Md Mostafa Kamal Sarker, BSc. MEng. PhD

Assistant Research Professor

Department of Oncology | University of Cambridge | UK.

+44(0)7902833970 m.kamal.sarker@gmail.com

| LinkedIn | Google Scholar | | mksarker.github.io |

Summary

Over **12 years** of experience developing AI systems, including **Generative AI, Clinical AI (cAI), Large Language Models (LLMs), Multimodal AI, Federated Learning (FL), Agentic-AI, and Foundation Models (FMs)** across several modalities, including medical imaging (radiology and digital pathology), genomics, and electronic health records (EHRs). I have experience in **writing and coordinating EU project proposals** and leading cross-domain AI teams for various EU and UKRI-funded projects. My work includes developing **Domain-Specific Foundation Models (DFMs)** in areas such as **Biology-inspired Foundation Models (BIFMs) for cancer research**, **Physics-informed Foundation Models (PIFMs)** for materials discovery, and **Epidemiology-informed Foundation Models (EIFMs)** for pandemic preparedness and response. More broadly, I am also interested in AI applications for materials science, climate, and pandemic science. Experience in developing impactful AI policies through the involvement in the **ISO/BSI** AI standards workgroup, and completed **Oxford AI Ethics, Regulation and Compliance**. I have experienced with complex, multi-stakeholder projects, including **Federated Learning in Healthcare** in the EU (**TRUMPET(€4M)**, **FLUTE(€6M)**), Oxford's Fetal Echocardiography (**COCHE**), and QUB's AI in Computational Pathology for Cancer Research (**PathLake**), hospitals contexts and worked with patient data standards (**GDPR, HL7**), and relevant research regulations. Translate high-level ideas into clinical applications, resource work plans, successfully managing >10 funded projects (South Korea, Spain, UK). My current research interests focus on **Trustworthy, Ethical, and Responsible AI in Healthcare**.

Professional Experiences

10.2025 – present	**Assistant Research Professor**, Precision Breast Cancer Institute, Department of Oncology, University of Cambridge, UK.
03.2024 – 09.2025	**Head of AI**, Technovative Solutions Limited (TVS), Manchester, UK.
01.2025 – 09.2025	**Visiting Fellow**, Dept. of Engineering Science, University of Oxford, UK.
09.2022 – 02.2024	**Senior Research Fellow**, Institute of Biomedical Engineering (IBME), Department of Engineering Science, University of Oxford, UK.
11.2021–08.2022	**Research Fellow**, National Subsea Centre, Robert Gordon University, UK.
05.2020–09.2021	**Research Fellow**, Tissue Hybridisation and Digital Pathology Lab at Precision Medicine Centre (PMC), Queen's University Belfast, UK.
09.2019–12.2019	**Research Associates**, Dept. of Math. & Computer Sci. at Uni. of Barcelona, Spain.
09.2016–08.2019	**Pre-doctoral Research Assistant (PhD student)**, Department of Computer Engineering and Mathematics at Universitat Rovira i Virgili, Spain.
09.2013–08.2016	**Research Assistant**, National Research Foundation, South Korea.
09.2011–08.2013	**Research Assistant (MEng. Student**, Department of Electronics Engineering at Chonbuk National University, South Korea.

Education

2025	**AI Ethics, Regulation & Compliance Program.,** Saïd Business School, Uni. of Oxford.
2016 – 2019	**Ph.D. in Computer Eng. and Mathematics**, Universitat Rovira i Virgili, Spain. Thesis title: *Efficient Deep Learning Models and Their Applications to Health Informatics.*
2011 – 2013	**M.Eng. in Electronics Eng.**, Jeonbuk National University, South Korea.
2003 – 2008	**B.Sc. in Physics**, Shahjalal University of Science and Technology, Bangladesh.

Projects

03.2024-09.2025 — **JARVIS (Submitted: €17M)**– Just, Trustworthy and Robust Virtual Agent Systems for Healthcare. [HORIZON-HLTH-2025-01-CARE-01] – End user-driven application of Generative Artificial Intelligence models in healthcare (GenAI4EU) [RIA]. 9-partners over 12 countries.
– VIRTUOSO- (Submitted: €17M) – GenAI-enabled Virtual Trials for Optimized Outcomes.[HORIZON-HLTH-2025-01-TOOL-03] – Leveraging multimodal data to advance GenAI in biomedical research [RIA]. 18-partner consortium over 10 countries.
– PANDAI (Submitted: €7M)- European Pandemics AI Observatory.[HORIZON-HLTH-2025-01-DISEASE-04] – Leveraging AI for pandemic preparedness and response [RIA]. 9-partner consortium; 7 countries.
– GENMAT (Submitted: €7M)- Generative Foundation Model for Multi-Scale Materials Discovery, Design and Deployment.[HORIZON-CL4-INDUSTRY-2025-01-DIGITAL-61] – AI Foundation models in science (GenAI4EU) [RIA]. 14-partner consortium across 7 countries.
– CLIMATEADAPT4EOSC (Funded: €7.9M) (https://climate-adapt4eosc.eu)- Fair Data and Innovative Services for Magnifying the Climate Adaptation potential of European Communities. Started January 2025, 48 months project, with an 18-partner consortium across 8 countries.
– EcoPlast (Funded: €6.3M) (https://www.norsar.no/projects/together/)- Empowering Circular Operations in the Automotive Plastics Value Chain Started 1 June 2025, runs for 36 months, with an 17-partner consortium across 5 countries.
– TOGETHER (Funded: €2.9M) (https://www.norsar.no/projects/together/)- Towards enhanced coordination of disaster risk management and governance through a holistic framework for multi-level and cross-sectoral interaction and communication. Starts 1 November 2025, runs for 36 months, with an 19-partner consortium across 11 countries.
– TRUMPET(Funded: €4M) (https://trumpetproject.eu)- TRUstworthy Multi-site Privacy Enhancing Technologies. Led the development of a Federated Learning platform based on Armoured Federated Learning for healthcare researchers and hospitals.
– FLUTE(Funded: €6M) (https://trumpetproject.eu)- Federate Learning and mUlti-party computation Techniques for prostatE cancer. Led the development of a Federated Learning platform for prostate cancer prediction using FL across borders of 3 European countries (Spain, Italy and Belgium).
My Role: Consortium **AI taskforce lead**, conceptual design, and writing entire AI strategy for all of submitted and funded projects with a focus on Trustworthy, Ethical, and Responsible AI, ensuring project's AI systems complies with EU AI Act.

09.2022-02.2024 **COCHE (HK$10 billion)**- Development of Clinical AI Models in Fetal Echocardiography for the Detection of Congenital Heart Defects. InnoHK-funded Hong Kong Centre for Cerebro-cardiovascular Health Engineering (COCHE). Contributor as Senior Research Fellow from University of Oxford, UK.

11.2021-08.2022 **ONR**- Underwater Object Detection using AI. Funded by Office of Naval Research (ONR) & Royal Navy, UK. Contributor as a Research Fellow at National Subsea Centre, UK.
IRT surveys- Automated thermograph survey report using **AI** (The Data Lab,UK). **Co-PI** at Robert Gordon University, UK.

05.2020-09.2021 **PathLAKE (£13.5M)**- Pathology Image Data Lake for Analytics Knowledge and Education. Contributor as a Research Fellow (Image Analyst) at PMC in Queen's University Belfast, UK.

09.2019-12.2019 **IKIWI**- Industrial Cleaning Robot. Contributor as a Research Associates at University of Barcelona, Spain

Projects (continued)

09.2016-08.2019

- **Food Related Scene Classification Under the Paradigm of Lifelogging.** Contributor as a Pre-doctoral Research Assistant at Universitat Rovira i Virgili, Spain.
- **Skin Lesion Segmentation and Classification in Dermoscopic Images.** Contributor as a Pre-doctoral Research Assistant at Universitat Rovira i Virgili, Spain.
- **Breast Tumor Segmentation and Sub-type Classification.** Contributor as a Pre-doctoral Research Fellow at Universitat Rovira i Virgili, Spain.

Research Publications

Google Scholar Citations = 1372, H-index = 15 (Accessed: 8 October 2025)

I have 48 peer-reviewed research publications (2012-now). Some selected publications are listed below; *: **MICCAI**, **ISBI** and **ECCV** are the top conference on medical image analysis and computer vision.

Journal Articles

1. **Sarker**, **M.**, Mishra, D., Alsharid, M., Netzahualcoyotl, H.-C., Ahujaa, R., Patey, O., … Noble, J. A. (2025). Harmonicechonet: Leveraging harmonic convolutions for automated standard plane detection in fetal heart ultrasound videos. ***Medical Image Analysis.***, 103758.
2. Hernandez-Cruz, N., Mishra, D., **Sarker**, **M.**, Papageorghiou, A., & Noble, J. A. (2024). Detection of fetal congenital heart defects on three-vessel view ultrasound videos. *WFUMB Ultrasound Open*, *2*(2), 100075.
3. Hernandez-Cruz, N., Saha, P., **Sarker**, **M.**, & Noble, J. A. (2024). Review of federated learning and machine learning-based methods for medical image analysis. *Big Data and Cognitive Computing*, *8*(9), 99.
4. Singh, V. K., Makhlouf, Y., **Sarker**, **M.**, Craig, S., Baena, J., Greene, C., … O'Reilly, P. et al. (2024). Krasformer: A fully vision transformer-based framework for predicting kras gene mutations in histopathological images of colorectal cancer. *Biomedical Physics & Engineering Express*, *10*(5), 055012.
5. Hernandez-Cruz, N., Mishra, D., Patey, O., **Sarker**, **M.**, Craik, R., Wilden, E., … Papageorghiou, A. (2023). Op06. 07: Machine learning-based detection of fetal anatomical orientation in second trimester ultrasound images. *Ultrasound in Obstetrics & Gynecology*, *62*, 62–62.
6. **Sarker**, **M.**, Singh, V., Alsharid, M., Papageorghiou, A. T., & Noble, J. A. (2023). Comformer: Classification of maternal-fetal and brain anatomy using a residual cross-covariance attention guided transformer in ultrasound. ***IEEE Trans. on Ultrasonics, Ferroelectrics, and Frequency Control***, *70*(11), 1417–1427.
7. Elyan, E., Vuttipittayamongkol, P., Johnston, P., Martin, K., McPherson, K., Moreno-García, C. F., … **Sarker**, **M.** (2022). Computer vision and machine learning for medical image analysis: Recent advances, challenges, and way forward. *Artificial Intelligence Surgery*, *2*(1), 24–45.
8. Neoh, S. C., Zhang, L., & **Sarker**, **M.** (2022). Acute lymphoblastic leukemia diagnosis using genetic algorithm and enhanced clustering-based feature selection. *Recent Advances in AI-enabled Automated Medical Diagnosis*, 123–134.
9. **Sarker**, **M.**, Akram, F., Alsharid, M., Singh, V., Yasrab, R., & Elyan, E. (2022). Efficient breast cancer classification network with dual squeeze and excitation in histopathological images. *Diagnostics*, *13*(1), 103.
10. Singh, V. K., **Sarker**, **M.**, Makhlouf, Y., Craig, S. G., Humphries, M. P., Loughrey, M. B., … Maxwell, P. (2022). Icoseg: Real-time icos protein expression segmentation from immunohistochemistry slides using a lightweight conv-transformer network. *Cancers*, *14*(16), 3910.
11. Banu, S. F., **Sarker**, **M.**, Abdel-Nasser, M., Puig, D., & Raswan, H. A. (2021). Aweu-net: An attention-aware weight excitation u-net for lung nodule segmentation. *Applied Sciences*, *11*(21), 10132.

12. **Sarker**, **M.**, Makhlouf, Y., Craig, M., O'Reilly, P., & Maxwell, P. (2021). A means of assessing deep learning-based detection of icos protein expression in colon cancer. *Cancers*, *13*(15), 3825.

13. **Sarker**, **M.**, Rashwan, H., Akram, F., Singh, V., & Abdel-Nasser, M. (2021). Slsnet: Skin lesion segmentation using a lightweight generative adversarial network. *Expert Systems with Applications*, *183*, 115433.

14. **Sarker**, **M.**, Makhlouf, Y., Banu, S. F., Chambon, S., Radeva, P., & Puig, D. (2020). Web-based efficient dual attention networks to detect covid-19 from x-ray images. *Electronics Letters*, *56*(24), 1298–1301.

15. Singh, V., Rashwan, H., Romani, S., Akram, F., Pandey, N., **Sarker**, **M.**, … Torrents-Barrena, J. (2020). Breast tumor segmentation and shape classification in mammograms using generative adversarial and convolutional neural network. *Expert Systems with Applications*, *139*, 112855.

16. Singh, V. K., Abdel-Nasser, M., Akram, F., Rashwan, H. A., **Sarker**, **M.**, Pandey, N., … Puig, D. (2020). Breast tumor segmentation in ultrasound images using contextual-information-aware deep adversarial learning framework. *Expert Systems with Applications*, *162*, 113870.

17. Martinez, E. T., Leyva-Vallina, M., Sarker, M. S., Puig, D., Petkov, N., & Radeva, P. (2019). Hierarchical approach to classify food scenes in egocentric photo-streams. *IEEE journal of biomedical and health informatics*, *24*(3), 866–877.

18. **Sarker**, **M.**, Rashwan, H. A., Akram, F., Talavera, E., Banu, S. F., Radeva, P., & Puig, D. (2019). Recognizing food places in egocentric photo-streams using multi-scale atrous convolutional networks and self-attention mechanism. *IEEE Access*, *7*, 39069–39082.

19. **Sarker**, **M.**, & Song, M. K. (2016). Segmentation and recognition of korean vehicle license plate characters based on the global threshold method and the cross-correlation matching algorithm. *Journal of Information Processing Systems*, *12*(4), 661–680.

20. **Sarker**, **M.**, Weihua, C., & Song, M. K. (2015). Detection and recognition of illegally parked vehicles based on an adaptive gaussian mixture model and a seed fill algorithm. *Journal of information and communication convergence engineering*, *13*(3), 197–204.

21. **Sarker**, **M.**, & Song, M. K. (2014b). Real-time vehicle license plate detection based on background subtraction and cascade of boosted classifiers. *Journal of the Korean Institute of Comm. and Info. Sciences*, *39*(10), 909–919.

22. **Sarker**, **M.**, Yoon, S., & Park, D. S. (2014). A fast and robust license plate detection algorithm based on two-stage cascade adaboost. *KSII Transactions on Internet and Information Systems*, *8*(10), 3490–3507.

23. Song, M. K., & **Sarker**, **M.** (2014). Modeling and implementing two-stage adaboost for real-time vehicle license plate detection. *Journal of Applied Mathematics*, *2014*(1), 697658.

24. **Sarker**, **M.**, Yoon, S., Lee, J., & Park, D. S. (2013). Novel license plate detection method based on heuristic energy map. *Journal of the Korean Institute of Communications and Information Sciences*, *38*(12), 1114–1125.

Conference Proceedings

1. Alsharid, M., Yasrab, R., Sarker, M. M. K., Drukker, L., Papageorghiou, A., & Noble, J. (2024). Zoom is meaningful: Discerning ultrasound images' zoom levels. In *2024 ieee international symposium on biomedical imaging (isbi)*. **ISBI-2024**, May 27-30, Athens, Greece.

2. Gaviria, D. D., **Sarker**, **M.**, & Radeva, P. (2023). Efficient deep learning ensemble for skin lesion classification. In *Visigrapp (5: Visapp)* (pp. 303–314). **VISIGRAPP-2023**, February 19-21, Lisbon, Portugal.

3. Hasan, M. J., Elyan, E., Yan, Y., Ren, J., & Sarker, M. M. K. (2023). Segmentation framework for heat loss identification in thermal images: Empowering scottish retrofitting and thermographic survey companies. In *International conference on brain inspired cognitive systems*. **BICS-2024**, August 5-6, Kuala Lumpur, Malaysia.

4. **Sarker**, **M.**, Yasrab, R., Alsharid, M., Papageorghiou, A. T., & Noble, J. A. (2023). Cnseg-gan: A lightweight generative adversarial network for segmentation of crl and nt from first-trimester fetal ultrasound. In *2023 ieee 20th international symposium on biomedical imaging (isbi)*. **ISBI-2023**, April 18-21, Cartagena de Indias, Colombia.

5. Yan, Y., Li, Y., Lin, H., Sarker, M. M. K., Ren, J., & McCall, J. (2023). Underwater object detection for smooth and autonomous operations of naval missions: A pilot dataset. In *International conference on brain inspired cognitive systems*. **BICS-2024**, August 5-6, Kuala Lumpur, Malaysia.

6. Yasrab, R., Alsharid, M., **Sarker**, **M.**, Zhao, H., Papageorghiou, A. T., & Noble, J. A. (2023). Automated description and workflow analysis of fetal echocardiography in first-trimester ultrasound video scans. In *2023 ieee 20th international symposium on biomedical imaging*. **ISBI-2023**, April 18-21, Cartagena de Indias, Colombia.

7. **Sarker**, **M.**, Moreno-García, C. F., Ren, J., & Elyan, E. (2022). Transslc: Skin lesion classification in dermatoscopic images using transformers. In *Annual conference on medical image understanding and analysis*. (**MIUA-2022**), July 27–29, Cambridge, UK.

8. Banu, S. F., **Sarker**, **M.**, Abdel-Nasser, M., Rashwan, H. A., & Puig, D. (2021). Weu-net: A weight excitation u-net for lung nodule segmentation. In *23rd international conference of the catalan association for artificial intelligence*, (**CCIA-2021**), October 20-22, Lleida, Spain.

9. Saleh, A., Rashwan, H. A., Abdel-Nasser, M., Singh, V. K., Abdulwahab, S., **Sarker**, **M.**, … Puig, D. (2019). Finseg: Finger parts semantic segmentation using multi-scale feature maps aggregation of fcn. In *Visigrapp (5: Visapp)*, (**VISIGRAPP-2019**), February 25-27, Prague, Czech Republic.

10. **Sarker**, **M.**, Banu, S. F., Rashwan, H. A., Abdel-Nasser, M., Singh, V. K., Chambon, S., … Puig, D. (2019). Food places classification in egocentric images using siamese neural networks. In *22nd international conference of the catalan association for artificial intelligence*, (**CCIA-2019**), October 23-24, Colònia de Sant Jordi, Spain.

11. Singh, V. K., Abdel-Nasser, M., Pandey, N., **Sarker**, **M.**, Romani, S. et al. (2019). Mass detection in mammograms using a robust deep learning model. In *22nd international conference of the catalan association for artificial intelligence*, (**CCIA-2019**), October 23-24, Colònia de Sant Jordi, Spain.

12. Akram, F., Singh, V. K., **Sarker**, **M.**, Garcia, M. A., & Puig, D. (2018). Brain mr image segmentation using multiphase active contours based on local and global fitted images. In *21st international conference of the catalan association for artificial intelligence*, (**CCIA-2018**), October 8-10, Roses, Spain.

13. Saleh, A., Abdel-Nasser, M., **Sarker**, **M.**, Singh, V. K., Abdulwahab, S., Saffari, N., … Puig, D. (2018). Deep visual embedding for image classification. In *2018 international conference on innovative trends in computer engineering (itce)*. (**ITCE-2018**), February 19-21, Aswan, Egypt.

14. **Sarker**, **M.**, Jabreel, M., Rashwan, H. A., Banu, S. F., Singh, V. K., Moreno, A., … Puig, D. (2018). Cuisinenet: Food attributes classification using multi-scale convolution network. In *21st international conference of the catalan association for artificial intelligence*, (**CCIA-2018**), October 8-10, Roses, Spain.

15. **Sarker**, **M.**, Rashwan, H., Akram, F., Radeva, P., & Puig, D. (2018). Slsdeep: Skin lesion segmentation based on dilated residual and pyramid pooling networks. In *21st international conference on medical image computing computer assisted intervention*. (**MICCAI-2018**), September 16-20, Granada, Spain.

16. **Sarker**, **M.**, Rashwan, H., Talavera, E., Banu, S., Radeva, P., & Puig, D. (2018). Macnet: Multi-scale atrous convolution networks for food places classification in egocentric photo-streams. In *15th european conference on computer vision*. (**ECCV-2018**), September 8 – 14, Munich, Germany.

17. Singh, V. K., Romani, S., Rashwan, H. A., Akram, F., Pandey, N., **Sarker**, **M.**, … Arquez, M. et al. (2018). Conditional generative adversarial and convolutional networks for x-ray breast mass segmentation and shape classification. In *21st international conference on medical image computing and computer-assisted intervention*. (**MICCAI-2018**), September 16-20, Granada, Spain.

18. Akram, F., Garcia, M. A., Singh, V. K., Saffari, N., **Sarker**, **M.**, & Puig, D. (2017). Image segmentation using active contours driven by bias fitted image robust to intensity inhomogeneity. In *20th international conference of the catalan association for artificial intelligence*, (**CCIA-2017**), October 25-27, Deltebre, Spain.

19. **Sarker**, **M.**, Leyva, M., Saleh, A., Singh, V. K., Akram, F., Radeva, P., & Puig, D. (2017). Foodplaces: Learning deep features for food related scene understanding. In *20th international conference of the catalan association for artificial intelligence*, (**CCIA-2017**), October 25-27, Deltebre, Spain.

20. Singh, V. K., Romani, S., Torrents-Barrena, J., Akram, F., Pandey, N., **Sarker**, **M.**, … Puig, D. (2017). Classification of breast cancer molecular subtypes from their micro-texture in mammograms using a vggnet-based convolutional neural network. In *20th international conference of the catalan association for artificial intelligence*, (**CCIA-2017**), October 25-27, Deltebre, Spain.

21. **Sarker**, **M.**, & Song, M. K. (2015). Korean car license plate character recognition using local line binary pattern, (**KICS-2015**), January 21-23, Jeongseon, South Korea.

22. **Sarker**, **M.**, & Song, M. K. (2014a). A novel license plate character segmentation method for different types of vehicle license plates. In *2014 international conference on information and communication technology convergence (ictc)*, (**ICTC-2014**), October 22-24, Busan, South Korea.

23. M.M.K. Sarkerand Park, D. S., & Badarch, L. (2012). Electronic control sensors applications for the next generation tractor based on open source library. In *2012 sixth international conference on sensing technology (icst)*, (**ICST-2012**), December 18-21, Kolkata, India.

24. **Sarker**, **M.**, Park, D., Ham, W., Tumenjargal, E., & Lee, J. (2012). Embedded workbench application of gps sensor for agricultural tractor. In *Conference on embedded systems and applications (esa 2012)*, (**WORLDCOMP-2012**), July 16-19, Las Vegas, USA.

Teaching

2024-2025 — **Mentoring AI Engineers:** — LLMs and Agentic-AI workflow research, development – Borhan Uddin Rabbani, Syed Shafkatul Hassan, Imdadul Haque Ohi.
— DFMs, LVMs and multimodal AI workflow research, development – Abu Hurayra Uchchas, Arnob Laskar, Shakib Absar, Mizbah Uddin Junayed.
— Physics-informed AI workflow research, development – Thasin Chowdhury Upoma, Mansura Mokbul, Tanjil Ahmed tanmoy.
— Training AI engineers in TVS for delivering EU projects tasks, including TRUMPET, FLUTE, CLIMATE-ADAPT4EOSC, EcoPlast.

2021– — **PhD supervisions**:
[2021–] Syeda Furruka Banu (PhD student in URV, Spain. Co-supervised with Prof. Domenec Puig)
[2024–] Afrida Asad (DPhil in Clinical Medicine, U. of Oxford. Co-supervised with Prof. Richard Maude).

2017– — **Master's supervisions:**
[2017] Rami Haffar (URV, Spain. Co-supervised with Prof. Domenec Puig)
[2022] David Dueñas Gaviria (U. of Barcelona, Co-supervised with Prof. Petia Radeva).

2013– — **Courses:** [2011] Embedded C Programming, JBNU, South Korea.
[2018] Introduction of Computer Vision, Universitat Rovira i Virgili, Spain.
[2021] Deep Learning for Computer Vision, Robert Gorton University, UK.
[2023] Led Tutor-B20: Machine Learning, 3rd-year Undergraduate Students (Michaelmas Term-2023) at Dept.of Engineering Science, University of Oxford, UK.

Knowledge and Skills

AI Governance — **Certified AI Auditor (CAIA)**, Global Regulation of AI (**e.g., EU Act**), Auditing AI Systems (**Oxethica**), Ethical and Responsible AI.

AI Algorithms — **CNNs** (Convolutional Neural Networks), **ViTs** (Vision Transformers), **GANs** (Generative Adversarial Networks), Diffusion models in 2D images and 3D videos, **Large Language Models (LLMs)**, **Large Vision Models (LVMs)**, **Foundation Models**, **Retrieval Augmented Generation (RAG)**.

Programming — **Python (advanced)**, **R (Basic)**, **C/C++**, SLURM (HPC), **FastAPI**, Flux, **MySQL**, **Web Application (Django)**, and JavaScript, etc.
CV and ML libraries: **OpenCV, SimpleITK, Scikit-learn.**
DL libraries: **PyTorch**, Tensorflow, Kears
Agentic-AI framework: **Hugging Face**, **LangChain**, **Model Context Protocol (MCP)**, **LangGraph**, **LLMs Guardrails**.
Version control: ***GitHub***, GitLab
AI/MLOps: **Amazon SageMaker, Azure ML, GCP, Docker**

Others. — MS office, LaTeX Overleaf, Project Management (Jira, Trello, Odoo.), etc.

Awards and Achievements

2021 — **Extraordinary Doctorate Award**, Universitat Rovira i Virgili, Spain (PhD studies).

2016 — **Martí Franquès Fellowship**, Universitat Rovira i Virgili, Spain (PhD studies).

2014 — **Award of Excellence**, Wonkwang University, South Korea (publication excellence).

2011 — **BK-21 Fellowship**, Jeonbuk National University, South Korea (Master's studies).

Academic Services

2024 — **Speaker of Doctoral Consortium:**British Machine Vision Conference 2024.

2023 — **AC & Rev Selection Chair:** British Machine Vision Conference 2023.

2022– — **Associate Editor:** Image Capture at Frontiers in Imaging.

2023– — **Guest Editor:**
[2023] Advances and Applications of Deep Learning Methods and Image Processing in Big Data and Cognitive Computing.
[2025] Machine Learning in Ultrasound Imaging in Bioengineering
[2025] Multimodal Data Fusion and Cross-Disciplinary Analytics in Medical Imaging in Frontiers in Imaging

Invited Talks:
[2025] Talk title: Artificial Intelligence in Climate Adaptation: Women's Contributions in Research and Mitigation. Venue: 1st International Conference on Environment and Climate Action (ICECA 2025), Asian University for Women (AUW), August 2, Chittagong, Bangladesh.
[2025] Talk title: Privacy-Preserving AI Platform for Federated Model Development in Prostate Cancer Diagnosis. Venue: Advancements in AI, Ultrasound Imaging, and Surgical Robotics for Cancer Diagnosis and Treatment, Hamlyn Symposium on Medical Robotics, June 27, Imperial College London, UK.

Reviewer: IEEE Transactions on Neural Networks and Learning Systems, Expert System and Application, MICCAI 2019, 2020, BMVC 2023.

2023– — **Member:** The British Machine Vision Association (BMVA).

2024– — **Committee Member**, ISO/BSI-(Artificial Intelligence - Functional Safety and AI Systems) at the **British Standard Institution (BSI)**, UK.