PARTNER INFORMATION — EU HORIZON EUROPE

Prof. Dr. Shadi Albarqouni

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20,826	45	172	4.73	~2.5 M€
CITATIONS	H-INDEX	PUBLICATIONS	FWCI (SCOPUS)	FUNDING ACQUIRED

ORGANISATION

Legal name	Universitätsklinikum Bonn (University Hospital Bonn, UKB)
Short name	UKB
Legal status	Public-law institution (Anstalt des öffentlichen Rechts), university hospital of the University of Bonn
Country	Germany
Department / unit	Clinic for Diagnostic and Interventional Radiology — Computational Medical Imaging Research (Albarqouni Lab)
Contact	Prof. Dr. Shadi Albarqouni, shadi.albarqouni@ukbonn.de, Clinic for Diagnostic and Interventional Radiology, University Hospital Bonn, Venusberg-Campus 1, 53127 Bonn, Germany

DESCRIPTION OF THE ORGANISATION

The University Hospital Bonn is one of Germany's leading university hospitals, combining patient care, research and teaching with the Faculty of Medicine of the University of Bonn, a German University of Excellence. The Albarqouni Lab at the Clinic for Diagnostic and Interventional Radiology develops trustworthy and affordable AI for medical imaging and translates it with clinical departments across UKB and with an international network of hospitals and universities.

MAIN TASKS AND EXPERTISE WE BRING

- Development of medical foundation and vision–language models for radiology, pathology and ophthalmology
- Federated and privacy-preserving learning across hospitals, including multi-centre validation
- Robustness, uncertainty, fairness and bias auditing of AI models (FUTURE-AI guideline co-author)
- Affordable AI for low-resource and point-of-care settings, including portable and ultra-low-field imaging
- Clinical data access and annotation through UKB clinics, and training and capacity building (summer schools, MSc and PhD teaching)

KEY PERSONNEL

Prof. Dr. Shadi Albarqouni (PI). Shadi Albarqouni is W2 Professor of Computational Medical Imaging at the Faculty of Medicine, University Hospital Bonn, University of Bonn, and leads the Albarqouni Lab (Computational Medical Imaging Research, CoMI). His research develops trustworthy and affordable AI for medical imaging: medical foundation and vision–language models, federated learning across hospitals without sharing patient data, and principled uncertainty, robustness and fairness, translated with clinical partners in radiology, pathology, ophthalmology and point-of-care imaging, and in low-resource settings. Previously AI Young Investigator Group Leader, Helmholtz AI, Helmholtz Munich; Visiting Scientist, Imperial College London, Computing Department; Visiting Scientist, ETH Zurich, Information Technology and Electrical Engineering. PhD in Computer Science, Technical University of Munich (summa cum laude, 2017). 20,826 citations, h-index 45 (Google Scholar); field-weighted citation impact 4.73 (Scopus); ~2.5 M€ competitive funding acquired.

The lab currently counts 9 researchers, PhD candidates and students in computer science, medicine and engineering, working with clinicians across UKB.

RELEVANT PUBLICATIONS

Nicola Rieke, Jonny Hancox, Wenqi Li, …, **S. Albarqouni**, et al. **The Future of Digital Health with Federated Learning**. *npj Digit. Med.* 2020.

Karim Lekadir, Alejandro F Frangi, Antonio R Porras, …, **S. Albarqouni**, et al. **FUTURE-AI: International consensus guideline for trustworthy and deployable artificial intelligence in healthcare**. *The BMJ* 2025.

S. Albarqouni, Christoph Baur, Felix Achilles, et al. **Aggnet: deep learning from crowds for mitosis detection in breast cancer histology images**. *IEEE TMI* 2016.

Jean Ogier Du Terrail, Samy-Safwan Ayed, Edwige Cyffers, …, **S. Albarqouni**, et al. **Flamby: Datasets and benchmarks for cross-silo federated learning in realistic healthcare settings**. *NeurIPS* 2022.

Duy M. H. Nguyen, Hoang Nguyen, Nghiem Diep, …, **S. Albarqouni**, et al. **Lvm-med: Learning large-scale self-supervised vision models for medical imaging via second-order graph matching**. *NeurIPS* 2023.

RELEVANT PREVIOUS PROJECTS AND ACTIVITIES

Development of a Deep Learning Toolkit for MRI-Guided Online Adaptive Radiotherapy. Funded by German Research Foundation; 2022 – 2026; role: co-PI.

Deep learning to estimate aging from chest imaging. Funded by German Research Foundation; 2023 – 2026; role: co-PI.

SyriaLeishAI+ — Multimodal machine learning for AI-based diagnosis of cutaneous leishmaniasis in Syria, with Heidelberg University Hospital, the MENTOR Initiative, the WHO and CIDEIM. Funded by the Federal Ministry of Research, Technology and Space (BMFTR) through GLOHRA; awarded, 2027 – 2028; role: PI and lead of the AI work package.

EEDA (2023) and **SANAD** (2025) — two DAAD Ta'ziz projects funded by the German Federal Foreign Office: EEDA, Affordable AI and Collaborative Federated Learning for Global Healthcare, with Beirut Arab University, Lebanon; SANAD, Strategic Arab-German Network for Affordable and Democratized AI. Role: PI.

BIGPICTURE — IMI2 public–private consortium building a European repository of digital pathology slides and AI tools (grant agreement 945358; Innovative Medicines Initiative 2 with EU Horizon 2020 and EFPIA). Participant at TU Munich (federated learning, with Owkin) until 2020, before the consortium started in 2021; no longer a consortium member.

SIGNIFICANT INFRASTRUCTURE AND TECHNICAL EQUIPMENT

Lab GPU server at Bonn: 8× NVIDIA A100 (64 GB), plus access to university and national HPC resources.

Open Medical Inference (OMI) network: national infrastructure of the Medical Informatics Initiative (BMFTR) for privacy-preserving AI training and inference across 16 partner sites in 4 MII consortia; our role: scientific lead. Details: albarqouni.github.io/projects/omi.

CoMI AI marketplace (internal) with 12 AI services.

Clinical imaging (CT, MRI, X-ray, ultrasound) and digital pathology at UKB, including high-resolution whole-slide scanners.

Open resources: curated datasets, open-source code and benchmarks published by the lab — datasets, code, github.com/albarqounilab.

NETWORKS AND MEMBERSHIPS

Global Young Academy (GYA) (Elected Member); European Laboratory for Learning and Intelligent Systems (ELLIS) (Elected Member); Arab-German Young Academy of Sciences and Humanities (AGYA) (Elected Member); German Alliance for Global Health Research (GLOHRA) (Steering Committee Member); aiaudit.org — ITU/WHO FG-AI4H AI audit network (Contributor (via Helmholtz Munich)); MICCAI-RISE (mentoring for early-career researchers) (Founder and Board Deputy); Palestine Young Academy (PYA) (Co-founder and Member); Palestinian Higher Council for Innovation and Excellence in Diaspora (Founding Member); IEEE (EMBS; Computer Society) (Senior Member); European Society of Radiology (ESR) (Member); MICCAI Society (Member).