

# Karim Lekadir

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CURRENT POSITION	<b>Associate Professor</b> Universitat de Barcelona, Spain Departament de Matemàtiques i Informàtica Director, Artificial Intelligence in Medicine Lab (BCN-AIM)	2022 – now
PAST POSITIONS	<b>Ramon y Cajal Researcher</b> Universitat Pompeu Fabra, Barcelona, Spain (2017 – 2019) Universitat de Barcelona, Spain (2019 – 2022)	2017 – 2022
	<b>Visiting Post-Doctoral Researcher</b> Stanford University, USA Integrative Biomedical Imaging Informatics at Stanford (IBIIS) Department of Radiology	2016 – 2017
	<b>Marie-Curie Research Fellow</b> Computer Vision Center, Barcelona, Spain	2016 – 2017
	<b>Juan de la Cierva Research Fellow</b> Universitat Pompeu Fabra, Barcelona, Spain Department of Information & Communication Technologies	2011 – 2015
	<b>Research Associate</b> Imperial College London, UK Department of Computing	2008 – 2010
	<b>Software developer</b> for cardiac image analysis (CMRtools) Imperial College London, UK Royal Society/Wolfson Foundation Medical Imaging Laboratory	2003 – 2004
EDUCATION	<b>Imperial College London, UK</b> Doctor of Philosophy (PhD) in Medical Image Computing “Medical image segmentation and analysis using statistical shape modelling and inter-landmark relationships”	2005 – 2009
	<b>Université de Montpellier II, France</b> Master’s degree (DEA) in Computer Science “Robust skeletonisation of three-dimensional objects”	2001 – 2002
	<b>RWTH Aachen, Germany</b> Erasmus exchange student, final year of Engineering degree Mobility studentship awarded by the European Commission	2000 – 2001
	<b>SupMéca Paris, France</b> Engineering degree (Mechanical Engineering)	1999 – 2001
	<b>Université de Bourgogne, France</b> Undergraduate degree in Mathematics and Computer Science	1996 – 1998

RESEARCH  
FUNDING:  
> €10.2  
MILLION

1. **AIMIX, ERC Consolidator Grant project**  
“Inclusive Artificial Intelligence for Accessible Medical Imaging Across Resource-Limited Settings”  
Principal Investigator & Project Coordinator: Karim Lekadir (2023 – 2028)  
Funding: 2 206 963,00€ (UB: 1 825 968,00 €). European Commission, Project # 101044779
2. **AI4HF, Horizon Europe project**  
“Trustworthy Artificial Intelligence for Personalised Risk Assessment in Chronic Heart Failure”  
UB Principal Investigator & Leader WP2: Karim Lekadir (2023 – 2027)  
Funding: 6 411 076,25€ (UB: 861 250,00 €). European Commission, Project # 101080430
3. **HappyMums, Horizon Europe project**  
“Understanding, predicting, and treating depression in pregnancy to improve mothers and offspring mental health outcomes”  
UB Principal Investigator & Leader WP2: Karim Lekadir (2022 – 2026)  
Funding: 8 925 241,00€ (UB: 938 306,00 €). European Commission, Project # 101057390
4. **DataTools4Heart, Horizon Europe project**  
“European Health Data Toolbox for Enhancing Cardiology Data Interoperability, Reusability and Privacy”  
Principal Investigator & Project Coordinator: Karim Lekadir (2022 – 2026)  
Funding: 7 747 905,00€ (UB: 1 183 750,00€). European Commission, Project # 101057849
5. **RadioVal, Horizon Europe project**  
“International Clinical Validation of Radiomics Artificial Intelligence for Breast Cancer Treatment Planning”  
Principal Investigator & Project Coordinator: Karim Lekadir (2022 – 2026)  
Funding: 5 838 576,00€ (UB: 801 250,00€). European Commission, Project # 101057699
6. **Youth-GEMs, Horizon Europe project**  
“Gene Environment interactions in Mental health trajectories of Youth”  
UB Principal Investigator & Leader WP6: Karim Lekadir (2022 – 2027)  
Funding: 8 107 980,00 € (UB: 658 125,00€). European Commission, Project # 101057182
7. **FUTURE-ES**  
“Trustworthy and multi-centre artificial intelligence for future medical imaging in Spain”  
Principal Investigator & Project Coordinator: Karim Lekadir (2022 – 2024)  
Funding: 125 235,00 €. Ministerio de Ciencia, Innovación y Universidades, Project # PID2021-126724OB-I00
8. **EuCanImage, H2020 project**  
“A European Cancer Image Platform Linked to Biological and Health Data for Next-Generation Artificial Intelligence and Precision Medicine in Oncology”  
Principal Investigator & Project Coordinator: Karim Lekadir (2020 – 2024)  
Funding: 9 994 358,50 € (UB: 1 278 125,00€). European Commission, Project # 952103
9. **EarlyCause, H2020 project**  
“Causative mechanisms & integrative models linking early-life-stress to psycho-cardio-metabolic multi-morbidity”  
Principal Investigator & Project Coordinator: Karim Lekadir (2020 – 2023)

Funding: 5 997 381,25 € (UB: 680 937,50€) . European Commission, Project # 848158

10. **euCanSHare, H2020 project**

“An EU-Canada joint infrastructure for next-generation multi-Study Heart research”

Principal Investigator & Project Coordinator: Karim Lekadir (2018 – 2022)

Funding: 5 395 292,50 € (UB: 685 697,31€). European Commission, Project # 825903

11. **LongITools, H2020 project**

“Dynamic longitudinal exposome trajectories in cardiovascular and metabolic non communicable diseases”

UB Principal Investigator & Leader WP7: Karim Lekadir (2020 – 2023)

Funding: 11 997 448,75 € (UB: 716 250,00€). European Commission, Project # 874739

12. **HealthyCloud, H2020 project**

“Health Research & Innovation Cloud”

UB Principal Investigator: Karim Lekadir (2021 – 2024)

Funding: 2 999 975,00 € (UB: 291 750,00 €). European Commission, Project # 965345

13. **HeartBrainCom**

“Un modelo de aprendizaje automático y de big data para evaluar la comorbilidad corazón-cerebro”

Principal Investigator & Project Coordinator: Karim Lekadir (2019 – 2021)

Funding: 55 297,00€. Ministerio de Ciencia, Innovación y Universidades, Project # RTI2018-099898-B-I00

14. **DECARTS**

“Decision support system for arterial stenting”

Principal Investigator: Karim Lekadir (2019 – 2021)

Funding: 96 000,00€. European Commission and ACCIÓ Agency, Project # TECSPR-0027-00

PUBLICATIONS

1. R. Osuala, K. Kushibar, L. Garrucho, A. Linardos, Z. Szafranowska, S. Klein, B. Glocker, **K. Lekadir**. Data synthesis and adversarial networks: A review and meta-analysis in cancer imaging. *Medical Image Analysis*, 102704, 2023
2. LA. Andreasen, A. Feragen, AN. Christensen, JK. Thybo, MBS. Svendsen, K. Zepf, **K. Lekadir**, MG. Tolsgaard, “Multi-centre deep learning for placenta segmentation in obstetric ultrasound with multi-observer and cross-country generalization”. *Scientific Reports*, 13(1), 2221, 2023.
3. C. Sendra-Balcells, VM. Campello, J. Torrents-Barrena, YA. Ahmed, M. Elattar, B. Ohene-Botwe, P. Nyangulu, W. Stones, M. Ammar, LN. Benamer, HN. Kitembo, S. Goitom Sereke, SZ. Wanyonyi, M. Temmerman, E. Gratacós, E. Bonet, E. Eixarch, K. Mikolaj, M. Grønnebak Tolsgaard, **K. Lekadir**. “Generalisability of fetal ultrasound deep learning models to low-resource imaging settings in five African countries”. *Scientific Reports*, 13(1), 2728, 2023.
4. C. Sendra-Balcells, VM. Campello, C. Martín-Isla, D. Viladés, ML. Descalzo, A. Guala, JF. Rodríguez-Palomares, **K. Lekadir**, “Domain generalization in deep learning for contrast-enhanced imaging”, *Computers in Biology and Medicine*, vol.149, no. 106052, 2022.
5. VM. Campello, T. Xia, X. Liu, P. Sanchez, C. Martín-Isla, S. E. Petersen, S. Seguí, S. Tsaftaris, **K. Lekadir**, “Cardiac aging synthesis from cross-sectional data with conditional generative adversarial networks”, *Frontiers in Cardiovascular Medicine*, vol.9, no.983091, 2022.
6. L. Garrucho, K. Kushibar, R. Osuala, O. Diaz, A. Catanese, J. del Riego, M. Bobowicz, F. Strand, L. Igual, **K. Lekadir** “High-resolution synthesis of high-density breast mammograms: Application to

- improved fairness in deep learning based mass detection”, *Frontiers in Oncology* vol. 12, Special Issue on “Precision Medical Imaging for Cancer Diagnosis and Treatment”, 2022.
7. E.R. Pujadas, Z. Raisi-Estabragh, L. Szabo, C. McCracken, C.I. Morcillo, V.M. Campello, S.E. Petersen, **K. Lekadir**, Prediction of incident cardiovascular events using machine learning and CMR radiomics. *European Radiology*, 1-13, 2022.
  8. A. Linardos, K. Kushibar, S. Walsh, P. Gkontra, **K. Lekadir**, “Federated learning for multi-center imaging diagnostics: A simulation study in cardiovascular disease”, *Scientific Reports*, vol.12, no.1, p.1-12, 2022.
  9. R. Osuala, G. Skorupko, N. Lazrak, L. Garrucho, E. García, S. Joshi, S. Jouide, M. Rutherford, F. Prior, K. Kushibar, O. Diaz, **K. Lekadir** “a Python library of pretrained generative models for medical image synthesis”, *Journal of Medical Imaging*, 10(6), 06140, 2022.
  10. X. Zhuang, J. Xu, X. Luo, C. Chen, C. Ouyang, D. Rueckert, **K. Lekadir**, *et al.* Cardiac segmentation on late gadolinium enhancement MRI: a benchmark study from multi-sequence cardiac MR segmentation challenge. *Medical Image Analysis*, 81, 102528, 2022.
  11. A. Salih, IB. Galazzo, SE. Petersen, **K. Lekadir**, P. Radeva, G. Menegaz, A. Altmann. Telomere length is causally connected to brain MRI image derived phenotypes: A mendelian randomization study. *Plos one*, 17(11), p.e0277344, 2022.
  12. Z. Szafranowska, R. Osuala, B. Breier, K. Kushibar, **K. Lekadir**, O. Diaz. Sharing generative models instead of private data: a simulation study on mammography patch classification. In *16th International Workshop on Breast Imaging (IWBI2022)* (Vol. 12286, pp. 169-177), 2022.
  13. L. Marti-Bonmati, DM. Koh, K. Riklund, M. Bobowicz, Y. Roussakis, J.C. Vilanova, J.J. Fütterer, J. Rimola, P. Mallol, G. Ribas, A. Miguel, M. Tsiknakis, **K. Lekadir**, G. Tsakou, “Considerations for artificial intelligence clinical impact in oncologic imaging: an AI4HI position paper”, *Insights into Imaging*, vol.12, no.1, p.1-11, 2022.
  14. L. Szabo, E. Ruiz Pujadas, C. McCracken, C. Izquierdo, V. M. Campello, A. Atehortua, S. E. Petersen, **K. Lekadir**, Z. Raisi-Estabragh, “Cardiac magnetic resonance radiomics for prediction of incident heart failure: a feasibility study in the UK Biobank Imaging cohort”, *European Heart Journal*, vol. 43, Suppl. 2, 2022.
  15. H. Naderi, J. Ramirez, S. van Duijvenboden, E. Ruiz Pujadas, L. Wang, **K. Lekadir**, S. E. Petersen, P. Munroe, “Classifying hypertension mediated left ventricular hypertrophy patterns from the electrocardiogram using machine learning”, *Journal of Human Hypertension*, vol.36, Suppl. 1, 2022.
  16. Z. Raisi-Estabragh, A. Salih, P. Gkontra, A. Atehortúa, P. Radeva, I. Boscolo Galazzo, G. Menegaz, N. C. Harvey, **K. Lekadir**, S. E. Petersen, “Estimation of biological heart age using cardiovascular magnetic resonance radiomics”, *Scientific Reports* vol. 12, no. 12805, 2022.
  17. T. Devriendt, M. Shabani, **K. Lekadir**, P. Borry, “Data sharing platforms: instruments to inform and shape science policy on data sharing?”, *Scientometrics*, p.1-13, 2022.
  18. K. Kushibar, V. Campello, L. Garrucho, A. Linardos, P. Radeva, **K. Lekadir**. Layer Ensembles: A Single-Pass Uncertainty Estimation in Deep Learning for Segmentation. In *Medical Image Computing and Computer Assisted Intervention–MICCAI 2022* (pp. 514-524), 2022.
  19. J. Ronkainen *et al.* “LongITools: Dynamic longitudinal exposome trajectories in cardiovascular and metabolic noncommunicable diseases”, *Environmental Epidemiology*, vol. 6, no.1, 2022.

20. V.M. Campello, C. Martín-Isla, C. Izquierdo, A. Guala, JFR. Palomares, D. Viladés, M.L. Descalzo, M. Karakas, E. Çavuş, Z. Raisi-Estabragh, SE. Petersen, **K. Lekadir**. Minimising multi-centre radiomics variability through image normalisation: a pilot study. *Scientific Reports*, 12(1), 2022.
21. L. Garrucho, K. Kushibar, S. Jouide, O. Diaz, L. Igual, **K. Lekadir**, Domain generalization in deep learning based mass detection in mammography: A large-scale multi-center study. *Artificial Intelligence in Medicine*, 132, 102386, 2022.
22. A. Jaggi, E. L. Shepherd Conole, Z. Raisi-Estabragh, P. Gkontra, C. McCracken, S. Neubauer, S. E. Petersen, S. R. Cox, **K. Lekadir**, “A Novel Heart-Brain Axis Mediates the Association Between Cardiovascular Risk and Cognitive Function”, medRxiv 2022.09.15.22279275, 2022.
23. S. Joshi, R. Osuala, C. Martín-Isla, V. M. Campello, C. Sendra-Balcells, **K. Lekadir**, S. Escalera, “nn-UNet Training on CycleGAN-Translated Images for Cross-modal Domain Adaptation in Biomedical Imaging”, International MICCAI Brainlesion Workshop, BrainLes 2021: Lecture Notes in Computer Science, vol. 12963, 2022.
24. A. Linardos, K. Kushibar, **K. Lekadir**, “Center Dropout: A Simple Method for Speed and Fairness in Federated Learning”, International MICCAI Brainlesion Workshop, BrainLes 2021: Lecture Notes in Computer Science, vol. 12963, 2022.
25. M. Abdulkareem, A. Kenawy, E. Rauseo, A. Lee, A. Sojoudi, A. Amir-Khalili, **K. Lekadir**, A. Young, M. Barnes, P. Barckow, M. Khanji, N. Aung, S. Petersen, “Predicting post-contrast information from contrast agent free cardiac MRI using machine learning: Challenges and methods”, *Frontiers in cardiovascular medicine*, vol. 9, 2022.
26. **K. Lekadir et al.** “From MICCAI to AFRICAI: African network for artificial intelligence in biomedical imaging”, The International Conference on Learning Representations (ICLR), 2022.
27. V. Pina, V.M. Campello, **K. Lekadir**, S. Seguí, J.M. García-Santos, L.J. Fuentes, “Mathematical Abilities in School-Aged Children: A Structural Magnetic Resonance Imaging Analysis with Radiomics”, *Frontiers in neuroscience*, p.512, 2022.
28. V.M Campello *et al.* “Multi-centre, multi-vendor and multi-disease cardiac segmentation: the M&Ms challenge”, *IEEE Transactions on Medical Imaging*, 2021, vol. 40, no.12, p. 3543-3554, 2022.
29. VN. Dang, F. Galati, R. Cortese, G. Di Giacomo, V. Marconetto, P. Mathur, **K. Lekadir**, M. Lorenzi, F. Prados, MA. Zuluaga, Vessel-CAPTCHA: an efficient learning framework for vessel annotation and segmentation. *Medical Image Analysis*, 75, p.102263, 2022.
30. E. Rauseo, C. Izquierdo Morcillo, Z. Raisi-Estabragh, P. Gkontra, N. Aung, **K. Lekadir**, SE. Petersen, “New imaging signatures of cardiac alterations in ischaemic heart disease and cerebrovascular disease using CMR radiomics”. *Frontiers in Cardiovascular Medicine*, 1209, 2021.
31. C. Izquierdo, G. Casas, C. Martin-Isla, VM. Campello, A. Guala, P. Gkontra, JF. Rodríguez-Palomares, **K. Lekadir**, Radiomics-based classification of left ventricular non-compaction, hypertrophic cardiomyopathy, and dilated cardiomyopathy in cardiovascular magnetic resonance. *Frontiers in Cardiovascular Medicine*, p.1502, 2021.
32. Z. Raisi-Estabragh, A. Jaggi, P. Gkontra, C. McCracken, N. Aung, PB. Munroe, **K. Lekadir**, SE. Petersen, Cardiac magnetic resonance radiomics reveal differential impact of sex, age, and vascular risk factors on cardiac structure and myocardial tissue. *Frontiers in Cardiovascular Medicine*, 8, 2021.
33. T. Devriendt, C. Ammann, F.W. Asselbergs, A. Bernier, R. Costas, M.G. Friedrich, J.L. Gelpi, M.-R. Jarvelin, K. Kuulasmaa, **K. Lekadir**, *et al.* “An agenda-setting paper on data sharing platforms: euCanSHare workshop”, *Open Research Europe*, v.1, p.80, 2021.

34. A. Salih, I. Boscolo Galazzo, Z. Raisi-Estabragh, E. Rauseo, P. Gkontra, S.E. Petersen, **K. Lekadir**, A. Altmann, P. Radeva, G. Menegaz, “Brain age estimation at tract group level and its association with daily life measures, cardiac risk factors and genetic variants”, *Scientific reports*, vol.11, n. 1, p. 1-14, 2021.
35. Z. Liu, V. Manh, X. Yang, X. Huang, **K. Lekadir**, V.M. Campello, N. Ravikumar, A.F. Frangi, D. Ni, “Style Curriculum Learning for Robust Medical Image Segmentation”, *International Conference on Medical Image Computing and Computer-Assisted Intervention*, p. 451-460, 2021.
36. **K. Lekadir** *et al.* 2021. “FUTURE-AI: Guiding Principles and Consensus Recommendations for Trustworthy Artificial Intelligence in Medical Imaging”. *arXiv:2109.09658*.
37. A. Salih, I. Boscolo Galazzo, Z. Raisi-Estabragh, S.E. Petersen, P. Gkontra, **K. Lekadir**, G. Menegaz, P. Radeva, “A new scheme for the assessment of the robustness of explainable methods applied to brain age estimation”, *2021 IEEE 34<sup>th</sup> International Symposium on Computer-Based Medical Systems (CBMS)*, 2021, p. 492-497.
38. Z. Raisi-Estabragh, C. McCracken, P. Gkontra, A. Jaggi, M. Ardissino, J. Cooper, L. Biasioli, N. Aung, S.K. Piechnik, S. Neubauer, P.B. Munroe, **K. Lekadir**, N.C. Harvey, S.E. Petersen, “Associations of meat and fish consumption with conventional and radiomics cardiovascular magnetic resonance phenotypes in the UK Biobank”, *Frontiers in cardiovascular medicine*, 2021, vol. 8, p.369.
39. EP. Antón, M. Pop, C. Martín-Isla, M. Sermesant, A. Suinesiaputra, O. Camara, **K. Lekadir**, A. Young, eds., *Statistical Atlases and Computational Models of the Heart: 12th International Workshop, STACOM 2021, Held in Conjunction with MICCAI 2021, Lectures Notes in Computer Science*, Springer Nature.
40. V. Pina, V.M. Campello, **K. Lekadir**, S. Seguí, JMG. Santos, LJ. Fuentes, “Mathematical Abilities in Children: An sMRI Analysis With Radiomics”, *Research Square*, 2021.
41. S. Chadalavada, M.T. Jensen, N. Aung, J. Cooper, **K. Lekadir**, P.B. Munroe, S.E. Petersen, “Women with diabetes are at increased relative risk of heart failure compared to men: Insights from UK Biobank”, *Frontiers in Cardiovascular Medicine*, 2021.
42. O. Diaz, K. Kushibar, R. Osuala, A. Linardos, L. Garrucho, L. Igual, P. Radeva, F. Prior, P. Gkontra, **K. Lekadir**, “Data preparation for artificial intelligence in medical imaging: A comprehensive guide to open-access platforms and tools”, *Physica Medica: European Journal of Medical Physics*, 2021.
43. Z. Raisi-Estabragh, C. McCracken, P. Gkontra, A. Jaggi, M. Ardissino, J. Cooper, L. Biasioli, N. Aung, S.K. Piechnik, S. Neubauer, P.B. Munroe, **K. Lekadir**, N.C. Harvey, S.E. Petersen, “Higher consumption of red and processed meat is associated with adverse cardiovascular magnetic resonance morpho-functional phenotypes: A study of 19,408 UK Biobank participants”, *European Journal of Preventive Cardiology*, 2021, vol. 28.
44. N. Mariani *et al.* “Identifying causative mechanisms linking early-life stress to psycho-cardio-metabolic multi-morbidity: The EarlyCause project”, *PloS ONE*, 2021, vol. 16., no. 1.
45. **K. Lekadir**, T. Leiner, A. A. Young, S. E. Petersen, “Current and Future Role of Artificial Intelligence in Cardiac Imaging”, *Frontiers in Cardiovascular Medicine*, 2020, vol. 7.
46. C. Martín-Isla, V.M. Campello, C. Izquierdo, Z. Raisi-Estabragh, B. Baeßler, S.E. Petersen, **K. Lekadir**, “Image-Based Cardiac Diagnosis with Machine Learning: A Review”, *Frontiers in Cardiovascular Medicine*, 2020, vol. 7, p.1.
47. C. Martín-Isla, M. Asadi-Aghbolaghi, P. Gkontra, V.M. Campello, S. Escalera, **K. Lekadir**, “Stacked BCDU-Net with Semantic CMR Synthesis: Application to Myocardial Pathology Segmentation

- Challenge”, in: X. Zhuang, L. Li (eds), “Myocardial Pathology Segmentation Combining Multi-Sequence Cardiac Magnetic Resonance Images”, MyoPS 2020, Lecture Notes in Computer Science, vol. 12554, pp. 1-16 (**Best Paper Award**).
48. E.P. Anton, M. Pop, M Sermesant, V. Campello, A. Lalande, **K. Lekadir**, A. Suinesiaputra, O. Camara, A. Young, “Statistical Atlases and Computational Models of the Heart. M&Ms and EMIDEC Challenges”, 11th International Workshop STACOM 2020, Springer-LNCS vol. 12592.
  49. I. Cetin, Z. Raisi-Estabragh, S. E. Petersen, S. Napel, S. K. Piechnik, S. Neubauer, M. A. Gonzalez Ballester, O. Camara, **K. Lekadir**, “Radiomics signatures of cardiovascular risk factors in cardiac MRI: Results from the UK Biobank”, *Frontiers in Cardiovascular Medicine*, 2020, vol. 7.
  50. C. Sendra-Balcells, R. Salvador, J.B. Pedro, M.C. Biagi, C. Aubinet, B. Manor, A. Thibaut, S. Laureys, **K. Lekadir**, G. Ruffini, “Convolutional neural network MRI segmentation for fast and robust optimization of transcranial electrical current stimulation of the human brain”, *bioRxiv*, 2020.
  51. V.M. Campello, C. Martín-Isla, C. Izquierdo, S.E. Petersen, M.A. González Ballester, **K. Lekadir**, “Combining Multi-Sequence and Synthetic Images for Improved Segmentation of Late Gadolinium Enhancement Cardiac MRI”, *arXiv*, 2020, STACOM 2019, p. 290.
  52. Z. Raisi-Estabragh, P. Gkontra, A. Jaggi, J. Cooper, J. Augusto, A.N. Bhuvu, R.H. Davies, C.H. Manisty, J.C. Moon, P.B. Munroe, N.C. Harvey, **K. Lekadir**, S.E. Petersen, “Repeatability of Cardiac Magnetic Resonance Radiomics: A Multi-Centre Multi-Vendor Test-Retest Study”, *Frontiers in Cardiovascular Medicine*, 2020, vol. 7, p. 289.
  53. Z. Raisi-Estabragh, C. Izquierdo, V. M. Campello, C. Martin-Isla, A. Jaggi, N. C. Harvey, **K. Lekadir**, S. E. Petersen, “Cardiac magnetic resonance radiomics: basic principles and clinical perspectives”, *European Heart Journal-Cardiovascular Imaging*, 2020, vol. 21, no. 4, pp. 349-356.
  54. Z. Raisi-Estabragh, A. Jaggi, N. Aung, S. Neubauer, S. Piechnik, P.B. Munroe, N.C. Harvey, **K. Lekadir**, S.E. Petersen, “Variation of cardiac magnetic resonance radiomics features by age and sex in healthy participants from the UK Biobank”, *European Heart Journal*, 2020, vol. 41, no. suppl. 2.
  55. C. Sendra-Balcells, R. Salvador, **K. Lekadir**, G. Ruffini, J.B. Pedro, “StarNET: A convolutional neural network for automated white and gray matter segmentation from magnetic resonance imaging in the human brain”, *Clinical Neurophysiology*, 2020, vol. 31, no. 4, pp. 55-56.
  56. I. Cetin, S.E. Petersen, S. Napel, O. Camara, M.A. González Ballester, **K. Lekadir**, “A radiomics approach to analyze cardiac alterations in hypertension”, *IEEE 16<sup>th</sup> International Symposium on Biomedical Imaging*, 2019, pp. 640-643.
  57. M. Masias Bruns, I. Cetin, S. E. Petersen, M. A. Gonzalez Ballester, G. Piella, **K. Lekadir**, “Can one predict brain disease based on cardiac imaging data? A proof-of-concept study”, *International Journal of Computer Assisted Radiology and Surgery*, 2019, vol. 14, no. Suppl. 1, pp. 4-5.
  58. I. Cetin, S. E. Petersen, O. Camara, M. A. Gonzalez Ballester, **K. Lekadir**, “Identifying alterations in the cardiac ventricles in atrial fibrillation: a radiomics approach”, *International Journal of Computer Assisted Radiology and Surgery*, 2019, vol. 14, no. Suppl. 1, pp. 75-76.
  59. G. Sanroma, O. M. Benkarim, G. Piella, **K. Lekadir**, N. Hahner, E. Eixarch, M. A. González Ballester, “Learning to combine complementary segmentation methods for fetal and 6-month infant brain MRI segmentation”, *Computerized Medical Imaging and Graphics*, 2018, vol. 69, pp. 52-59.
  60. O. Bernard, A. Lalande, C. Zotti, F. Cervenansky, X. Yang, P. Heng, I. Cetin, **K. Lekadir**, et al. “Deep learning techniques for automatic MRI cardiac multi-structures segmentation and diagnosis: is the problem solved?”, *IEEE Transactions on Medical Imaging*, 2018, vol. 37, no. 11, pp. 2414-2525.

61. X. Albà, **K. Lekadir**, M. Pereañez, P. Medrano-Gracia, A.A. Young, A.F. Frangi, "Automatic initialization and quality control of large-scale cardiac MRI segmentations", *Medical Image Analysis*, 2018, vol. 43, pp.129-141.
62. **K. Lekadir**, A. Galimzianova, A. Betriu, M. Vila, L. Igual, D. Rubin, E. Fernandez, P. Radeva, S. Napel, "A convolutional neural network for automatic characterization of plaque composition in carotid ultrasound", *IEEE Journal on Biomedical and Health Informatics*, 2017, vol. 21, no. 1, pp. 48-55.
63. C. Hoogendoorn, R. Sebastian, J. F. Rodriguez, **K. Lekadir**, A. F. Frangi, "An atlas and data-driven approach to initializing reaction-diffusion systems in computer cardiac electrophysiology", *International Journal for Numerical Methods in Biomedical Engineering*, 2017, vol. 33, no. 8.
64. A. Gooya, **K. Lekadir**, I. Castro-Mateos, J.M. Pozo, A.F. Frangi, "Mixture of probabilistic principal component analyzers for shapes from point sets", *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 2017, vol. 40, no. 4, pp. 891-904.
65. A. Suinesiaputra, P. Ablin, X. Alba, M. Alessandrini, J. Allen, W. Bai, S. Cimen, P. Claes, B.R. Cowan, J. D'hooge, N. Duchateau, J. Ehrhardt, A.F. Frangi, A. Gooya, V. Grau, **K. Lekadir et al.** "Statistical shape modeling of the left ventricle: myocardial infarct classification challenge", *IEEE Journal of Biomedical and Health Informatics*, 2017, vol. 22, no. 2, pp- 503-515.
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71. P. Peng, **K. Lekadir**, A. Gooya, L. Shao, S. E. Petersen, A. F. Frangi, "A review of heart chambers segmentation for structural and functional analysis using cardiac magnetic resonance imaging", *Magnetic Resonance Materials in Physics, Biology and Medicine*, 2016, vol. 29, no. 2, pp. 155-195.
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74. **K. Lekadir**, C. Hoogendoorn, J. Hazrati-Marangalou, Z. Taylor, C. Noble, B. van Rietbergen, and A. F. Frangi, "A predictive model of vertebral trabecular anisotropy from ex vivo micro-CT", *IEEE Transactions on Medical Imaging*, 2015, vol. 34, no. 8, pp. 1747-1759.



75. **K. Lekadir**, J. Hazrati-Marangalou, C. Hoogendoorn, Z. Taylor, B. van Rietbergen, and A. F. Frangi, "Statistical estimation of femur micro-architecture using optimal shape and density predictors", *Journal of Biomechanics*, 2015, vol. 48, no. 4, pp. 598-603.
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83. T. Lassila, M. Lange, A.R.P. Perez, **K. Lekadir**, X. Albà, G. Piella, A.F. Frangi, "Electrophysiology model for a human heart with ischemic scar and realistic Purkinje network", *Statistical Atlases and Computational Models of the Heart*, 2015, pp. 90-97.
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97. V.A.M. Zimmer, R. Fonolla, **K. Lekadir**, G. Piella, C. Hoogendoorn, A.F. Frangi, "Patient-specific manifold embedding of multispectral images using kernel combinations", *International Workshop on Machine Learning in Medical Imaging*, 2013, pp.82-89.
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100. **K. Lekadir**, A. Pashaei, C. Hoogendoorn, M. Pereanez, X. Alba, and A. F. Frangi, "Personalized modeling of cardiac electrophysiology using shape-based prediction of fiber orientation", *Statistical Atlases and Computational Models of the Heart*, 2013 (Nagoya, Japan), Springer-LNCS vol. 8330, pp. 50-57.
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109. **K. Lekadir**, "Medical image segmentation and analysis using statistical shape modelling and inter-landmark relationships", Imperial College London, 2009.
110. I. El-Hamamsy, **K. Lekadir** *et al.* "Pattern and degree of reverse remodelling following extended septal myectomy for hypertrophic cardiomyopathy: An MRI study", Circulation, 2009, vol. 129, pp. 794-795.
111. **K. Lekadir**, J. Abi Nahed, M. Ellington, R. Merrifield, G.Z. Yang, "1131 Robust semi-automatic computer-aided segmentation of the left ventricle", Journal of Cardiovascular Magnetic Resonance, 2008, vol. 10, no. 1, pp.1-3.
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113. K. Koh, T. Wood, H. Zhang, **K. Lekadir**, D. Elson, G.Z. Yang, "Fluorescence excitation spectroscopic imaging with a tunable light source and dimensionality reduction using FR-IsoMap", Advanced Biomedical and Clinical Diagnostic Systems VI, 2008.
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115. **K. Lekadir**, R. Merrifield, and G.-Z. Yang, "Outlier detection and handling for robust 3-D active shape models search", IEEE Transactions on Medical Imaging, 2007, vol. 26, no. 2, pp. 212-222.
116. K.R. Koh, **K. Lekadir**, D.S. Elson, G.Z. Yang, "Excitation/emission resolved fluorescence imaging with FR-IsoMap", Proceedings of Medical Image Understanding and Analysis (MIUA), 2007, pp. 101-105.

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119. **K. Lekadir**, D.S. Elson, J. Requejo-Isidro, C. Dunsby, J. McGinty, N. Galletly, G. Stamp, P.M.W. French, G.-Z. Yang, “Tissue characterization using dimensionality reduction and fluorescence imaging”, International Conference on Medical Image Computing and Computer-Assisted Intervention, 2006, pp. 586-593.
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121. **K. Lekadir**, R. Merrifield, A. Varghese, D. Pennell, G.-Z. Yang, “Automatic carotid atherosclerotic plaque assessment from magnetic resonance imaging”, Proc. euroCMR, 2005, Zurich.

COMPETITIVE FELLOWSHIPS

1. **Ramon y Cajal Fellow** 2017  
Funded by Spanish Ministry of Science & Innovation
2. **Marie-Curie Research Fellow** 2016  
Co-funded by the European Commission and ACCIÓ Agency
3. **Juan de la Cierva Fellow** 2011  
Funded by the Spanish Ministry of Science & Innovation
4. **Erasmus Exchange Studentship** 2001  
Awarded to 6 out of 102 students at my university. Spent at RWTH Aachen, Germany
5. **Leonardo da Vinci industrial studentship** 1999  
Funded by the European Commission, carried out at Daimler AG, Mannheim, Germany

AWARDS

1. **Best Paper Award** in Physica Medica Journal 2021 2021
2. **1<sup>st</sup> place** MICCAI challenge on Federated Tumour Segmentation 2021
3. **Best Paper Award** at MyoPS 2020 2020
4. **Best Challenge Paper** at STACOM 2015 2015
5. **1<sup>st</sup> place** MICCAI challenge on myocardial infarction classification 2015
6. **Best Student Paper** at EIT 2015 2015

SOFTWARE

1. OpenVRE for federated data analytics 2021
2. euCanSHare platform for cardiovascular research data 2020
3. CMRtools for CMR image quantification 2009  
Commercialised and used in more than 250 clinical centers worldwide

INDUSTRIAL EXPERIENCE

1. Terma GmbH, Darmstadt, Germany 2021  
Internship as Software developer: Satellite communication simulation
2. MTU Aero Engines, Munich, Germany 2020

	Internship as Software programmer: Test bed data analysis	
	3. EvoBus, Daimler AG, Mannheim, Germany	1999
	Internship as Database programmer: Kaizen quality control database	
TEACHING	1. Master Sinology: “Inteligencia artificial y machine learning: bases y aplicaciones” Universitat de Barcelona, Barcelona	2020-now
	2. Master Computer Vision: “Optimisation & Inference” Universitat Pompeu Fabra, Barcelona	2017-now
	3. Master Intelligent Interactive Systems :“Pattern Recognition” Universitat Pompeu Fabra, Barcelona	2017-2019
	4. Master in Computing: “Computer Vision” class Imperial College London, UK	2009-2010
CURRENT PHD STUDENTS	1. <b>Carlos Martin</b> (expected end date: 2023) “Multi-modal cardiac image segmentation”	
	2. <b>Victor Campello</b> (expected end date: 2023) ”Multi-centre cardiac image analysis”	
	3. <b>Cristian Izquierdo</b> (expected end date: 2023) “Machine learning and radiomics for survival analysis”	
	4. <b>Vien Ngoc Dang</b> (expected end date: 2024) “Fair machine learning in mental health”	
	5. <b>Lidia Garrucho</b> (expected end date: 2024) “Trustworthy AI in breast mammography”	
	6. <b>Richard Osuala</b> (expected end date: 2024) “Data synthesis for trustworthy AI in medical imaging”	
	7. <b>Smriti Joshi</b> (expected end date: 2026) “Trustworthy radiomics AI for breast treatment planning”	
	8. <b>Grzegorz Skorupko</b> (expected end date: 2026) “Federated learning with real-world multi-modal data”	
	9. <b>Zuzanna Szafranowska</b> (expected end date: 2026) “Inclusive AI for fetal ultrasound screening”	
PAST PHD STUDENTS	1. <b>Marco Pereañez (2016)</b> : “Enlargement, subdivision and individualisation of statistical shape models”	
	2. <b>Xenia Alba (2016)</b> “Automated cardiac MR image analysis for population imaging”	
MISC. ACTIVITIES	1. <b>Associate Editor</b> - IEEE Transactions on Medical Imaging (2017 – now) - IEEE Journal on Biomedical and Health Informatics (2021 – now)	
	2. <b>Guest Editor</b> - Frontiers in Cardiovascular Medicine, Special Issue on Artificial Intelligence in Cardiac Imaging (2020, 2022)	

3. **Paper reviewing**

- Medical Image Analysis, Journal of Medical Imaging, IEEE Transactions on Medical Imaging, IEEE Transactions on Biomedical Engineering, Journal of Biomechanics, Frontiers, PLoS ONE, Journal of Cardiovascular Magnetic Resonance, European Heart Journal.

4. **Grant reviewing**

- Medical Research Council (UK), German Research Foundation (Germany), National Research Evaluation Agency (Spain), Dutch Organisation for Scientific Research (Netherlands), Swiss National Science Foundation (Switzerland), Horizon Europe (European Commission)

5. **Event organisation**

- MICCAI 2024, Marrakesh, Morocco (General Chair)
- IEEE-ISBI 2023, Cartagena, Colombia (Diversity Chair)
- MICCAI 2018, Grenada, Spain (Student Event Chair)
- IEEE-ISBI 2012, Barcelona, Spain (Publications Chair)
- MICCAI 2009, London, UK (Local Organising Committee Member)

6. **Program committees**

- MICCAI 2019, Shenzhen, China
- SPIE Medical Imaging, USA (2017-2023)
- MICCAI 2009, London, UK

7. **Invited speaker (selection)**

- "Inclusive Artificial Intelligence for Accessible Medical Imaging in Low-Resource African Settings", *University of Cape Town*, March 2023, Cape Town.
- "Holistic and Trustworthy AI Evaluation in Breast Cancer Imaging", *European Congress of Radiology*, March 2023, Vienna.
- "Expert panel discussion: Launch of the European Cancer Imaging Launch", *European Commission*, January 2023, Brussels.
- "MICCAI Goes to Africa and Beyond", *German Cancer Research Center*, December 2022, Heidelberg.
- "FUTURE-AI: International Guidelines for Trustworthy & Deployable AI in Healthcare". *ITU/WHO Focus Group on Artificial Intelligence for Health Meeting*, November 2022, Douala.
- "Fetal Ultrasound Plane Recognition: A Multi-Country Study in 5 African Countries", *African Network for Artificial Intelligence in Biomedical Imaging*, July 2022 (Online)
- "The EarlyCause Project", *Paula Rantakallio Symposium on Birth Cohorts and Longitudinal Studies*, June 2022, Oulu.
- "RadioVal EU Project: Trustworthy AI for Breast Cancer Treatment". *Workshop on Ethical and Social Implications of AI in Biomedical Research on Cancer*, May 2022, Berlin.
- "Expert discussion: High-level forum on the EU vision for trustworthy AI in the world", *World Expo*, March 2022, Dubai.
- "From Risky to Trustworthy AI in Healthcare", *University of Glasgow, School of Computing Seminars*, February 2022.
- "Future of Artificial Intelligence in Radiology: Promises, Obstacles and Best Practices", *The 35th Barcelona Clinic Liver Cancer*, November 2021, Barcelona.
- "Dear Doctor AI: Can I trust you? Insights on validating future AI solutions in healthcare"; *DataEthics Summer School*, July 14, 2021, Barcelona.

- “A research spot in radiomics: the EU EuCanImage project”, *European Congress of Radiology*, March 2021 (Online).
- “Data sharing and analytics platforms for medical imaging in the age of big data”, *European Society of Medical Imaging Informatics*, June 2020 (online).
- “Translational medicine and data analytics using next generation platforms”, *Bioworld Data*, November 2019, Basel.
- “International flagship collaboration with Canada for human data storage, integration and sharing to enable personalised medicine approaches”, *European Research and Innovation Days*, September 2019, Brussels.
- “euCanSHare: Next generation imaging analysis platform for cardiovascular precision medicine”, *Imaging in Precision Medicine Beacon Seminars*, June 2019, Nottingham.
- “Radiomics in CMR: Extracting More Information from Clinical Images”, *EuroCMR*, 2019, Venice.
- “euCanSHare: A Multi-Centre and Multi-Omics Big Data Platform to Enhance Future Research in Cardiovascular Personalised Medicine”, *Integrative Biomedical Imaging Informatics Stanford Seminars*, 2019, Stanford.
- “Radiomics for Cardiac Magnetic Resonance: Deep & Interpretable Imaging Phenotyping of CVD”, *Annual Meeting of Society of CMR*, February 2019, Bellevue, USA
- “Artificial Intelligence in Cardiac Imaging”, *Annual Workshop of SmartHeart*, January 2019, London, UK
- “CMR Image Analysis Using Radiomics: An Alternative to Conventional Indices and Deep Learning?”, *UK Biobank Workshop*, October 2017, London.
- “Statistical shape modelling and application to personalised medicine”, *Hamlyn Winter School*, December 2016, London.
- “Personalization and optimization of medical treatments with in silico medicine: Illustration in patient-specific computational modeling of cardiac electrophysiology”, *International Symposium on Medical Information Processing and Analysis*, May 2013, Mexico City.

#### 8. Expert Groups

- Scientific Board Member, European Institute for Biomedical Imaging Research (EIBIR)
- WHO Expert Group on Artificial Intelligence for Cardiovascular Diseases
- External Advisor SimCor H2020 project

#### 9. Articles in Media

- “Beautiful, healthy minds? Mathematics and mental health beyond the stereotypes”, Inspire the mind, by Karim Lekadir, August 2020
- “La máquina que predice quién enfermará (Entrevista con Karim Lekadir)”, by Nuno Domínguez in El País, 2019.

#### LANGUAGES

1. **French** Fluent (Native speaker)
2. **English** Fluent
3. **Spanish** Fluent
4. **German** Intermediate
5. **Berber** Intermediate