

Curriculum Vitae

Personal information

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| | Dr.-Ing. Till Halbach Røssvoll |
| Birth | 1973 in Düsseldorf , Germany |
| Position | Research scientist |
| Affiliation | Norwegian Computing Center |
| Memberships | IEEE incl. Signal Processing Society , Tekna , and Foreningen av ansatte ved Norsk Regnesentral |
| Grants & awards | International Academy, Research, and Industry Association (IARIA) (best-paper award for article “Estimation of Subjective Video Quality as Feedback to Content Providers”, 08/2010), International Academy, Research, and Industry Association (IARIA) (best-paper award for article “Towards Cognitively Accessible Web Pages”, 02/2010), Norwegian Research Council (international scholarship, 08/2002–01/2003), IKT Webtek (Ph.D. grant, 04/2002–03/2004), Department for Electrical Engineering at NTNU (Ph.D. grant, 09/1999–03/2002), IENT at RWTH (travel grants, 1999, 2000, and 2001), SINTEF (study grant, 03–09/1999), European student exchange program Sokrates (student exchange grant, 04–12/1998) |
| References | Please contact Tor A. Ramstad at NTNU or Snorre M. Grimsby at Opera Software (contact information available upon request) |

Main fields of competence

Web technology

Universal design, accessibility, usability

Still-image and video communication and standards

Channel error robustness, including channel coding, resilience, and concealment, joint source channel coding

Multiresolution image processing

Quality assurance systems and processes

Research work, project management

Work experience and training

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| Since 06/2007 | Research scientist at Norwegian Computing Center in Oslo (Norway) Applied research; Multimedia communication, streaming, and broad- |
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- casting (video and audio); web technology and applications, e-inclusion, accessibility, usability; software and system development; marketing, project acquisition and management; consulting and teaching
- 07/2006–05/2007 Project and test manager at [Opera Software](#) in Oslo
Opera-internal Core technology product deliveries; Deputy Core QA manager
- 05–06/2006 Core technology engineer at Opera Software’s Korean office in Seoul
Project-specific tasks
- 01/2005–04/2006 Quality assurance engineer at Opera Software in Oslo
General and scalable multimedia cross-platform rendering (including handheld devices), image decoding, browser security, and development of quality assurance tools and systems; participation in development of web standards; Deputy Core QA manager
- 10–12/2004 Trainee at Opera Software in Oslo and Linköping (Sweden)
Software and device testing, browser security, and multimedia rendering; Deputy Core QA manager
- 06/2000–07/2002 Contributor to H.264 standardization of [ITU-T](#)
Improvement of the standard’s error resilience
- 04–12/1998 Contributor to JPEG2000 standardization of [ISO/IEC](#)
Enhancement of the standard’s error robustness
- 01–03/1998 Professional internship at [Rohde&Schwarz](#) GmbH&Co. KG in [Munich](#), Germany
A hardware implementation of a channel codec for MPEG-2 Video / DVB-T
- 10/1995–05/1997 Student assistant at Institute for Communications Engineering ([IENT](#)), University of Science and Technology ([RWTH](#)), in [Aachen](#), Germany
Development of software tools for video compression

Post-secondary education

- 08/2002–01/2003 Visiting scholar at the School of Electrical Engineering and Computer Science ([EECS](#)), Washington State University ([WSU](#)), in [Pullman](#) (WA, USA), with dr. Thomas R. Fischer as local supervisor
Development of an SNR scalability extension for H.264 as well as research on optimum channel coding for hybrid code streams
- 06–09/2001 Visiting scientist at IENT, with Prof. J.-R. Ohm as local adviser
Research on increased error robustness of H.26L
- 06–08/2000 Visiting scientist at IENT
Project participation concerning adaptive block transforms in H.26L
- 09/1999–07/2004 Ph.D. (dr.ing.) student at [Department of Electronics and Telecommunications](#) (former Department of Telecommunications), Norwegian University of Science and Technology ([NTNU](#)) in [Trondheim](#), Norway, with Prof. Tor A. Ramstad as supervisor
Main research area: Robust still-image and video compression

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| 06–07/1999 | Visiting scientist at IENT with Prof. H.-D. Lüke as local adviser Research on a modification of JPEG2000 for increased channel error resilience |
| 03–09/1999 | Scientist (stipendiat) at SINTEF in Trondheim Area of research: Robust image compression in JPEG2000 |
| 04–12/1998 | Diploma (M.Sc.) thesis at Department of Telecommunications, NTNU, with Prof. Tor A. Ramstad as local supervisor Participation in the Core Experiment Development Group for increased error robustness of JPEG2000 |
| 02/1995 | Finishing undergraduate studies with Vordiplom. Start of Philosophy as minor subject Communications Engineering as field of interest during graduate studies |
| 10/1992–12/1998 | Study of Electrical Engineering at RWTH. Graduating with Diplom-Ingenieur degree |

Language skills

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| German | Mother tongue |
| English | Readings: excellent; writing: excellent; verbal: very good |
| Norwegian | Readings: excellent; writing: very good; verbal: very good |

Computer skills

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| Systems | Windows, Unix (Solaris), Linux (Redhat/Fedora, Debian, Ubuntu), Mac |
| Languages | ANSI-C, C++, Java, PHP, JavaScript/ECMAScript, Shell programming, Awk, Matlab, Octave |
| Software development | Eclipse, CVS/SVN/hg/git, g++, gdb, emacs |
| Applications | MS Office, Open Office, various Linux programs |
| Other | \LaTeX , (X)HTML, CSS, various web/ W3C standards |

Visual communication standards

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| Still-image and graphics coding standards | aGIF, GIF, BMP, ICO, JPEG, PNG, SVG, WBMP, XBM, Motion JPEG, JPEG2000, Motion JPEG2000, JPEG-LS, JBIG |
| Video coding standards | MPEG-1, MPEG-2, MPEG-4, H.120, H.261, H.262, H.263, H.-263+, H.263++, H.264, Flash, Dirac, Theora |

Teaching

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| Selected topics in Multimedia Communication | Master level. Single lectures, Spring 2009 and 2010. 5–10 students Video coding and quality, codec comparisons, Dirac, Theora, H.264, |
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| | SVC, Motion JPEG2000, 3D cinema |
| Digital Filtering | Ph.D. level. Lectures, supervised in Autumn 2003. 9 students State-of-the-art digital filter techniques and realizations; non-linear, multirate, and multidimensional filtering; finite-precision effects; signal synthesis; applications |
| Digital Image Communication | Specialization on a M.Sc. level. Lectures (incl. examinations), held in Autumn 2003. 8 students Multirate signal processing; information-theoretic bounds; signal analysis, classification, and mapping; still-image and video compression; optimum resource allocation; signal decomposition, filter banks, and transforms |
| Digital Image Communication | M.Sc. level. Tutorials on the upcoming video coding standard H.264, given in Autumn 2001 and Autumn 2002. 16 and 11 students Standardization efforts; encoder and decoder technical issues and concepts including profiles; coding examples; performance comparisons |
| Communications and Multimedia Seminar | M.Sc. level. Tutorial about Joint Source Channel Coding, given in Spring 2001. Roughly 30 students Information theory issues; conventional systems; joint encoding and decoding; recent research; examples in still-image and video compression |
| Digital Signal Processing | M.Sc. level. Labs and some lectures (incl. examinations), held in Autumn 1999, Spring 2000, and Spring 2001. Between 80 and 110 students Analog, discrete, and digital signals; signal analysis, modeling, and filtering; estimation and detection theory; LTI systems; signal transforms |
| Information Theory, Coding, and Compression | M.Sc. level. Labs (incl. examinations), developed and held in Autumn 2000. Around 40 students Communication system structures and modeling; communication theory and information-theoretic bounds; lossless and lossy signal compression; rate distortion theory; signal quantization; channel coding |

Other occupations

Member of Technical Program Committee for [ACHI-2011](#)

Conference on Advances in Computer-Human Interactions

Peer review of submitted articles for [IEEE Transactions on Image Processing](#), [IEEE Signal Processing Letters](#), and [IEEE Transactions on Multimedia](#), 2004–2007

Member of Program Committee and article reviewer for [NORSIG-2005](#)

Conference on Signal Processing

Examiner of fifth-year students under oral examination, Autumn 2004

Course topic: Digital Image Communication

Article reviewer for the [NORSIG-2003](#) conference

Supervisor for one fifth-year student writing master's thesis, Spring 2003

Title: 'Håndtering av pakketap i videokonferansesystemer'

Supervisor for one fifth-year student working on short-term project, Autumn 2002

Title: 'Generelle konsepter og feilrobusthet i H.26L'

Assignment from Høyskole i Stavanger for examination of a Diploma thesis, Spring 2002

Title: 'Temporær redundans i videokoderen H.26L'

Supervision of one fifth-year student working on short-term project, Autumn 2001

Title: 'H.26L & feilrobusthet i variabel-lengde-kodere'

Supervisor for two fifth-year students writing master's thesis, Spring 2000

Research area: MPEG-4 Visual

Publications

Theses

Till Halbach. *Error-Robust Coding and Transmission of Compressed Layered Hybrid Video Streams for Packet-Switched Wireless Networks*. PhD thesis, Norwegian University of Science and Technology (NTNU), Trondheim (Norway), 2004.

Till Halbach. Robust still image compression for mobile and wireless communications. Master's thesis, Norwegian University of Science and Technology, Trondheim (Norway), December 1998.

Journal articles

Till Halbach Røssvoll and Ivar Solheim. Design of cognitively accessible web pages. *International Journal on Advances in Intelligent Systems*, 3(3&4):303–312, 2010. Last accessed 2011-04-04.

Till Halbach and Thomas R. Fischer. SNR scalability by coefficient refinement for hybrid video coding. *IEEE Signal Processing Letters*, 13(2):88–91, February 2006.

Conference articles

Wolfgang Leister, Svetlana Boudko, and Till Halbach. Estimation of subjective video quality as feedback to content providers. In *Proceedings of 5th International Conference on Systems and Networks Communications (ICSNC-2010)*, pages 266–271, Nice (France), August 2010. International Academy, Research, and Industry Association (IARIA), IEEE. <http://www.iaria.org/conferences2010/ICSNC10.html>.

Till Halbach, Kristin Skeide Fuglerud, Øystein Dale, Ivar Solheim, and Trenton Schulz. Usability and accessibility evaluation of the upcoming norwegian E-vote solution. In *Proceedings of Unitech-2010*, pages 156–167, Oslo (Norway), May 2010. Tapir Academic Publishers. <http://www.iu.hio.no/~frodes/unitech10/>.

Ivar Solheim, Øystein Dale, Lothar Fritsch, Till Halbach, Knut Holmqvist, and Ingvar Tjøstheim. Search and navigation as retrieval strategies in large photo collections. In *Proceedings of*

European Conference on Information Retrieval (Information Access for Personal Media Archiv Workshop, IAPMA), pages 30–37, Milton Keynes (UK), March 2010. Dublin City University. <http://doras.dcu.ie/15373/>.

Till Halbach. Towards cognitively accessible web pages. In *Proceedings of Third International Conferences on Advances in Computer-Human Interactions (ACHI-2010)*, St. Maarten (Netherlands Antilles), February 2010. International Academy, Research, and Industry Association (IARIA), IEEE Computer Society. <http://www.iaria.org/conferences2010/ACHI10.html>.

Till Halbach. A framework for serving inclusive web forms to disabled and elderly individuals. In *Proceedings of 2nd International Conference on Advances in Human-oriented and Personalized Mechanisms, Technologies, and Services*, Porto (Portugal), September 2009. International Academy, Research, and Industry Association (IARIA), IEEE Computer Society. <http://www.iaria.org/conferences2009/CENTRIC09.html>.

Knut Holmqvist, Till Halbach, and Thor Kristoffersen. Virtualization as a strategy for maintaining future access to multimedia content. In *Proceedings of International Conference on Advances in Multimedia*, Colmar, France, July 2009. International Academy, Research, and Industry Association (IARIA), IEEE Computer Society. <http://www.iaria.org/conferences2009/MMEDIA09.html>.

Till Halbach. Comparison of open and free video compression systems. In *Proceedings of International Conference on Imaging Theory and Applications (IMAGAPP)*, Lisboa (Portugal), February 2009. Institute for Systems and Technologies of Information, Control and Communication (INSTICC), Springer. <http://imagapp.visigrapp.org/IMAGAPP2009/>.

Riitta Hellman, Till Halbach, and Anne-Lise N arstad. Log in if you can — the Br onn oyssund case. In *Proceedings of Verdiskapning i IKT (VERDIKT)*, Bergen (Norway), October 2008. Norwegian Research Council.

Till Halbach. Optimum unequal error protection of SNR-scalable DPCM-coded video. In *Proc. Int. Conf. on Acoustics, Speech, and Signal Proc. (ICASSP)*, volume 4, pages 629–632, Montreal (Quebec, Canada), May 2004. Institute of Electrical and Electronics Engineers (IEEE).

Till Halbach. Unequal error protection of SNR-scalable DPCM-coded video. In *Proc. Data Compression Conference (DCC)*, Snowbird (UT, USA), March 2004. Brandeis University.

Till Halbach and Steffen Olsen. Error robustness evaluation of H.264/MPEG-4 AVC. In *Proc. SPIE Visual Communications and Image Processing (VCIP)*, San Jose (CA, USA), January 2004. Society of Photo-Optical and Instrumentation Engineers (SPIE).

Till Halbach. The H.264 video compression standard. In *Proc. Nordic Signal Processing Symposium (NORSIG)*, Bergen (Norway), October 2003. Nordic Signal Processing Society (NORSIG).

Till Halbach and Tor A. Ramstad. Multidimensional adaptive non-linear filters for concealment of interlaced video. In *Proc. Nordic Signal Processing Symposium (NORSIG)*, Bergen (Norway), October 2003. Nordic Signal Processing Society (NORSIG).

Till Halbach and Thomas R. Fischer. SNR scalability by transform coefficient refinement for block-based video coding. In *Proc. SPIE Visual Communications and Image Processing (VCIP)*, Lugano (Switzerland), July 2003. Society of Photo-Optical and Instrumentation Engineers (SPIE).

Till Halbach and Thomas R. Fischer. Channel rate allocation for error-robust packet transmission of SNR-scalable DPCM-coded video. In *Proc. International Symposium on Signal Processing and its Applications (ISSPA)*, Paris (France), July 2003.

Till Halbach and Mathias Wien. Concepts and performance of next-generation video compression standardization. In *Proc. Nordic Signal Processing Symposium (NORSIG)*, on board Hurtigruten (Norway), October 2002. Nordic Signal Processing Society (NORSIG).

Till Halbach. Motivation for error-tolerant communication. In *Proc. SPIE Visual Communications and Image Processing (VCIP)*, volume 4671 (Part Two), pages 1210–1218, San Jose (CA, USA), January 2002. Society of Photo-Optical and Instrumentation Engineers (SPIE).

Till Halbach. Motivation for error-robust communication. In *Proc. Nordic Signal Processing Symposium (NORSIG)*, pages 157–161, Trondheim (Norway), October 2001. Nordic Signal Processing Society (NORSIG).

Till Halbach and Arne Lie. Norwegian contributions and recent developments in still image standardization. In *Proc. Norwegian Conf. on Image Processing and Pattern Recognition (NOBIM)*, pages 114–117, Trondheim (Norway), June 2000. Norsk forening for bildebehandling og mønstergjenkjenning (NOBIM).

Till Halbach, Tor A. Ramstad, and Andrew Perks. Blockwise mixed fixed-length/variable-length coding in JPEG2000. In *Proc. Nordic Signal Processing Symposium (NORSIG)*, pages 7–12, Asker (Norway), September 1999. Nordic Signal Processing Society (NORSIG).

Standardization contributions

Till Halbach. Performance comparison: H.26L intra coding vs. JPEG2000. Technical Report D039, ITU-T VCEG | ISO/IEC MPEG (JVT), July 2002.

Till Halbach. Reduced slice headers and bit error resilience. Technical Report C129, ITU-T VCEG | ISO/IEC MPEG (JVT), May 2002.

- Till Halbach. Enhanced variable-length coding. Technical Report B034r1, ITU-T VCEG | ISO/IEC MPEG (JVT), January 2002.
- Till Halbach. TML-8.4 error resilience performance. Technical Report N67, ITU-T Q.6/SG 16 (VCEG), September 2001.
- Mathias Wien and Till Halbach. Results of H.26L Core Experiment on adaptive block transforms. Technical Report K15, ITU-T SG16 Q.15, August 2000.
- Tor A. Ramstad, Andrew Perkis, Geir Øien, and Till Halbach. Report on Core Experiment: FLC versus VLC. Technical Report N997, ISO/IEC JTC 1/SC 29/WG 1, October 1998.
- Andrew Perkis, Tor A. Ramstad, Geir Øien, Helge Coward, and Till Halbach. Fixed length coding by nonuniform scalar quantization in JPEG2000. Technical Report N851, ISO/IEC JTC 1/SC 29/WG 1, June 1998.
- Reports and notes Kristin Skeide Fuglerud and Till Halbach Røssvoll. Previous and related research on usability and accessibility issues of personal identification management systems. Technical note DART/10/10, October 2010.
- Kristin Skeide Fuglerud, Till Halbach, Øystein Dale, Ivar Solheim, and Trenton Schultz. Accessibility and usability evaluation of E-vote prototypes. Technical Report DART/07/09, Norwegian Computing Center, Oslo (Norway), November 2009.
- Till Halbach. Evaluation of VoIP Linux distributions based on Asterisk. Technical note DART/02/10, March 2010.
- Till Halbach and Knut Holmqvist. Søknadsevaluering. Technical Report dart/01/08, Norwegian Computing Center, Oslo (Norway), January 2008.
- Till Halbach. Video codec performance evaluation. Technical Report dart/09/07, Norwegian Computing Center, Oslo (Norway), November 2007.
- Popular science Till Halbach. Some important international standards and organizations in visual telecommunications, Part III: Video compression standards. *NORSIGNalet*, 1:12–19, April 2003.
- Till Halbach. Some important international standards and organizations in visual telecommunications, Part II: Still-image compression standards. *NORSIGNalet*, 3:23–26, 30, December 2002.
- Till Halbach. Some important international standards and organizations in visual telecommunications, Part I: Organizations in international standardization. *NORSIGNalet*, 2:9–13, September 2002.
- Andrew Perkis and Till Halbach. 4. generasjons mobilkommunikasjonssystemer. *NORSIGNalet*, 1:3–6, March 2001.
- Presentations Till Halbach. Utdrag av KogNett-veilederen: Praktiske råd for nettredeaktører. Presentasjon på seminar, December 2009.

Riitta Hellman, Kristin Skeide Fuglerud, Lasse Udjus, Till Halbach, Kjell Tore Guttormsen, and Harald K. Jansson. UNIMOD: Universell utforming i multimodale grensesnitt — prosjektavslutningsforedrag. Presentasjon på seminar, March 2009.

Till Halbach. H.264/AVC scalable video coding. Course presentation, April 2008.

Upcoming

Wolfgang Leister, Svetlana Boudko, and Till Halbach Røssvoll. Adaptive video streaming through estimation of subjective video quality. To appear in International Journal On Advances in Systems and Measurements, 2011.

Kristin Skeide Fuglerud and Till Halbach Røssvoll. An evaluation of Web-based voting usability and accessibility. To appear in Universal Access in Information Society (Springer), 2011.

Other

Till Halbach, Riitta Hellman, Gro Marit Rødevand, and Ivar Solheim. Utformingsveileder: Kognitiv tilgjengelighet av nettsider og nettsteder. Nettsted, January 2010. <http://iktforalle.no>.

Till Halbach, Riitta Hellman, Kristin Skeide Fuglerud, and Ivar Solheim. Designveileder for kognitiv tilgjengelighet av elektroniske tjenester og innhold. Online, August 2009.

Till Halbach. *Dokumentasjon av UNIMOD-innloggingsprototypen*, April 2009.

Till Halbach. Creating presentations/slideshows with HTML & CSS. *dev.opera.com*, January 2009.

Private interests

Sports Outdoors, skiing, jogging

Other Passionate cooking, especially Mediterranean food

Oslo, February 2011