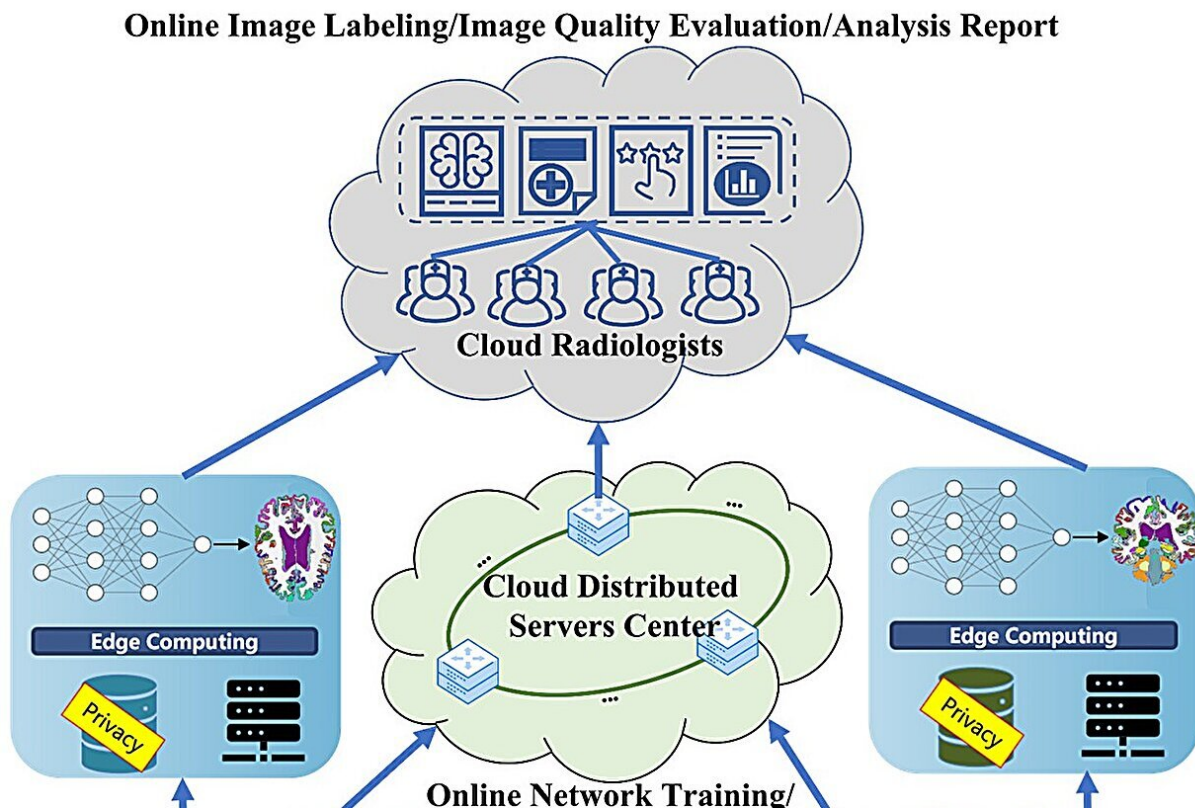# Cloud-magnetic resonance imaging system in the 6G and AI era

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The workflow of Cloud-MRI system. Credit: Yirong Zhou., et al

Magnetic resonance imaging (MRI) has played an important role in modern medical diagnosis, generating petabytes of crucial data annually across health care facilities worldwide. However, the challenges in big

data storage, data accessibility, data security, etc., have impeded its potential in further enhancing global health care.

To that end, Professor Xiaobo Qu and his research team at Xiamen University have developed the Cloud-MRI system. This new platform facilitates seamless data sharing and improves diagnostic capabilities across health care institutions.

"Traditional methods of managing MRI data face significant limitations, from storage constraints to barriers in collaborative research," Professor Qu explains. "Our Cloud-MRI system will address these challenges by harnessing the power of distributed cloud computing, ultra-fast 6G bandwidth, edge computing, federated learning, and blockchain technology."

The core of the Cloud-MRI system is its capability to upload k-space raw data, essential for MRI reconstruction, to unified servers or local edge nodes in the ISMRMRD format, a standard vendor-neutral file format for MRI research and development. This facilitates rapid image reconstruction and enables advanced artificial intelligence (AI)-driven tasks, significantly enhancing diagnostic efficiency.

"The first generation of Cloud-MRI system has been set up at csrc.xmu.edu.cn/CloudBrain.html , enabling the multiple vendor data reading, AI-based MRI image reconstruction, radiologists' blind image quality evaluation, metabolic spectrum analysis, and visualized AI programming (without coding)," Professor Qu emphasizes "We anticipate successful Cloud-MRI system will lead to transformative impacts on medical diagnostics and patient care."

The team published their study in the journal *Magnetic Resonance Letters*.

More information: Yirong Zhou et al, Cloud-magnetic resonance imaging system: In the era of 6G and artificial intelligence, *Magnetic Resonance Letters* (2024). DOI: 10.1016/j.mrl.2024.200138

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