

Gwenn Englebienne

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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**
- 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 interests

My main interests are:

- Machine Learning and Pattern Recognition: Bayesian methods, Approximate inference, Transfer learning, Information theory and Algorithms
- Machine vision: Tracking, Activity recognition
- Sensor networks: Sensor fusion, multimodal sensor input

Research Experience

Current projects:

- Healthlab Mar. 2010 – Mar. 2013
In collaboration with the Vrije Universiteit (VU), AMSTA and the Hogeschool van Amsterdam
In this project, I manage the technical and information-theoretical aspects of setting up of a “living lab” inside a home for elderly people, where we learn, monitor and coach their activities.

Past projects

- Zorgen voor Morgen Sept. 2009 – Jun. 2011
In collaboration with Vivium Naarderheem and the Hogeschool van Amsterdam.
In this project, 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.

Funding 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. I am now supervising one postdoc, Vijay John, who is working on this project.

Work experience

Postdoctoral researcher 2008 – present
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.

Teaching Experience

I have defined the material and am 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 well in the students’ anonymous evaluations, even though the course contents are challenging Fall 2009, Fall 2010, Fall 2011.

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

Student supervision

I have supervised two **Ph.D. students** who recently defended successfully, **Athanasios Noulas** and **Tim van Kasteren**. I am now supervising three more students: **Saskia Robben** and **Ahmed Nait Aicha**, who are doing research on human activity recognition with ambient sensors, and **Ninghang Hu**, who is working on human activity recognition with mobile robots.

I have supervised the graduation project of the following **M.Sc. students** who have successfully graduated already: **Yanxia Zhang** (“Multi-people Tracking using Graph Representation with Ceiling-Mounted video cameras”, 2010), **Silvia Laura Pinte**a (“Orientation Estimation from ceiling-mounted cameras”, 2011) and **Nimrod Raiman** (“Deception detection from low-quality video streams”, 2011). I am currently supervising **Tjeerd van Dijk** (gesture recognition with 3D cameras), **Bram Stoeller** (appearance modelling for tracking of people over wide areas), **Wouter Josemans** (fall detection of elderly people with combined 2D and 3D cameras) and **Domenic Vossen** (speaker detection with wearable accelerometers).

Open Source Software

I have made contributions to multiple open source software projects. I also wrote *Yasmin*, an open source, 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, ICDCS 2011, BNAIC 2011 (PC member), ICMI 2011, ICCV 2011.

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

Scholarships

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

Skills

My native tongues are French and Dutch. 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 (3.11 – XP) 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

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

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

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 (SEMAPRO2010).

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).