Curriculum vitae with track record

PERSONAL INFORMATION

Family name, First name: LUNDERVOLD, Arvid
Date of birth: 13-FEB-1952
Sex: Male
Nationality: Norwegian
Researcher unique ID: ORCID 0000-0002-0032-4182
URL for personal web site: https://www.uib.no/en/persons/Arvid.Lundervold / https://github.com/arvidl

EDUCATION

1995	PhD (Quantitative MR imaging, 25.05.95), Department of Physiology, University of Bergen
1982	MD, Faculty of Medicine, University of Oslo, Oslo, Norway
1975	BSc (Mathematics, Analytic 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. Mathias Ziegler)
2018-	Professor II (computational radiography), Department of Health and Functioning, Western Norway University of Applied Sciences,

PREVIOUS POSITIONS

2005 – 2016	Research scientist (20% position), Department of Radiology, Haukeland University Hospital, Bergen, Norway (Head: 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 (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)
1978	Student research fellow (NAVF) in neuroscience (hippocampal slice preparation), Department of Neurophysiology, University of Oslo (Head: Prof. Per Andersen)

MOBILITY

2013 (06-12)	Sabbatical (Meltzer fellowship), UC Berkeley, CA, USA, Helen Wills Neuroscience Institute (Prof. Robert Knight Lab).
1991	Visiting scholar, Michigan State University, Department of Computer Science, Pattern Recognition and Image Processing Laboratory (Head: Prof. Anil K. Jain)

SUPERVISION OF GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS

(*Medical Faculty PhD Supervision course - date of completion 10/3/2019*)

Current	1 PhD (Saruar Alam, MedFak 3.1.19 – 2.1.23); 1 PD (Marek Kocinski, MedFak 15.10.19 – 14.10.22)
2014 – now.	3 PD mentorships (with their PhD from medical image analysis)

2001 – now	8 PhD supervisions (their MSc from mathematics, computer science, physiology, medicine)
1993 – now	20 MSc supervisions (with their BSc from mathematics, informatics, physics, biology)

COLLABOARTIVE RESEARCH PROJECTS LED BY APPLICANT

2018 – 2022	"Computational medical imaging and machine learning – methods, infrastructure and applications"; PI: A.L., co-PI: Assoc. Prof. Alexander S: Lundervold Western Norway University of Applied Sciences; Funded by the Bergen Research Foundation / UoB. Tot. 27.7 MNOK
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 (several hands-on courses are fully digital on GitHub with lectures on YouTube)

2017 – 2020	Work Package leader (Computational biomedicine and machine learning) in "Open Educational Resources in Computational Biomedicine", Funded by EU Erasmus+ Strategic Partnership for Higher Education: https://github.com/oercompbiomed with KI(sv), SDU(dk), UEF(fi), UTU(fi), UiB(no). Responsible for the coding part (Python Jupyter notebooks) of the Summer schools: https://github.com/oercompbiomed/Seili-2019 and https://github.com/oercompbiomed/Seili-2020
2018	Awarded 50 KNOK for «The best teacher at the Faculty of Medicine in 2018»
2019 –	Initiated «Artificial Intelligence and Computational Medicine» (ELMED219; 6 ECTS at UiB/HVL)
2006 –	Initiated «In vivo imaging and physiological modelling» (BMED360; 10 ECTS), MSc / PhD level. Course material publicly available on https://github.com/computational-medicine/BMED360-2021
1999 –	Teaching postgraduate courses (lectures / labs) in Molecular and Cellular Neuroscience, Gastro-intestinal physiology, Circulatory Physiology, and Neurobiology (MED3, BMED340, BMED350) at Medical School and Masters' Programme in Biomedical Sciences, 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, Department of 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 (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

2021 -	Editor Board, "Diagnostics" IF 3.1 (MDPI)
2010 -	Review Editor, "Frontiers in Neuroinformatics" IF 2.6 (Frontiers)
1997 -	Associate Editor, "Computerized Medical Imaging and Graphics" IF 3.75 (Elsevier)
2021	Review panel member, ANR CE45 Mathematics and digital sciences for biology and health (France)
2014 & 2015	Review panel member, Neuroscience, Research Council for Health of the Academy of Finland
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, Applied Mathematics)
2012	Scientific Evaluation: The Royal Society Industry Fellowship - University of Liverpool, Department of Mathematical Sciences, UK.
2017 - 2021	European COST CA16103 – PARENCHIMA ("Magnetic Resonance Imaging Biomarkers for Chronic Kidney Disease" - https://www.cost.eu/actions/CA16103). MC subst. & WG member.
2016 - 2020	European COST CA15124 – NEUBIAS ("A new Network of European Bioimage Analysts to advance life science imaging" - https://www.cost.eu/actions/CA15124). MC & WG member.

2007 - 2011	European COST BM0601 – NEUROMATH ("Advanced methods for the estimation of human brain activity and connectivity" - https://www.cost.eu/actions/BM0601 MC & WG member.
2003 - 2007	European COST B21 ("Physiological modelling of MR image formation" - https://www.cost.eu/actions/B21). MC & WG member.
1998 – 2002	European COST B11 ("Quantification of magnetic resonance image texture" - https://www.cost.eu/actions/B11). Management Committee and Working Group member.
2000	Evaluator: European Science Foundation; Welcome Trust Joint Infrastructure Fund; the NATO scientific and Environmental Affairs Division.
2019 /2020	Invited expert to Paris by the French National Agency for Research (ANR) being on the evaluation panel regarding the call "Research and teaching chairs in Artificial Intelligence" under the 1.5 billion EURO program "AI for Humanity" (www.aiforhumanity.fr)
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, Medical Image Analysis and more.

MEMBERSHIPS OF SCIENTIFIC SOCIETIES

2008 -	Founding member: the MedViz research cluster (now in MMIV https://mmiv.no)
1994 -	Founding member: the Bergen fMRI Group - http://fmri.uib.no
1984 -	Memberships: the Norwegian Medical Association, the International Society for Magnetic Resonance in Medicine, the Society for Neuroscience, IEEE Computer Society (Life time member), and 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
Profs. Kristine Walhovd and Anders Fjell (both ERC Starting & Consolidator grantees), LCBC, U Oslo, NO
Assoc. Prof. Alexander S. Lundervold, machine learning / deep convolutional networks, HVL, NO

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/Jupyter Notebooks (on a weekly basis) for the last 25 years.

Google scholar (February 2021): 7239 citations in total; h-index: 43; i10-index 98

[1] Lundervold, AS, **Lundervold A**. An overview of deep learning in medical imaging focusing on MRI. Zeitschrift fur Medizinische Physik, 2019;29(2):102-127 https://www.sciencedirect.com/science/article/pii/S0939388918301181 (most downloaded and cited article from ZMP ever). Awarded 500 EUR for best paper in ZMP 2019 (379 citations)
[2] Lundervold A.J, Bøe T, **Lundervold A**. Inattention in primary school is not good for your future school achievement – A pattern classification study. PLoS One 2017 Nov 28;12(11):e0188310 (manuscript, data, and code by A.L. at https://github.com/arvidl/inattention-populationsample)
[3] 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. (82 citations)
[4] 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. (32 citations)
[5] 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. (22 citations)
[6] 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. (160 citations; ET Westlye was my PhD student)

[7] 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. (137 citations)
[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. (125 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. (236 citations)
[10] Lu Z, **Lundervold A**, Tjøstheim D, Yao Q. Exploring spatial nonlinearity using additive approximation. Bernoulli 2007;13(2):447-472. (Google scholar: 41 citations; providing Erdös number of 4 https://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. (964 citations)
[**most pioneering publications**:] **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")
Taxt T, **Lundervold A**. Multispectral analysis of the brain using magnetic resonance imaging. *IEEE Transactions on Medical Imaging* 1994;13(3):470-481 (133 citations)
[**first international publication]**: Hablitz J, **Lundervold A**. Hippocampal excitability and changes in extracellular potassium. *Experimental Neurology* 1981;71:410-420. (87 citations; three most recent citations: Journal of Physiology 2014;592(1):87-102, PLoS Computational Biology 2015;11(3):e1004137), Progr in Neurobiology 2020 online 13.05)
[**most scholary publication:] Lundervold A**. On consciousness, resting state fMRI, and neurodynamics. *Nonlinear Biomedical Physics* 2010 Jun 3;4 Suppl 1:S9. (26 citations; incl. Neuron 2014;81(1):35-48, and The Lancet 2012;379(9825):1517-1524). https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2880806/

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

- *Visual Data Science and its Role in Computational Medicine*. Workshop at TU Delft, February 6th 2018.
- *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.
- *IEEE CVPR'96 (Computer Vision and Pattern Recognition):* Tutorial on *Medical Image Analysis,* San Francisco, CA USA, June 16-20, 1996.

Recent publications (printed or in press):

[**a**] Ousdal OT, Kaufmann T, …, **Lundervold A,** Westlye LT. Longitudinal stability of the brain functional connectome is associated with episodic memory performance in aging. *Human Brain Mapping* 2020;41(3):697-709.
[**b**] Losnegård A, …, **Lundervold A**, Beisland C. Magnetic resonance radiometrics for prediction of extraprostatic extension in non-favorable intermediate- and high-risk prostate cancer patients. *Acta Radiol* 2020 Feb 28.
[**c**] Rahman A, …., **Lundervold A**, …., Chekenya M. Sequential bortezomib and temozolomide treatment promotes immunological responses in glioblastoma patients with positive clinical outcomes: A phase 1B study. *Immunity, Inflammation and Disease* 2020;8(3):342-359 (related to https://clinicaltrials.gov/ct2/show/NCT03643549)
[**d**] Hodneland E, ..., **Lundervold A**, ..., Haldorsen I. Automated segmentation of endometrial cancer on MR images using deep learning. Sci Rep 2021;11(1):179.
[e] Kaliyugarasan S, **Lundervold A**, Lundervold AS. Pulmonary nodule classification in lung cancer from 3D thoracic CT scans using fastai and MONAI. Int J Interactive Multimedia and Artificial Intelligence, 2021 (minor revision)