference (ASCI'09). Zeewolde, The Netherlands. 2009

Learning Concept Mappings from Instance Similarity

Shenghui Wang, Gwenn Englebienne and Stefan Schlobach

Proceedings of the 7th International Semantic Web Conference (ISWC2008). Karlsruhe, Germany, October 2008.

Accurate Activity Recognition in a Home Setting

Tim van Kasteren and Athanasios K. Noulas and Gwenn Englebienne and Ben J. A. Kröse

UbiComp, volume 344 of ACM International Conference Proceeding Series, page 1-9. ACM, (2008)

A Probabilistic Model for Generating Realistic Lip Movements from Speech.

Gwenn Englebienne, Tim Cootes and Magnus Rattray

Advances in Neural Information Processing Systems (NIPS), December 2007.

The paper was accepted for a full oral presentation (< 4% acceptance rate).