

Curriculum Vitae

Jim Tørresen

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Current position: Professor at Department of Informatics at University of Oslo
Date of birth: December 6, 1964 in Mandal, Norway
Nationality: Norwegian
Family: Married, 1 child

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Education

2003 Pedagogical education at Pedagogical Research Institute, University of Oslo. Fulfills demand for basic pedagogical competence.
1996 Dr. Ing. (PhD) in computer science, Department of Computer and Information Science, Norwegian University of Science and Technology (formerly NTH), Trondheim.
1991 Siv. Ing. (M.Sc.) in computer science, Department of Computer and Information Science, Norwegian University of Science and Technology (formerly NTH), Trondheim.

Employment

June 1999 – current Professor, Department of Informatics, University of Oslo (associate professor 1999-2005)
April 1998 – May 1999 R&D Satellite-based landing system, Navia Aviation.
April 1996 – March 1998 R&D Power line carrier system, NERA Telecommunications.
Jan. 1992 – March 1996 Research assistant, Department of Computer and Information Science, Norwegian University of Science and Technology, Trondheim

Visiting researcher/professor:

Aug 2010 – July 2011 Cornell Creative Machines Lab, US, Visiting prof. (12 months)
January 2000 – April 2000 Electrotech. lab. (now AIST), Tsukuba, Japan, Visiting researcher (3 months)
Oct 1993 – Nov 1994 Kyoto University, Japan, Visiting doctor student (13 months)

Fields of interest and present research activities

My main research interest and focus are within biology-inspired computing/machine learning (hardware and software) being applied for design and optimization problems. That is, solving complex real-world applications by applying an automated method like evolutionary computation. This allows for systems being autonomously reconfigurable and adaptable which is an important part of the research. The motivation is to address applications where there is room for improvement in performance such as latency and classification accuracy. Classifier systems are one example, which would be relevant in almost any kind of sensor data analysis whether for human or robot motion data. Although I am working in robotics including rapid-prototyping and robot modelling, much of the research has been related to reconfigurable logic hardware, called Field Progr. Gate Arrays (FPGAs). The research is to a large extent undertaken through our externally funded projects in addition to complementary internal funding.

Memberships Of Scientific Societies

2017 – Norwegian Academy of Technological Sciences (NTVA)
2015 – Member, Research Network “*European Network of Excellence on High Performance and Embedded Architecture and Compilation (HiPEAC)*”
1991 – Senior member *IEEE* (regular member until 2016)

Teaching/supervision experience (at Department of Informatics, University of Oslo)

- Master/Doctor students. 43 Master students and eight PhD students have graduated with my supervision. Presently, I am supervising six Master students and five PhD students.
- Postdoctoral researchers. I have been supervising four former postdoctoral researchers (2008-2014, two have become associate professor and one lecturer, respectively). Currently I supervise four postdoctoral researchers.
- I have been responsible (together with a colleague) of establishing a new course (INF3430/4430) in design of advanced digital systems (FPGA/VHDL), named *Digital System Design*. Given for the first time autumn 2005, the course includes four compulsory lab exercises that we have designed. I gave 11 weeks of lectures with 2 hours a week each autumn 2005-2007.
- I have been teaching a basic digital design course (digital logic design, programmable logic devices and VHDL) autumn 1999 (IN-240), autumn 2000 (IN-240), autumn 2001 (IN-240), spring 2002 (INF-130) and spring 2003 (INF-130). 12 weeks of lectures with 3-4 hours a week (except for spring 2002/2003 which was of 6 weeks duration).

- I have in 2001 established and taught a new course (INF-EHW/5450) on *Evolutionary Computation and Evolvable Hardware*. It is a master level course, and I was teaching the course each autumn 2001-2009. Continued in new biology-inspired computing course 2013-

Censor and evaluation tasks

- External evaluator of PhD thesis at NTNU (2 x 2012, 1 x 2015), University of Bergen (2012), University of Paderborn, Germany (2013), National University of Ireland, Galway, Ireland (2013), Mid Sweden University (2014)
- Censor (all with marks) of nine 4th year projects and 35 M.Sc. thesis at Department of Computer and Information Science and Department of Electronics and Telecommunications, NTNU from 1998.
- External examiner for two PhD thesis at School of Electrical and Electronic Engineering, Nanyang Technological University, Singapore in 2005 and 2006.
- Censor/external examiner for one M.Sc. thesis at Department of Electronics, The University of York, 2004.

Adjudication committee member for university positions

- External assessor for evaluation for an extension of tenure for a professor position Department of Computer Engineering of Tallinn University of Technology, Estonia, 2014.
- External assessor for evaluation of candidate for promotion to becoming senior lecturer at National University of Ireland, Galway, Ireland, 2014.
- External assessor for evaluation for an extension of tenure for an associate professor position at Nanyang Technological Institute, Singapore, 2007.
- Associate professor position at Department of Computer and Information Science, NTNU, 2003.
- Associate professor position at Dept. of Computer and Information Science, NTNU (Snorre Aunet assigned), 2002.
- Associate professor position at Department of Physical Electronics, NTNU (Per Gunnar Kjeldsberg assigned), 2001.
- Associate professor position at Department of Informatics, UiO (Mats Høvin assigned), 2000.

Administration/leadership

- PI/one of three cluster leaders in a Research Council of Norway funded interdisciplinary Centre of Excellence (CoE): *Centre for Interdisciplinary Studies in Rhythm, Time and Motion* (RITMO, 2018-2028, selected among 150 applicants).
- Co-initiator of the Robotics and Intelligent Systems (ROBIN) research group in 2006 and group leader since 2007.
- The group has also been appointed as an *Emerging research initiative* by the Faculty of Mathematics and Natural Sciences giving internal priority in assignment of PhD-positions. 2007-2012.
- Co-initiator of the fourMs group (Music, Mind, Motion, Machines) at the University of Oslo (UiO). Since 2008 we have built up an interdisciplinary group composed of researchers from informatics and musicology, with close connections to researchers in psychology, neurology, physiotherapy, and the performing arts.
- I have been much involved in establishing labs equipped with internationally state-of-art equipment (funded in 2009 by UiO and Research Council of Norway by 1.1 M€ for motion capture (3 labs) and 3D-printing of robotics parts (2 labs).
- Member of the education management board of Master/Bachelor program in Electronics and Computer Technology at Faculty of Mathematics and Natural Sciences, 2004-2013.
- Member of the education management board at the Department of Informatics, in 2001 and 2003 - 2006.
- Participated in the development of the educational programs at the Microelectronics Systems group. In 2001, we introduced a new successful 5 year study program called "Profesjonsstudiet i mikoelektronikk" in Norwegian.

Externally funded research projects (where Torresen is project manager or Principle Investigator)

- *Collaboration on Intelligent Machines (COINMAC)*, Research Council of Norway (RCN) INTPART call. *Project manager*. Period: 2017-2020. Total amount: NOK 3,495,000 (EUR 400,000) (28% of prop. funded)
- *Introducing personalized Treatment Of Mental health problems using Adaptive Technology (INTROMAT)*, Research Council of Norway (RCN) IKTPLUSS Lighthouse call. *Principle Investigator*. Period: 2016-2021 (4% of prop. funded)
- *In silico Pathology - Improving diagnosis by utilizing Big Data and software-driven automation of pathology (DoMore!)*, Research Council of Norway (RCN) IKTPLUSS Lighthouse call. *Principle Investigator*. Period: 2016-2021, Amount assigned our research group: ~NOK 6,500 000 (4% of prop. funded)
- *Multimodal Elderly Care Systems (MECS)*, Research Council of Norway (RCN) IKTPLUSS (2 PhDs and 1 post-doc), *Project manager*. Period: 2015-2019. Total amount: NOK 12,000,000 (EUR 1,240,000). (10% of prop. funded)
- *Engineering Predictability with Embodied Cognition (EPEC)*, Research Council of Norway (RCN) FRINATEK (2 PhDs and 1 post-doc), *Project manager*. Period: 2015-2019. Total amount: NOK 9,000,000 (EUR 1,050,000). (10% of prop. funded)
- *Study Programmes For Programmable Logic Development by Remote Lab (SPLUF)*. Funding from Norgesuniversitetet. Goal: Establish two remote teaching courses on hardware design with learning materials and remote labs available through the Web. *Project manager*, project P70/2014, Period: 01.01.2014 – 31.12.2016. NOK 1 000 000 (EUR 120 000).
- *Organizing the "22nd Int. Conference on Field Programmable Logic and Applications (FPL)"* in Oslo, 2012. Financial conference organizing support from the RCN. *Project manager*, project no 214057, NOK 250 000 (EUR 34 000).
- *European Digital Virtual Design lab (eDiViDe)*, Action Erasmus Multilateral Projects, Lifelong Learning Programme, 518565-LLP-1-2011-1-BE-ERASMUS-ESMO. Period: 01.10.2011- 30.09.2014. 4 partners assigned EUR 300 000 in total. Goal of partner UiO: Establish a real lab setup accessible remotely by students and others through Internet demonstrating partial reconfiguration of FPGA. *Coordinator of the partner UiO*.
- *Engineering Proprioception in Computing Systems (EPiCS)* EU integrating project (IP) in ICT Call 5: FP7-ICT-2009-5 Self-Awareness in Autonomic Systems, FET Proactive. Grant agreement no: 257906. UiO is one of eight partners. *Coordinator of the partner UiO*. UiO goal: Bio-inspired algorithms for proprioceptive systems, and an active music demonstrator. Period: 01.09.2010 – 31.08.2014. Amount assigned UiO: EUR 536 644. Review three last years concluded with "Excellent progress".
- *Context Switching Reconfigurable Hardware for Communication Systems*. The Research Council of Norway R&D project for one post-doc and two Ph.D. students. Goal: Develop architectures and tools for run-time reconfigurable hardware and demonstrate effectiveness with use-cases. *Project manager*. Period: 01.07.2009 – 31.12.2013. Total amount: NOK 10,002,000 (EUR 1,266,000). (16% of proposals funded)

- *Sensing Music-related Actions*. The Research Council of Norway R&D project for one post-doc and one Ph.D. candidate. Goal: Understanding motion – music relations and apply it for development of interfaces and devices for an active music experience. *Project partner*. Multidisciplinary collaboration with Dept. of Musicology, UiO. Period: 01.07.2008 – 31.12.2012. Total amount: NOK 6,444,000 (EUR 816,000).
- *Biological-Inspired Design of Systems for Complex Real-World Applications (BIDSCA)*. The Research Council of Norway R&D project for one Ph.D. candidate, equipment and research visits. Project no. 160308/V30. Goal: Develop schemes and architectures for evolving systems for complex real-world applications. *Project manager*. Period: 01.04.2004 – 02.03.2009. Total amount: NOK 2,045,000 (EUR 259,000).
- *DAADppp mobility programme Germany-Norway*. 2007 – 2008. University of Paderborn, Professor Marco Platzner for mutual annual visits by faculty and one PhD student. *Project manager*.
- EMBLA – *Embedded systems design, modelling, Language and Analysis* funded by the Research Council of Norway. Project member, 2003-2005. Goal: Strengthen the competitiveness of Norwegian electronics companies through collaboration between universities (4 members) and companies (10 members). *Project partner*.
- *Financial conference organizing support for ICES'2003*. I was responsible for writing a proposal for conference support from the European Community Fifth Framework program. The proposal (IST-2001-92552 ICES) was assigned EUR 12,000. For the same event, I wrote an application to the Research Council of Norway which assigned us NOK 90 000 (EUR 12 000), project no. 154615/432.

Scholarships for funding research visits

- Science and Technology Agency (STA) fellowship for visiting *Electrotechnical laboratory*, Tsukuba, Japan from January 2000 – April 2000.
- Sazakawa fellowship for visiting various research laboratories in Japan for three weeks in November 1997.
- The Research Council of Norway fellowship for visiting *Kyoto University* in Japan, October 1993 – November 1994.

Proposal and project evaluations:

- Croucher Foundation Innovation Award (remote and one day in Hong Kong, 2016)
- EU H2020 ICT-25 Generic Micro- and Nano-electronic Techn. (remote evaluator and panel member Brussels, 2015)
- Human Brain Project Competitive Call evaluation panel member (remote and 2 day panel meeting in London, 2014 + remote and 1 day panel meeting, Juelich, Germany 2015)
- Short proposal evaluation EU FP7 FET Open (Future and Emerging Technologies, 54 proposals 2007-2009, 2011-2012).
- Evaluator of one ongoing EU FP7 FET Open project, 2011, 2012 and 2013.
- Remote evaluator EU FP7 FET-Open Xtrack 2013 (6 proposals) and EU Horizon2020 FET Open 2015 (5 proposals)
- Project evaluation *Forschung, Innovation, Technologie – Informationstechnologie (FIT-IT)*, Austrian research programme, 2007 (11 projects).
- Project evaluation of one *Research institution-based strategic project – ISP*, Research Council of Norway, 2007.
- Proposal evaluation for the research program *Global Computer Science (GLANCE)*, The Netherlands Organisation for Scientific Research (NWO), 2006.

Editorial Board of journals

- Guest editor Elsevier Microprocessors and Microsystems (MICPRO) Special Issue on “2015 IEEE Nordic Circuits and Systems Conference (NORCAS)” (published 2016)
- Guest editor *IEEE Computer* Special Issue on “Self-aware and Self-expressive Computing Systems”, July 2015
- International Journal of Reconfigurable Computing (Hindawi), since 2012
- Frontiers in Evolutionary Robotics, since 2014
- Memetic Computing (Springer), since 2009.
- International Journal of Bio- Science and Bio- Technology (IJBSBT, published by SERSC), since 2010.

Paper reviewing:

- ACM Transactions on Reconfigurable Technology and Systems (TRETs), 2015.
- AIEDAM Journal: Artificial Intelligence for Engineering Design, Analysis and Manufacturing, 2009
- Engineering Applications of Artificial Intelligence (Elsevier), 2010
- Genetic Programming and Evolvable Machines (Springer), 2002, 2008, 2009, 2011-2015
- Evolutionary Intelligence, 2014
- IEEE Transactions on Cognitive and Developmental Systems 2016-2017
- IEEE Transactions on Computers, 2012
- IEEE Transactions on Evolutionary Computation, 2003-2016
- IEEE Transactions on Transactions on Mechatronics 2010
- IEEE Transactions on Systems, Man, and Cybernetics – Part C. 2005-2006, 2008, 2010.
- IET/IEE Proceedings – Computers and Digital Techniques, 2003-2008
- Integrated Computer-Aided Engineering (IOS Press) 2010-2013
- International Journal of Reconfigurable Computing (Hindawi), 2010
- Microprocessor and Microsystems (Elsevier), 2006, 2008, 2011
- WIREs Data Mining and Knowledge Discovery (Wiley), 2010

Program committee member with review (~10 conferences annually)

- Genetic and Evolutionary Computation Conf. (GECCO), Springer LNCS/ACM, since 2000.
- IEEE Norchip Conference, since 2004
- IEEE Congress on Evolutionary Computation (CEC), since 2011
- International Conference on Field Programmable Logic and Applications (FPL), since 2007
- International Conf. on Bioinspired Optimization Methods and their Applications (BIOMA), since 2004
- International Conf. on Engineering of Reconfigurable Systems and Algorithms (ERSA), since 2004

- International Conf. on Knowledge-Based Intelligent Inf. & Eng. Systems (KES), Springer LNAI, 2004-2006
- International Conference on New Interfaces for Musical Expression (NIME, since 2011
- International Conference on ReConFigurable Computing and FPGAs (ReConFig), since 2011
- International Conference on Evolvable Systems: From Biology to Hardware (ICES), Springer LNCS, since 2000
- NASA/ESA Conference on Adaptive Hardware and Systems (AHS). IEEE CS Press, since 2006
- Reconfigurable Architectures Workshop (RAW), IEEE CS Press, since 2004

Conference organizing/steering committees

- Technical Program Chair IEEE Nordic Circuits and Systems Conference, Oslo, October 2015, 95 participants
- Local Co-chair of the *HiPEAC Computing Systems Week* organized at University of Oslo May 2015, European project conference with thematic sessions and project reviews, 285 participants
- Program Vice-Chairs at 21st Reconfigurable Architectures Workshop (IEEE), May 19-20, 2014, Phoenix, USA
- Steering committee *International Conference on Field Programmable Logic and Applications (FPL)* since 2012.
- General Chair at *22nd International Conference on Field Programmable Logic and Applications (FPL 2012)* in University of Oslo, Norway, August 2012, IEEE, <http://www.fpl2012.org> 280 participants. The largest and oldest conference within reconfigurable hardware.
- University representative in the organizing committee of the annual *Norwegian FPGA-forum*, since 2005. It gathers FPGA designers, project managers, technical leaders, univ. faculty, researchers, suppliers, consultants and the last year's students to share knowledge and experience. Since starting in 2005, it has become the most important event for FPGA-technology in Norway with more than 100 people attending.
- Local organizing committee for *11th International Conference on New Interfaces for Musical Expression (NIME)*, Oslo, 30 May – 1 June, 2011. It is one of the largest and most important international conferences in music technology and interfaces for musical expression. 129 scientific and 69 artistic contributions (peer reviewed) were presented for the approximately 400 participants.
- Workshop Chair at *9th International Conference on Parallel Problem Solving From Nature (PPSN'2006)*.
- Steering committee member “*International Conference on Evolvable Systems: From Biology to Hardware*” since 2003.
- Program Co-chair “*5th International Conference on Evolvable Systems: From Biology to Hardware (ICES 2003)*” in Trondheim, Norway, March 2003. Springer Lecture Notes in Computer Science, <http://ices03.idi.ntnu.no>

Invited Talks (selected):

- Artificial intelligence - a human technology? **TEDx Oslo**, May 2017.
- Making Technology Adaptive by Biologically Inspired Computing, *Hong Kong University*, 24 Oct. 2016.
- Unleashing AI in the Real World, *School of Computer Science, Univ. of Manchester*, UK, 5 Oct. 2016.
- Robotics in IoT, *HiPEAC Computing Systems Week*, Oslo, May 2015
- Introduction to Run-time Evolvable and Reconfigurable Hardware. *Invited talk at School of Engineering - Universidad Autonoma de Madrid*, Spain, 22 November 2013.
- Self-aware and Self-expressive Active Music Systems, *Awareness Summer School (AWASS 2012)*, Edinburgh, UK, 10 – 16th June 2012
- Can Run-time Reconfigurable Hardware be more Accessible? *Invited talk at 2011 Int. Conf. on Engineering of Reconfigurable Systems and Algorithms (ERSA'11)*, July 18, 2011, Las Vegas, US.
- Exploring Bio-Inspired Computing for Robotics and Intelligent Systems, *Invited talk at Dept. of Computer Science Colloquium*, University of Vermont, US, April 8th, 2011.
- Making Run-time Reconfigurable Hardware more Useful, *Invited talk at University of Southern California (USC)*, LA, CA. January 28, 2011.
- Robotics and Intelligent Systems Research at University of Oslo, *Invited talk at Jet Propulsion Laboratory/California Institute of Technology*, Pasadena, CA, January 26, 2011.
- Robotics and Intelligent Systems research group (ROBIN at UiO), *Invited talk at Cornell Creative Machines Lab*, Cornell University, August 30th, 2010.
- A New Project to Address Run-Time Reconfigurable Hardware Systems. *Invited participant/speaker at Dagstuhl Seminar 10281: Dynamically Reconfigurable Architectures*, Schloss Dagstuhl, Germany, July 11 – 16, 2010.
- “Adaptable System on Chip”, *Keynote at Reconfigurable Communication-centric Systems on Chip Conference (ReCoSoC'10)*. May 17-19, 2010, Karlsruhe, Germany.
- “Evolutionary Computing Applied to Hardware and Robotics”. *Invited talk at Faculty of Information Technology*, Brno University of Technology (BUT), Brno, Czech Republic, January 20th, 2009.
- ”Adapting Systems by Evolving Hardware”. *Invited talk in Computer Systems Colloquium (EE380)*, Stanford University. January 23rd, 2008.
- “Evolutionary Computing and its Application to Signal and Image Classification in Hardware.” *Invited talk at Fudan University*, China, September 17th, 2007.

Tutorials Given (selected):

- A Run-Time Evolvable Hardware Tutorial, *2011 Int. Conf. on Engineering of Reconfigurable Systems and Algorithms (ERSA'11)*, July 18, 2011, Las Vegas, US
- Evolvable Hardware (co-organised with Lukas Sekanina, Brno University of Technology). *2009 NASA /ESA Conference on Adaptive Hardware and Systems (AHS-2009)*, San Francisco, July, 2009.
- Evolvable Hardware (co-organised with Lukas Sekanina, Brno University of Technology). *IEEE Congress on Evolutionary Computation (CEC-2009)*, Trondheim, May 2009.
- Run-Time Reconfigurable and Adaptive Hardware. *2008 NASA /ESA Conference on Adaptive Hardware and Systems (AHS-2008)*, The Netherlands, June 2008.

- Evolvable Hardware (co-organised with Kyrre Glette, University of Oslo (Norway) and Marco Platzner and Paul Kaufmann, University of Paderborn (Germany), *21st International Conference on Architecture of Computing Systems*, ARCS'08. Dresden, Germany, February 25-28, 2008.
- Reconfigurable Computing by Reconfigurable Logic. *1st NASA/ESA Conference on Adaptive Hardware and Systems (AHS'2006)*. June 2006, Istanbul, Turkey.

Publications

A total of 150 papers (50 as the first author) have been published in international conferences, journals and books. See a list at: <http://www.mn.uio.no/ifi/english/people/aca/jimtoer/index.html> (most recent) and <http://home.ifi.uio.no/~jimtoer/papers.html>

Google Scholar Citations (25 May 2017) indicates: Total: h-index= 25, citations= 2326; Last 5 years: h-index= 16, citations= 1196.

3 best papers awards (2008 - 2010).

Publications also include a general public book: *What is artificial intelligence* (in Norwegian, November 2013) for the publisher Universitetsforlaget (Hva-er-bokserien). I have in the last 5 years had more than 30 appearances in mass media (newspapers, magazines, radio, TV).