PERSONAL INFORMATION

Name:	Arvid LUNDERVOLD
Researcher unique ID:	ORCID 0000-0002-0032-4182
Nationality:	Norwegian
Date of birth:	13-Feb-1952
URL for web site:	http://www.uib.no/en/persons/Arvid.Lundervold

EDUCATION

1995	PhD (Quantitative MR imaging), Department of Physiology, University of Bergen
1982	MD, Faculty of Medicine, University of Oslo, Oslo, Norway
1975	BSc (Mathematics, Analytical philosophy), University of Oslo, Oslo, Norway

CURRENT POSITIONS

2005 –	Professor I (physiology / medical information technology), Neural Network Research Group, Department of Biomedicine, University of Bergen, Norway (Head: Prof. Rolf Reed)

PREVIOUS POSITIONS

2005 – 2016	Research scientist (20% position), Department of Radiology, Haukeland University Hospital, Bergen, Norway (Head: Assoc. prof. Aslak Aslaksen)
1998 - 2002	Chief Engineer (20% pos.), Dept. Clinical Engineering, Haukeland University Hospital.
1997 - 2005	Associate Professor, Department of Physiology, University of Bergen
1994 - 1997	Research scientist, Department of Physiology, University of Bergen
1989 - 1994	Research scientist, Image Analysis and Pattern Recognition (BILD) Group, Norwegian Computing Center (Norsk Regnesentral), Oslo
1988	Civil service, MRI Laboratory, The Norwegian Radium Hospital / Oslo University Hospital & Norwegian Computing Center, Oslo.
1984 - 1988	Consultant / Research scientist, Computer Department & Center for Medical informatics, The National Hospital (Rikshospitalet) / Oslo University Hospital
1982 – 1983	Internship for medical authorization (Bærum sykehus / Skjetten legesenter)

FELLOWSHIPS AND AWARDS

2013 (06-12)	Sabbatical (Meltzer fellowship), UC Berkeley, CA, USA, Helen Wills Neuroscience Institute (Prof. Robert Knight Lab).
2013 (10)	Visiting Professor, Mayo Clinic, Rochester, MN, USA, Department of Radiology, Informatics Division (Head. Prof. Bradley Erickson)
1993 - 1996	RCN Research fellow, University of Bergen, Department of Physiology, Section for Medical Image Analysis and Informatics (Head: Prof. Torfinn Taxt)
1991 - 1993	50% NAVF research fellow in Medical image analysis, Norwegian Computing Center, Oslo / University of Bergen, Department of Physiology (Head: Prof. Torfinn Taxt)
1991	Visiting scholar, Michigan State University, Department of Computer Science, Pattern Recognition and Image Processing Laboratory (Head: Prof. Anil K. Jain)
1978	Student research fellow (NAVF) in neuroscience (hippocampal slice preparation), Department of Neurophysiology, University of Oslo (Head: Prof. Per Andersen)

SUPERVISION OF GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS

2014 –	2 PD mentor (with their PhD from medical image analysis)
2001 –	7 PhD (with their MSc from mathematics, computer science, physiology, medicine)
1993 –	16 MSc (with their BSc from mathematics, informatics, physics, biology)

COLLABOARTIVE RESEARCH PROJECTS LED BY APPLICANT

2010 - 2011	"A hybrid approach to motion correction of MRI of human kidney"; Partners: Lundervold; Prof. L. Schad / Frank Zöllner, U Heidelberg, DE; Funded by RCN, (DAADppp)
2006 – 2007	"Brain tissue segmentation and morphometry …"; Partners: Lundervold; Prof. V Barra, Blaise Pascal University, FR; Funded by RCN / French Ministry of Research (AURORA)

TEACHING ACTIVITIES

2006 –	"In vivo imaging and physiological modelling" (BMED360; 10 ECTS), MSc / PhD level.
1999 –	Teaching courses (lectures and labs) in Gastrointestinal physiology, Renal physiology, and Neurobiology (MED1NEVRO/MED3, BMED340) at Medical School, University of Bergen.
1979	Organizer/lecturer at Summer school in algebraic group theory for young scientists (Foreningen Unge Forskere), Voss, Norway, supported by the RCN.
1974 - 1975	Teaching assistant, undergraduate mathematics, Dept. Mathematics, University of Oslo

ORGANISATION OF SCIENTIFIC MEETINGS

2007	Functional Renal MR Imaging and Modelling Workshop, Oct 4-6, Bergen, Norway - http://www2.die.upm.es/costb21 (funded by COST B21; 14 participants, 6 nations)
2006	Renal MRI Workshop, Dec 8, Bergen, Norway - http://www2.die.upm.es/costb21(funded by COST

B21; 21 participants from 8 countries)

2002 Tissue texture in MRI, May 2-4, Bergen, Norway - http://www.uib.no/costb11/bergen2002 (European workshop funded by COST B11 / UiB; 28 participants from 10 countries)

INSTITUTIONAL RESPONSIBILITIES

2017 - Board member, Centre for Digital Life Norway Research School (https://www.ntnu.edu/dln/dlnrs)

2009 -2016 Board Chairman, Norwegian Research School in Medical Imaging (RCN-funded -> 2016)

2013 Faculty member, IEEE SPS Summer School on Biomedical Image Processing and Analysis, June 8-14, Dubrovnik, Croatia

2002 - 2004 Board member, Bergen Center for Computational Science

COMMISSIONS OF TRUST

2010 - present Editorial Board, "Frontiers in Neuroinformatics" IF 3.3 (Frontiers)

1997 - present Editorial Board, "Computerized Medical Imaging and Graphics" IF 1.2 (Elsevier)

2014 & 2015 Review panel member, Neuroscience, Research Council for Health of the Academy of Finland, Helsinki

2015 Review Board: EU Joint Programme for Neurodegenerative Disease Research (pre-proposals), JPND Joint Call Secretariat, Bonn Germany

2015 Referee Royal Society Medal and Awards nominations, UK (Prof. Ke Chen, Appl. Math)

2012 Scientific Evaluation: The Royal Society Industry Fellowship - University of Liverpool, Department of Mathematical Sciences, UK.

2007 - 2011 European COST BM0601 – NEUROMATH ("Advanced methods for the estimation of human brain activity and connectivity" - http://www.cost.eu/COST_Actions/bmbs/BM0601). MC and WG member.

2003 - 2007 European COST B21 ("Physiological modelling of MR image formation" - http://www.cost.eu/COST_Actions/bmbs/B21). MC and WG member.

1998 – 2002 European COST B11 ("Quantification of magnetic resonance image texture" - http://www.uib.no/costb11), Management Committee and Working Group member.

2000 Evaluator: European Science Foundation; Welcome Trust Joint Infrastructure Fund; the NATO scientific and Environmental Affairs Division.

1996 – Reviewer: Acta Radiologica, BMC Medical Imaging, Computer Methods and Programs in Biomedicine, Frontiers in Neuroscience, Human Brain Mapping, IEEE Trans. on Medical Imaging, Neuroimage, PLoS ONE

MEMBERSHIPS OF SCIENTIFIC SOCIETIES

2008 - present Founding member: the MedViz research cluster - http://medviz.uib.no

1994 - present Founding member: the Bergen fMRI Group - http://fmri.uib.no

1984 - present Memberships: the Norwegian Medical Association, the International Society for Magnetic Resonance in Medicine, the Society for Neuroscience, the IEEE Computer Society, the American Mathematical Society

MAJOR COLLABORATIONS

Prof. Kenneth Hugdahl, fMRI, Department of Biological and Medical Psychology, U Bergen. NO
Prof. Helwig Hauser, medical visualization / cohort analysis, Department of Informatics, U Bergen, NO
Prof. Antonella Zanna Munthe-Kaas, image registration, Department of Mathematics, U Bergen, NO
Prof. Astri J. Lundervold, cognitive aging, Dept. of Biological and Medical Psychology, U Bergen, NO
Prof. Andrzej Materka, image analysis, Inst. of Electronics, Lodz University of Technology, Lodz, PL
Prof. Bogdan Matuszewski, Head of Robotics and Computer Vision Research Laboratory, UCLAN, UK
Prof. Lothar Schad, MRI physics, Chair in Computer Assisted Clinical Medicine, U Heidelberg , DE
Prof. Jan Modersitzki, image processing, Inst of Mathematics and Image Computing, U Lübeck, DE
Prof. Vincent Barra, brain MRI, Engineering School in Computer Science, Blaise Pascal University, FR
Prof. Andres Santos, MRI processing, Director of BIT, Technical University of Madrid, ES

TEN YEAR TRACK-RECORD

Current research interests are in the fields of medical image processing and pattern recognition; multimodal and functional imaging (in brain, kidney and in oncology); image segmentation; image registration; longitudinal imaging; imaging-based biomarkers; mathematical and statistical modeling including machine learning. Lundervold has been programming in C and later MATLAB, R, and PYTHON (on a weekly basis) for more than 25 years.

Google scholar (March 2017): 4350 citations in total; h-index: 33

[**1**] Vik A, Hodneland E, Haász J, Ystad M, Lundervold A.J, **Lundervold A**. Fractional anisotropy shows differential reduction in frontal-subcortical fiber bundles - A longitudinal MRI study of 76 middle-aged and older adults. *Frontiers in Aging Neuroscience*, 2015;7:81. (4 citations)

[**2**] Hodneland E, Kögel T, Frei DM, Gerdes H-H, **Lundervold A**. CellSegm - a MATLAB toolbox for high-throughput 3D cell segmentation. *Source Code for Biology and Medicine* 2013;8(1):16. (19 citations)

[**3**] Kocinski M, Klepaczko A, Materka A, Chekenya M, **Lundervold A.** 3D image texture analysis of simulated and real-world vascular trees. *Computer Methods and Programs in Biomedicine* 2012;107:140-154. (20 citations)
[**4**] Hodneland E, Ystad M, Haász J, Munthe-Kaas AZ, **Lundervold A**. Automated approaches for analysis of multimodal MRI acquisitions in a longitudinal study of cognitive aging. *Computer Methods and Programs in Biomedicine* 2012;106:328-341. (19 citations)
[**5**] Westlye ET, **Lundervold A**, Rootwelt H, Lundervold AJ, Westlye LT. Increased hippocampal default mode synchronization during rest in middle-aged and elderly APOE e4-carriers: relationships with memory performance. *Journal of Neuroscience* 2011;31(21):7775-7783. (97 citations; ET Westlye was my PhD student)
[**6**] Ystad M, Hodneland E, Adolfsdottir S, Haász J, Lundervold AJ, Eichele T, **Lundervold A**. Cortico-striatal connectivity and cognition in normal aging: a combined DTI and resting state fMRI study. *Neuroimage* 2011;55(1):24-31. (71 citations)
[**7**] **Lundervold A**. On consciousness, resting state fMRI, and neurodynamics. *Nonlinear Biomedical Physics* 2010 Jun 3;4 Suppl 1:S9. (22 citations; incl. Neuron 2014;81(1):35-48, The Lancet 2012;379(9825):1517-1524)
[**8**] Ystad M, Eichele T, Lundervold AJ, **Lundervold A**. Subcortical functional connectivity and verbal episodic memory in healthy elderly - A resting state fMRI study. *Neuroimage* 2010 Aug 1;52(1):379-388. (85 citations)
[**9**] Klauschen F, Goldman A, Barra V, Meyer-Lindenberg A, **Lundervold A**. Evaluation of automated brain MR image segmentation and volumetry methods. *Human Brain Mapping* 2009 Apr;30(4):1310-1327. (123 citations)
[**10**] Lu Z, **Lundervold A**, Tjøstheim D, Yao Q. Exploring spatial nonlinearity using additive approximation. *Bernoulli* 2007;13(2):447-472. (Google scholar: 36 citations; providing Erdös number of 4 wwwp.oakland.edu/enp)

[**most cited publication**: Lysaker M, **Lundervold A**, Tai X-C. Noise removal using fourth-order partial differential equations with applications to medical magnetic resonance images in space and time. *IEEE Transactions on Image Processing* 2003;12:1579-1590. (676 citations)]
[**most pioneering publication**: **Lundervold A**, Ersland L, Gjesdal KI, Smievoll AI, Tillung T, Sundberg H, Hugdahl K. Functional magnetic resonance imaging of primary visual processing using a 1.0 T scanner. *International Journal of Neuroscience*, 1995;81:151-168. (the first fMRI paper in Scandinavia, and also in whole of Continental Europe; the #9 fMRI publication (#1-#7 from the US, #8 from UK) in the ISI Web of Science sorted from "oldest to newest")]
[**first international publication**: Hablitz J, **Lundervold A**. Hippocampal excitability and changes in extracellular potassium. *Experimental Neurology* 1981;71:410-420. (76 citations; three most recent citations: Journal of Physiology 2014;592(1):87-102, PLoS Computational Biology 2015;11(3):e1004137), 2016 IEEE 38th Engineering in Med & Biol]
[**most recent publication:** Zandt BJ, Losnegård A, Hodneland E, Veruki ML, **Lundervold** A, Hartveit E. Semi-automatic 3D morphological reconstruction of neurons with densely branching morphology: Application to retinal AII amacrine cells imaged with multi-photon excitation microscopy. J Neurosci Methods. 2017 Jan 20;279:101-118.

Invited presentations to peer-reviewed, internationally established conferences and/or **international advanced schools**:

- *IEEE SPS Summer School on Biomedical Image Processing and Analysis*, Center for Advanced Academic Studies, Dubrovnik, Croatia, June 8-14, 2013. Lecture 1: Texture analysis; Lecture 2: Brain connectivity.
- *2013 Informatics Division Visiting Professor*, Department of Radiology, Mayo Clinic, Rochester, MN, USA, October 29-30, 2013. Lecture 1: Multimodal MR imaging and neuropsychology in a longitudinal project on 'cognitive aging'; Lecture 2: Methodological and cross-disciplinary challenges in quantitative imaging - integration of tools, algorithms, and competences; Lecture 3: The MedViz research cluster in Bergen - collaborative opportunities.
- *Health Research with Real Impact,* Research School of Health, University of Central Lancashire, Preston, UK, May 15, 2013. Invited lecture: Quantitative medical imaging in health research – Impact on the study of cognitive aging.
- *UCLan's Distinguished Visitor Programme*, University of Central Lancashire, Preston, UK, May 13, 2013. Invited talk: Imaging of connections in brains and cells - the role of graph theory and network analysis.
- *IEEE 2012 Joint Conference New Trends in Audio & Video and Signal Processing: Algorithms, Architectures, Arrangements, and Applications (NTAV/SPA).* Lodz University of Technology, Lodz, Poland September 27-29, 2012. Invited talk (in IEEE Explore): Functional MRI – Signal processing algorithms and applications.
- *International Workshop on Image Processing Techniques and Applications*, Centre for Mathematical Imaging Techniques (CMIT), University of Liverpool, UK, June 22-23, 2011. Invited talk: Structural and functional brain connectivity assessed with multimodal MRI and graph metrics.
- *19th Annual Meeting of the International Society for Magnetic Resonance in Medicine* (ISMRM 2011), Montreal, Canada, May 7-13, 2011. Invited speaker for the Sunrise Session on Image Analysis. Lecture: Analysis of texture.
- *4th International Conference on Applied Mathematics, Simulation, and Modeling*, Corfu Island, Greece, July 22-25, 2010. Plenary lecture: The role of mathematics in the study of structural and functional brain connectivity.
- *ERASMUS Basic MRI Physics Course*, Lodz, Poland, September 13-17, 2010. Lecture series on functional MRI.

Organisation of international conferences:

- *Scandinavian Physiological Society Meeting* (SPS 2010*)*, Aug 12-14, 2010, Bergen, Norway. Special session on Imaging Physiology.
- *IEEE 6th International Symposium on Image and Signal Processing and Analysis* (ISPA 2009), Sep 16-18, 2009, Salzburg Austria. Special Session on "New Advances in Vascular Imaging and Modeling"