

Sebastian Stein

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Research Statement

My research interests are in activity recognition, sensor fusion, computer vision and machine learning for assistive technologies. My goal is to take these methods out of the academic sandpit and apply them to real problems of socially and technologically excluded people. In order to reach this goal, I believe that it is absolutely necessary to assess needs and design solutions in a user-centric approach.

Education

Dec. 2010 – present	PhD in Computer Vision at the School of Computing, University of Dundee, Dundee, Scotland, UK. Supervised by Prof. Stephen J. McKenna.
Oct. 2005 – Sept. 2010	Diplom Informatik (Msc. Computer Science equivalent.) at Dortmund Technical University, Dortmund, Germany. Thesis: Face Recognition Based On Interest Points.
Sept. 2007 – June 2008	Affiliate student of Computer Science, University College London, London, England, UK.

Summer schools:

1st Heidelberg Laureate Forum, one week of lectures, master classes and socialising with Abel Prize, Fields Medal and ACM Turing Award laureates. Heidelberg, Germany, September 2013.

SICSA Summer School: Inference and Dynamics in Interaction, Glasgow, Scotland, UK, June 2012.

ENS/INRIA Visual Recognition and Machine Learning Summer School, Paris, France, July 2011.

Professional Experience

June 2014 – present	Research Assistant in the Accessibility group at the School of Computing, University of Dundee, Dundee, Scotland, UK.
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Publications

[1] Sebastian Stein and Stephen J. McKenna. *User-adaptive Models for Recognizing Food Preparation Activities*. ACM International Conference on Multimedia (ACMM 2013), 5th Workshop on Multimedia for Cooking and Eating Activities (CEA 2013), Barcelona, Spain, 2013.

[2] Sebastian Stein and Stephen J. McKenna. *Combining Embedded Accelerometers with Computer Vision for Recognizing Food Preparation Activities*. ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp 2013), **Acceptance rate: 18%**, Zurich, Switzerland, 2013.

[3] Sebastian Stein and Stephen J. McKenna. *Towards recognizing food preparation activities in situational support systems*. **Best Student Paper**. Digital Futures 2013 (3rd Annual Digital Economy All Hands Conference), Aberdeen, Scotland, UK, 2012.

[4] Sebastian Stein and Stephen J. McKenna. *Accelerometer Localization in the View of a Stationary Camera*. The 9th Conference on Computer and Robot Vision (CRV 2012), Toronto, Ontario, Canada, 2012.

[5] Sebastian Stein and Gernot A. Fink. *A New Method for Combined Face Detection and Identification based on interest points*. IEEE International Conference on Face & Gesture Recognition (FGR 2011), Santa Barbara, California, USA, 2011.

[6] Sebastian Stein and Stephen J. McKenna. *Accelerometer Localization and Relational Histograms for Multi-modal Activity Recognition*. **Under revision for** IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI).

Thesis

[7] *Face Recognition based on Interest Points*. Submitted for the degree of "Dipl.-Inf." (MSc. Computer Science equivalent) to Dortmund Technical University, **Grade: A**, Dortmund, Germany, 2010.

Awards

Finalist for the EPSRC UK ICT Pioneers 2014 competition in the category "Technology Everywhere", Engineering & Physical Sciences Research Council, Swindon, UK.

2nd Prize in the category "Most Useful" (Microsoft Surface tablet),

The ACM Symposium on User Interface Software and Technology (UIST 2013), Student Innovation Contest, St. Andrews, Scotland, UK, 08-11 October 2013.

Best Paper Award for Outstanding Doctoral Student (£ 50),

SoC PhD Symposium, University of Dundee, Dundee, Scotland, UK, 24-25 April 2013.

British Telecom Best Student Paper Award (£ 100),

Digital Futures 2013 (3rd Annual Digital Economy All Hands Conference), Aberdeen, Scotland, UK, 23-25 October, 2012.

NCR Award for Excellence as a Doctoral Student,

SoC PhD Symposium, University of Dundee, Dundee, Scotland, UK, 28-29 March 2012.

BMVA Travel Bursary (£ 700),

for presenting a poster at the IEEE International Conference on Face & Gesture Recognition (FGR 2011), awarded by the British Machine Vision Association (BMVA), February 2011.

EPSRC PhD Studentship (full tuition and subsistence),

RCUK Digital Economy Research Hub EP/G066019/1 SiDE: Social Inclusion through the Digital Economy, December 2010 until May 2014.

ERASMUS Scholarship (full tuition and subsistence support),

for one academic year at University College London, awarded by Technical University of Dortmund, August 2007 until June 2008.

Service

Reviewer

British Machine Vision Conference (BMVC 2014)
Nottingham, UK, 01-05 September, 2014.

International Symposium on Wearable Computers (ISWC 2014)
Seattle, Washington, USA, 13-17 September, 2014.

ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp 2014), Seattle, Washington, USA, 13-17 September, 2014.

ACM CHI Conference on Human Factors in Computing Systems (CHI 2014), Toronto, Ontario, Canada, 26 April – 01 May, 2014.

ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp 2013), Zurich, Switzerland, 08-12 September 2013.

International Conference on Inductive Logic Programming (ILP'12), Dubrovnik, Croatia, 17-19 September 2012.

Auxiliary Reviewer

International Conference on Multi-modal Interaction (ICMI'12) Santa Monica, California, USA, 22-26 October 2012.

European Conference on Computer Vision (ECCV'12) Florence, Italy, 07-13 October 2012.

Organizing Committee

3rd UK Computer Vision Student's Workshop in conjunction with BMVC'12 Dundee, Scotland, UK, 02 September 2011.

Local Committee

22nd British Machine Vision Conference (BMVC'12),
Certificate of Recognition,
Dundee, Scotland, UK, 29 August – 02 September 2011.

Student Volunteer

20th Automated Reasoning Workshop,
Dundee, Scotland, UK, 11-12 April 2013.

Social Event Chair and Reviewer

SoC PhD Symposium at University of Dundee,
Dundee, Scotland, UK, 28-29 March, 2012.

Presentations

Talks

Multi-modal Recognition of Food Preparation Activities for Situational Support Systems.

Invited Talk at the AI Seminar at University of Waterloo, Waterloo, Ontario, Canada, 25 May 2012.

Recognizing food preparation activities in situational support systems.

Guest Lecture in Research Frontiers: Robot Eyes (AC42001) at University of Dundee, Dundee, Scotland, UK, 01 February 2013.

Multi-modal Recognition of Food Preparation Activities for Situational Support Systems.

Guest Lecture in Research Frontiers: Robot Eyes (AC42001) at University of Dundee, Dundee, Scotland, UK, 23 March 2012.

Combining Embedded Accelerometers with Computer Vision for Recognizing Food Preparation Activities.

The 2013 ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp 2013), Zurich, Switzerland, 8-12 October 2013.

User-adaptive Models for Recognizing Food Preparation Activities. 5th Workshop on Multimedia for Cooking and Eating Activities (CEA 2013), Barcelona, Spain, 21 October 2013.

Towards recognizing food preparation activities in situational support systems.

Digital Futures 2013 (3rd Annual Digital Economy All Hands Conference), Aberdeen, Scotland, UK, 23-25 October 2012.

Multi-modal Recognition of Food Preparation Activities

SoC PhD Symposium at University of Dundee, Dundee, Scotland, UK, 20 May 2014.

Recognizing food preparation activities in situational support systems.

SoC PhD Symposium at University of Dundee, Dundee, Scotland, UK, 24 April 2013.

Multi-modal Recognition of Food Preparation Activities for Situational Support Systems.

SoC PhD Symposium at University of Dundee, Dundee, Scotland, UK, 28-29 March 2012.

Towards Multi-Modal Recognition of Food Preparation Activities for Situational Support Systems.
SoC Research Seminar at University of Dundee, Dundee, Scotland, UK, 09 September 2011.

Posters

Accelerometer Localization in the View of a Stationary Camera.

The 9th Conference on Computer and Robot Vision, Toronto, Ontario, Canada, 27-30 May 2012.

A New Method for Combined Face Detection and Identification using Interest Point Descriptors.

The 9th IEEE Conference on Automatic Face and Gesture Recognition, Santa Barbara, California, USA, 21-25 March 2011.

User-adaptive Models for Recognizing Food Preparation Activities. 5th Workshop on Multimedia for Cooking and Eating Activities (CEA 2013), Barcelona, Spain, 21 October 2013.

Combining Embedded Accelerometers with Computer Vision for Recognizing Food Preparation Activities.

The 2013 ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp 2013), Zurich, Switzerland, 8-12 October 2013.

Accelerometer Localization in the View of a Stationary Camera.

SICSA PhD Conference 2012, Glasgow, Scotland, UK, 20-22 June 2012.

Demos

An Ambient Fountain That Automatically detects and Fills Glasses in its Proximity. "Most Useful" 2. Prize, ACM Symposium on User Interface Software and Technology (UIST 2013), Student Innovation Contest.

Teaching

2013/14 **Co-Supervisor** for Hons. Project on Object Recognition, Calum Murray.

2012/13 **Co-Supervisor** for MSc. project on Hand Tracking, Aeymanmol Hassan.

Teaching Assistant for Research Frontiers: Robot Eyes.

Duties included: Lab supervision, lecture on activity recognition, marking.

Teaching Assistant for Probabilistic Inference and Machine Learning.

Duties included: Lab supervision, tutorial on probabilistic inference.

Teaching Assistant for Algorithms and Artificial Intelligence.

Duties included: Tutorial on mathematics and algorithms, lab supervision.

2011/12 **Teaching Assistant** for Research Frontiers: Robot Eyes.

Duties included: Lab supervision, lecture on activity recognition, marking.

Teaching Assistant for Research Frontiers: Computer Face Models.

Duties included: Lab supervision, marking.

Teaching Assistant for Algorithms and Artificial Intelligence.

Duties included: Tutorials on mathematics and algorithms.

Programming Language Skills

Advanced C, C++, Java, MATLAB

Intermediate C# (Windows Phone), Python, Miranda, Haskell, JavaScript

Basic Visual Basic, PHP, SQL

Languages

Mother tongue German
Fluently English, French

References

Project PI

Professor Vicki Hanson
Chair of Inclusive Technologies
School of Computing
University of Dundee
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PhD Supervisor

Professor Stephen McKenna
Chair of Computer Vision
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