

New Research Project ODELIA Launches to Revolutionise Artificial Intelligence in Healthcare using Swarm Learning

On January 1, 2023, a new EU-funded research project establishing an Open Consortium for Decentralized Medical Artificial Intelligence (ODELIA) has officially begun, with the goal of revolutionising Artificial Intelligence (AI) in healthcare through the use of Swarm Learning (SL). Over the next five years, the project aims to overcome the obstacles of data collection in healthcare by utilising SL, where partners work together to train AI models without the need to share any personal patient data. Thereby, ODELIA will break data sharing boundaries and accelerate the scale-up of medical AI in Europe for the benefit of European citizens, patients, and clinicians.

AI models in healthcare have the huge potential to improve decision-making in clinical routine resulting in earlier, better, and more precise diagnosis, prognosis, and treatment of diseases. One of the main challenges in implementing AI in healthcare is the lack of large enough datasets to train models with. This is especially true for cancer screening, where the collection of data faces severe practical, ethical, and legal obstacles. ODELIA aims to overcome these obstacles by implementing SL, a novel approach to AI training that allows for privacy-conserving training of medical AI algorithms without sharing any sensitive and private data.

ODELIA's main objective is to build the first open-source software framework for SL, providing an assembly line for the streamlined development of AI solutions. The project partners will collaborate to develop the first clinically useful AI algorithm for the detection of breast cancer in magnetic resonance imaging (MRI), using a distributed database that exceeds all previous studies. This will not only deliver a useful medical application, but also prove the clinical benefit of SL in terms of accelerated development, increased performance, and robust generalisability to ultimately improve treatment and healthcare for European patients.

The success of the ODELIA project is expected to push partners to serve as nuclei for the exponential growth of the SL network and extend SL to a multitude of medical applications. This will provide patients, healthcare providers, and citizens in Europe with a digital infrastructure that enables the development of expert-level AI tools on big data without compromising data safety and data privacy.

"We are thrilled to officially launch the ODELIA project and begin working towards our goal of establishing an open-source SL framework," says Dr. Daniel Truhn of the University Hospital Aachen, one of the project's two Scientific Coordinators. "SL has the potential to address the challenges of data collection and providing a framework for collaboration in AI training, and ultimately improve the quality of healthcare for patients in Europe," said Prof. Jakob N. Kather of the Else Kröner Fresenius Center for Digital Health at Technische Universität in Dresden, who acts as the other Scientific Coordinator for ODELIA.

About ODELIA

The ODELIA consortium brings together partners from twelve academic institutions and industry partners from across Europe: European Institute for Biomedical Imaging Research (Austria), University Hospital Aachen (Germany), Vall d'Hebron Institute of Oncology

(Spain), Mitera Hospita (Greece), Radboud University Medical Center (Netherlands), University Medical Center Utrecht (Netherlands), Ribera Salud (Spain), Fraunhofer Institute for Digital Medicine MEVIS (Germany), OSIMIS (Belgium), Technische Universität Dresden (Germany), University of Zurich (Switzerland) and University of Cambridge (United Kingdom). The project will run from January 2023 to December 2027. Total funding: € 8 691 755.00. Website: www.odelia.ai

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