uMR 680

1.5T Wide Bore System
with ‘3.0T-like’ Performance

uAiFI inside

uMR 680

1.5T Wide Bore System With ‘3.0T-like’ Performance

The uMR® 680 was designed with a high performance system: outstanding gradient performance of 45 mT/m & 200 T/m/s, up to 96 RF receiver channels and excellent magnetic field homogeneity with a 70cm wide bore, expanding your capabilities in the field of clinical applications and research. Empowered by uAIFI Technology, the uMR® 680 delivers '3.0T-like' image quality and achieves a new standard in workflow and patient care.

‘3.0T-like’ High Performance Hardware

Uniform 1.5T Magnet
70cm wide Bore

‘3.0T-like’ Gradient
45mT/m & 200T/m/s

‘3.0T-like’ RF System
⩾72 RF receive channels

‘3.0T-like’ Reconstruction Hardware
Ultra-fast real-time reconstruction

uAIFI Technology

DeepRecon
Deep learning based image reconstruction technology, simultaneously improving SNR and image sharpness.

EasySense*
Contactless sensing of patients’ respiratory motions

QScan
Quiet scanning for better patient satisfaction

EasyScan & Plan
Simplified workflow

*WIP

uMR 680

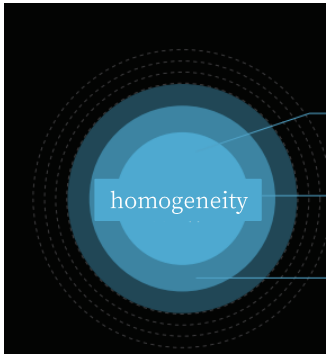
Ultra-uniform Wide Bore Magnet

The 70cm wide bore reduces the claustrophobia of patients and provides a comfortable scanning experience, especially for special patients such as children, pregnant women, and obese patients. The ultra-uniform magnet design provides more accurate imaging effects for off-center, high-resolution anatomical imaging and high-sensitivity functional imaging.

Precisely control the winding position, size and relaxation of the MRI to ensure excellent magnetic field uniformity.

Using high-level welding process, precise heat input, each pattern can withstand ultra-low temperature and high pressure at the same time and has high air tightness to ensure "zero" liquid helium volatilization

Equipped with high-level scientific research shimming technology to achieve faster and more accurate large-scale and local shimming effects, ensuring high-definition and accurate imaging, as well as more uniform grease pressing effect, smaller dispersion deformation, and more accurate spectral measurement, etc.



0.033ppm*
@30cm DSV

0.831ppm
@50cm DSV

*V-RMS 24 plane plot

uMR 680

‘3.0T-like’ Gradient

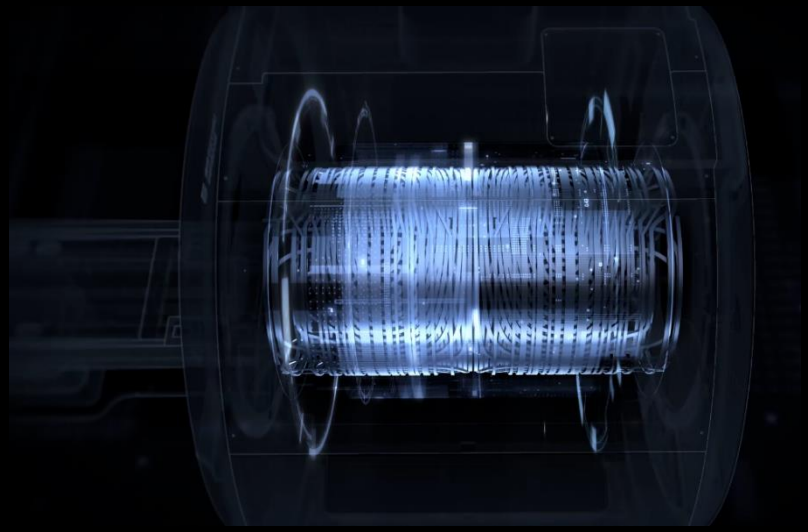
The remarkable 45 mT/m & 200 T/m/s (simultaneous on each axis) unlock higher signal-to-noise ratio (SNR) for neuro and cardiac imaging.

Gradient Field Strength

45mT/m

Gradient Slew Rate

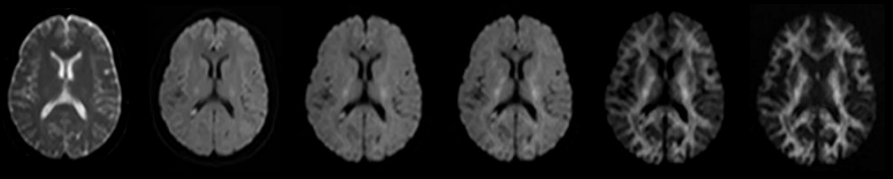
200T/m/s



High Performance GPA

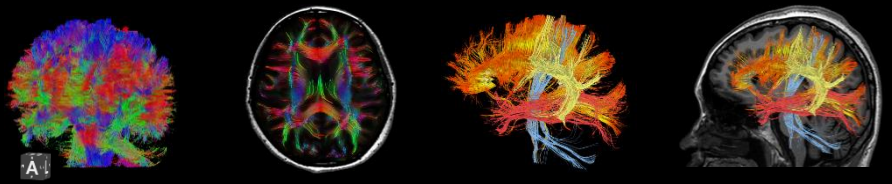
2.05MW GPA

High SNR, "zero deformation" high b-value DWI



DWI b0 | DWI b1000 | DWI b2000 | DWI b2500 | DWI b5000 | **DWI b10000**

256 Directions DTI



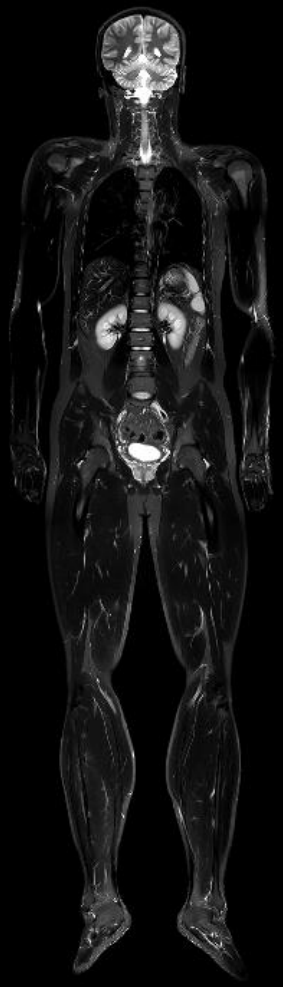
uMR 680

‘3.0T-like’ RF System

⩾72 independent RF receiving channel architecture, combined with new generation of high-density coils, supports higher-density whole-body coil unit coverage, realizes simultaneous acquisition of higher channels in a single scanning FOV, and supports higher acceleration in multiple directions, significantly improving Image quality and imaging speed.

⩾72 RF receive channels

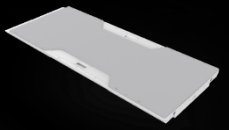
New Generation High-density Coils



24 ch
Head & Neck Coil

24ch
Cardiac Coil*

32ch
Spine Coil



24ch
Body Array Coil*

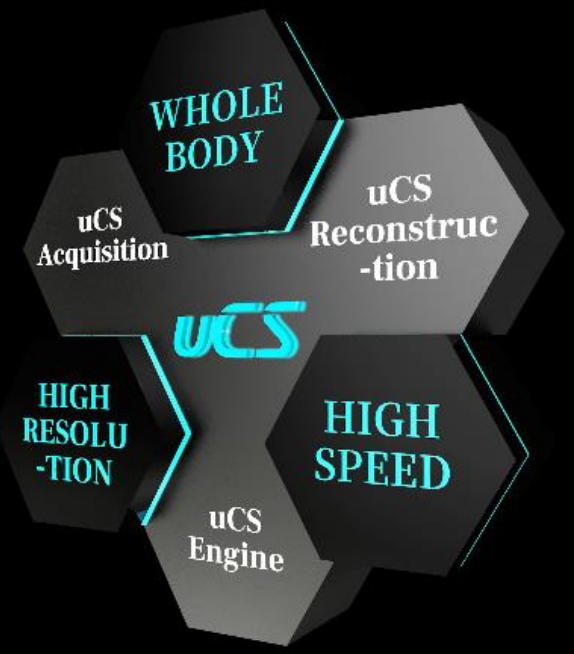
24ch
Foot & Ankle Coil*

*Optional

uMR 680

‘3.0T-like’ Reconstruction Hardware

A new generation uCS platform with ultra-high speed acquisition, reconstruction, and engine. It provides sequences covering all body parts, which can be used for dynamic multi-phase scanning of abdomen , 3D isotropic imaging and 2D routine clinical scan.



16x
Acceleration

“0”
Time-delay, real-time reconstruction*

2D/3D/4D
Fully available

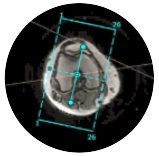
2.0sec/phase
Temporal resolution

** Typical reconstruction time varies on different clinical scenarios*

uAIFI Technology

Innovation. Uncompromised.

The uAIFI Technology Platform includes a series of innovations including both hardware and software to fully empower uMR®: EasySense, the industry's first remote dual-source millimeter-wave contactless respiratory motion sensing technology; AI-assisted compressed sensing (ACS) , an integral MR acceleration technology capable of doing acquisitions in seconds; and DeepRecon, a deep learning (DL) based image reconstruction technology, that simultaneously improves SNR and image sharpness. We also offer QScan, a quiet scanning technique for whole body, the SuperFlex Coil with remarkable flexibility and higher RF element density, and more.



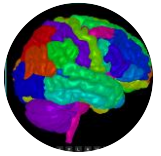
EasyScan

EasyPlan

QScan

EasySense

DeepRecon

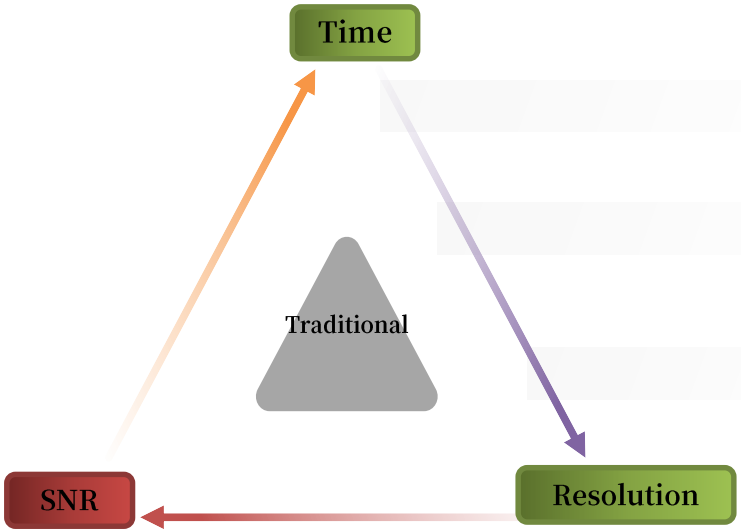


Post-Processing

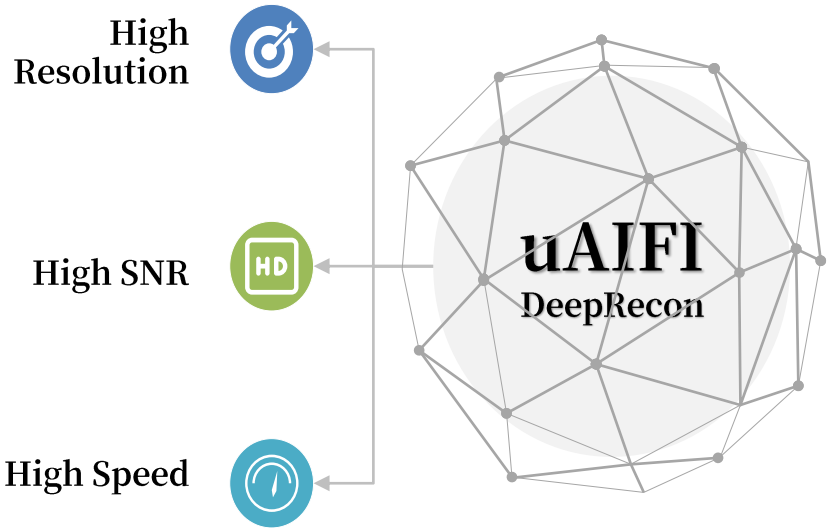
uAIFI Technology

AI for Imaging

The trade-off between MRI time and image quality is a major limitation to better and faster clinical applications of MRI. With the rapid development of AI artificial intelligence in the medical field, the use of deep learning to solve the problem that traditional filtering techniques cannot effectively improve image quality is becoming the mainstream development trend of the times. Deep learning can effectively learn advanced features from massive data by using a multi-layer framework structure, and the algorithm performance is better than traditional algorithms in terms of image quality improvement.



Limitations of traditional technology

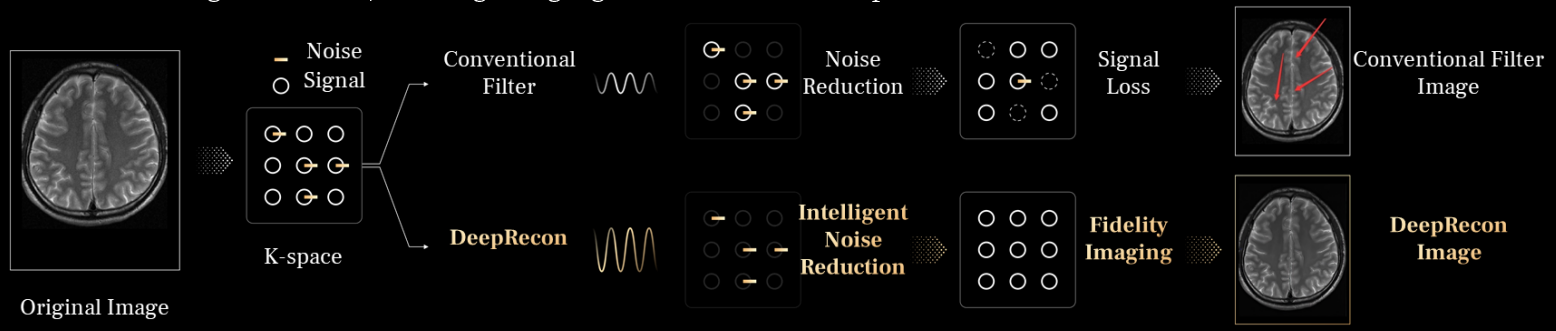


Innovation breaks the limitations: achieve a balance

uAiFI Technology

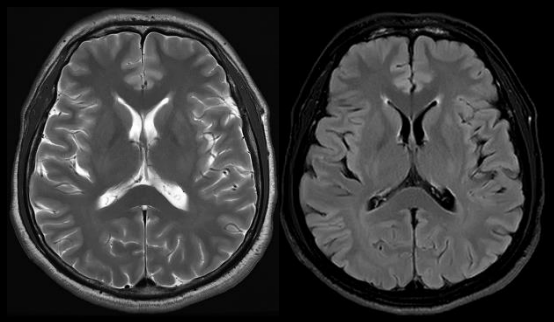
DeepRecon

Based on AI deep learning network, it enables MRI reconstruction, effectively identifies and intelligently removes noise, and obtains images with higher SNR, higher resolution and richer details without prolonging or even reducing scanning time. The application covers anatomical structures of various parts of the body and rich contrast scenes, and the fidelity module design realizes dual fidelity control in contrast and image structure, making imaging more reliable than pure AI.



1.5T System with ‘3.0T-like’ Performance

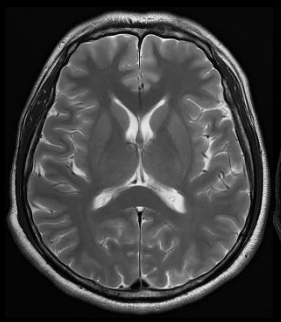
3.0T



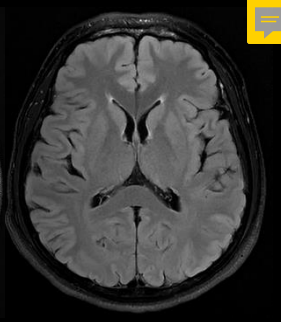
T2 FSE TRA
0.8×0.8×5 mm³
2:20 min

T2 FSE TRA FLAIR
0.6×0.6×5mm³
2:08 min

1.5T
With DeepRecon



T2 FSE TRA
0.8×0.8×5 mm³
2:20 min



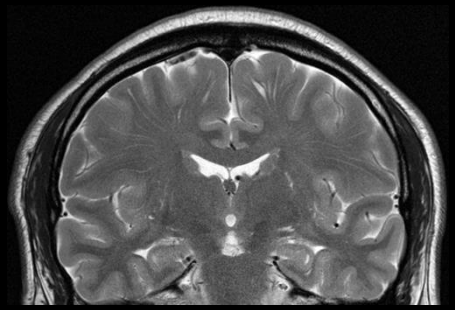
T2 FSE TRA FLAIR
0.6×0.6×5 mm³
2:08 min

uAiFI Technology

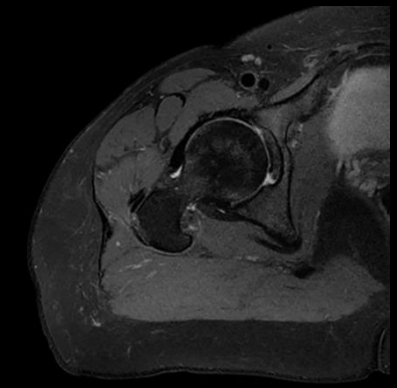
DeepRecon

Under the same protocol, it can achieve high resolution and noise reduction fidelity, greatly improve the image SNR and provide rich image details.

Conventional

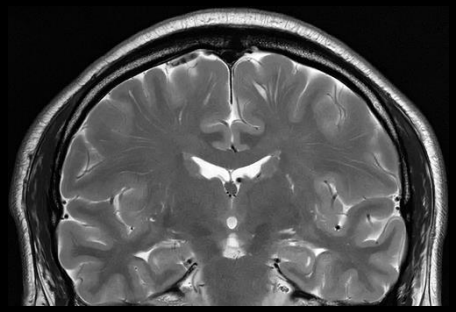


T2_FSE_TRA
0.4×0.4×4.0 mm^3

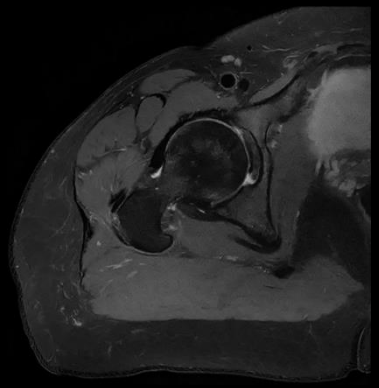


PD_FSE_TRA_FS
0.63×0.63×4.0 mm^3

DeepRecon

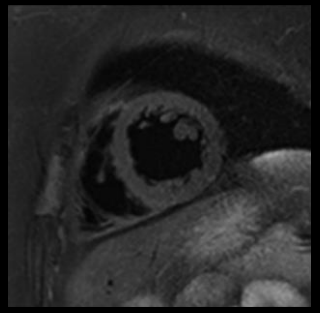


T2_FSE_TRA
0.2×0.2×4.0 mm^3

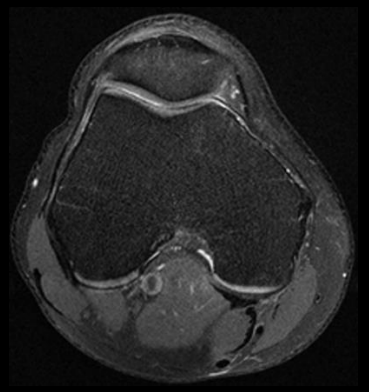


PD_FSE_TRA_FS
0.32×0.32×4.0 mm^3

Conventional

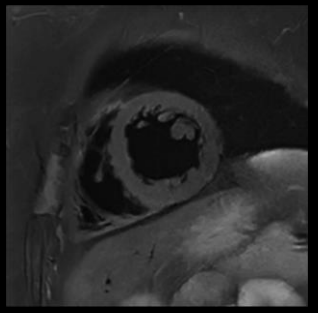


T2 FSE DB SPAIR SAX
1.18×1.18×8.0 mm^3

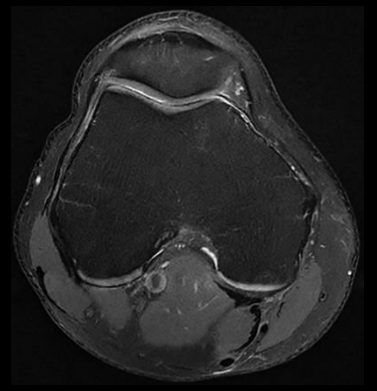


PD_FSE_TRA_FS
0.53×0.53×3.0 mm^3

DeepRecon



T2_FSE_COR_FS
0.78×0.78×4.0 mm^3



PD_FSE_TRA_FS
0.35×0.35×3.0 mm^3

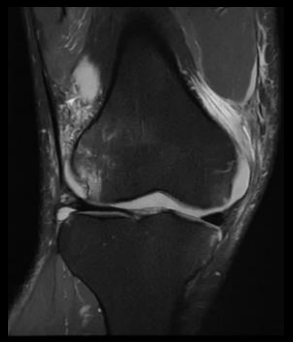
uAiFI Technology

uCS × DeepRecon

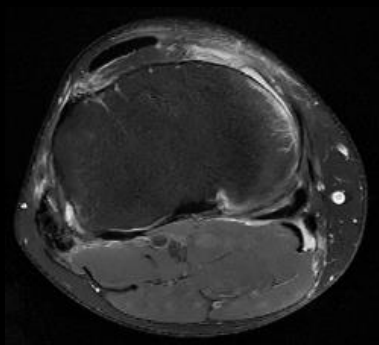
uCS combined with DeepRecon technology can obtain high-quality clinical images in less time.

uAiFI DeepRecon

T1W FSE TRA
0.3×0.3×3mm
AD:1:16min



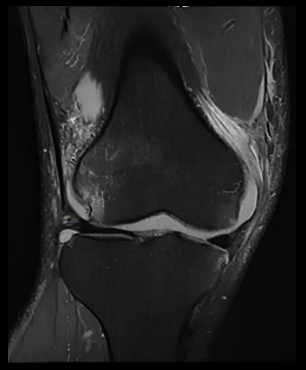
PDW FSE FS TRA
0.4×0.4×3mm
AD:1:24min



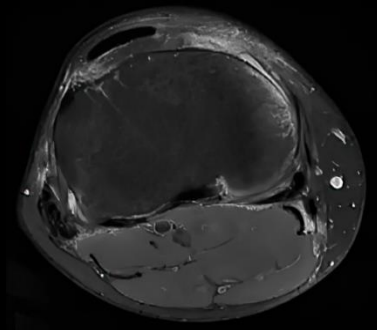
PDW FSE FS TRA
0.4×0.4×3mm
AD:1:40min

uAiFI DeepRecon × uCS 2.0

T1W FSE TRA
0.3×0.3×3mm
AD:41s



PDW FSE FS TRA
0.4×0.4×3mm
AD:52s

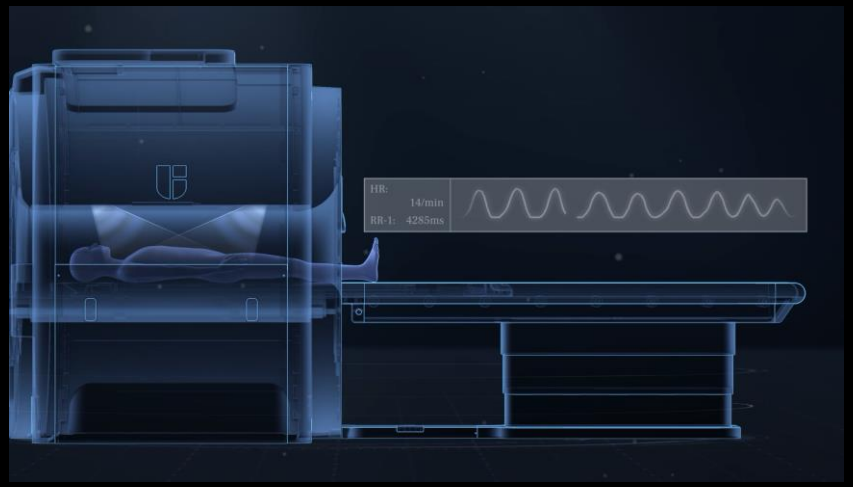


PDW FSE FS TRA
0.4×0.4×3mm
AD:58s

uAiFI Technology

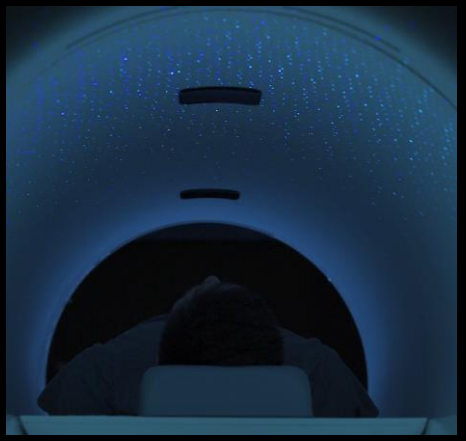
Contactless sensing of patients' respiratory motions

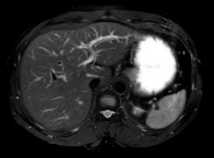
The dual-source phased array millimeter-wave radar can pass through obstacles such as clothing and sheets to realize non-contact intelligent remote sensing of vital signs, directly detect the patient's breathing state, and realize free abdominal breathing imaging without the need for traditional breathing straps and other accessories.



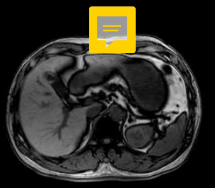
Non-contact remote sensing: scanning more freely
Dual source detector: more accurate scanning
Time resolution: 20ms
Motion detection resolution: 0.1mm

Free Breathing Abdomen Imaging

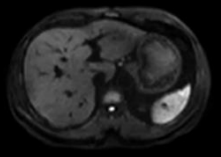




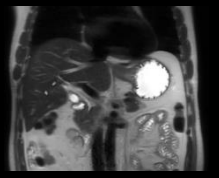
T2 FSE TRA FS
With EasySense



T1 TRA Dualecho
With EasySense

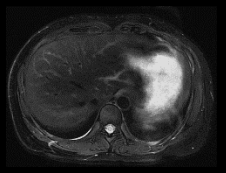


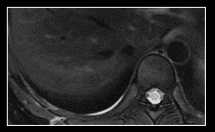
EPI DWI TRA b800
With EasySense



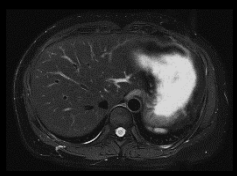
T2 SSFSE COR
With EasySense

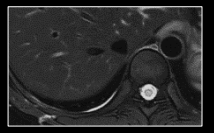
Unaffected by the tightness of the binding, the imaging is more stable





Breathing belt loose, false trigger
With respiratory trigger





Stable sensing signal, precise triggering
With EasySense

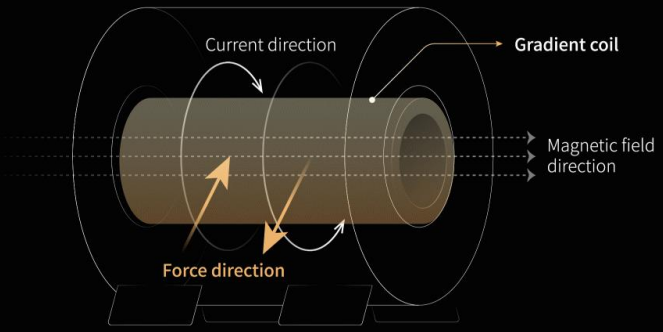
uAiFI Technology

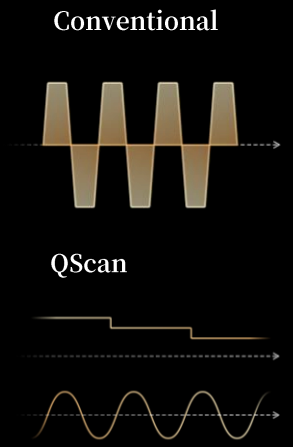
QScan

Noise reduction is achieved from the source of MRI scan noise, providing the best care for special patients such as infants and young children. Achieve full sequence coverage during scanning, including 2D/3D anatomical imaging and DWI , SWI, MRS spectroscopy and other functional imaging of the whole body, as well as pre-scan.

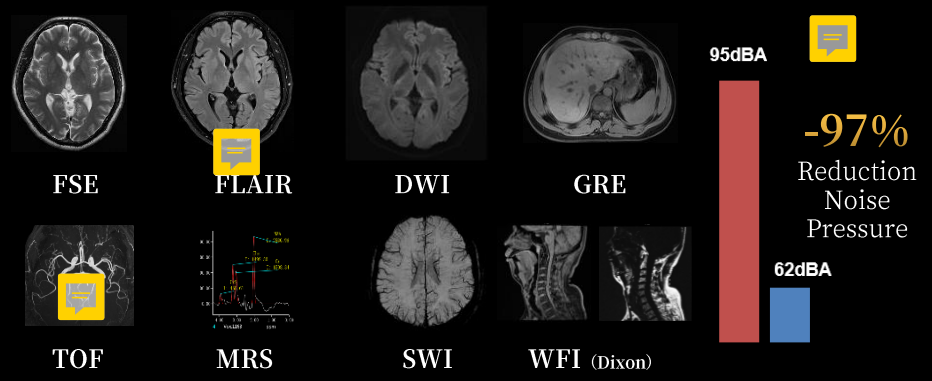
QScan Design

Noise source: gradient vibration





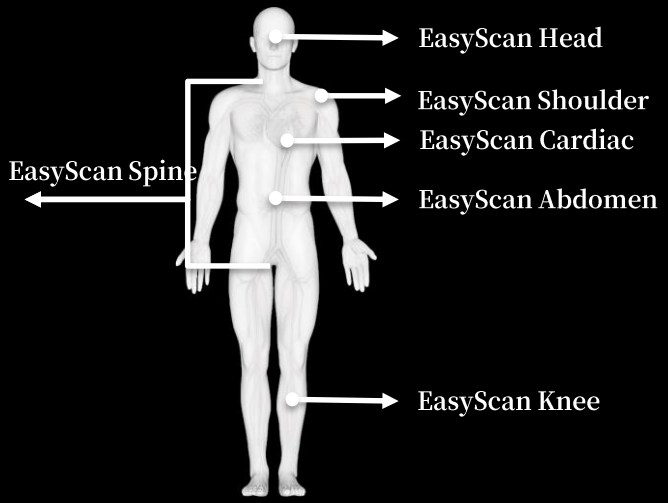
2D, 3D, Full Body Coverage



uAiFI Technology

EasyScan

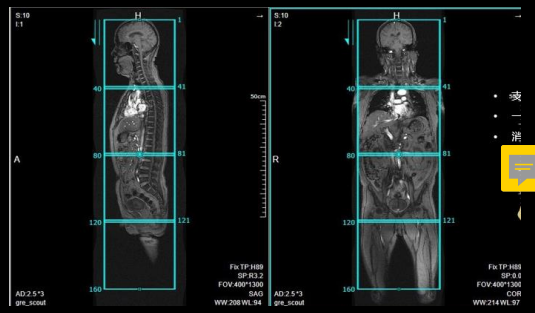
Intelligent, automatic, and consistent anatomical orientation.



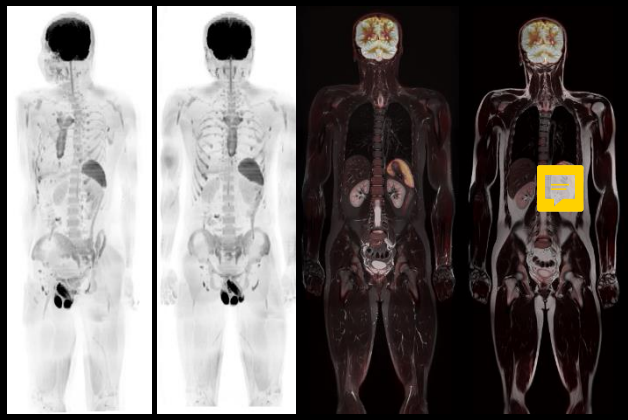
uAiFI Technology

EasyPlan

Automatic multi-step scan planning and image stitching with ONE-click.



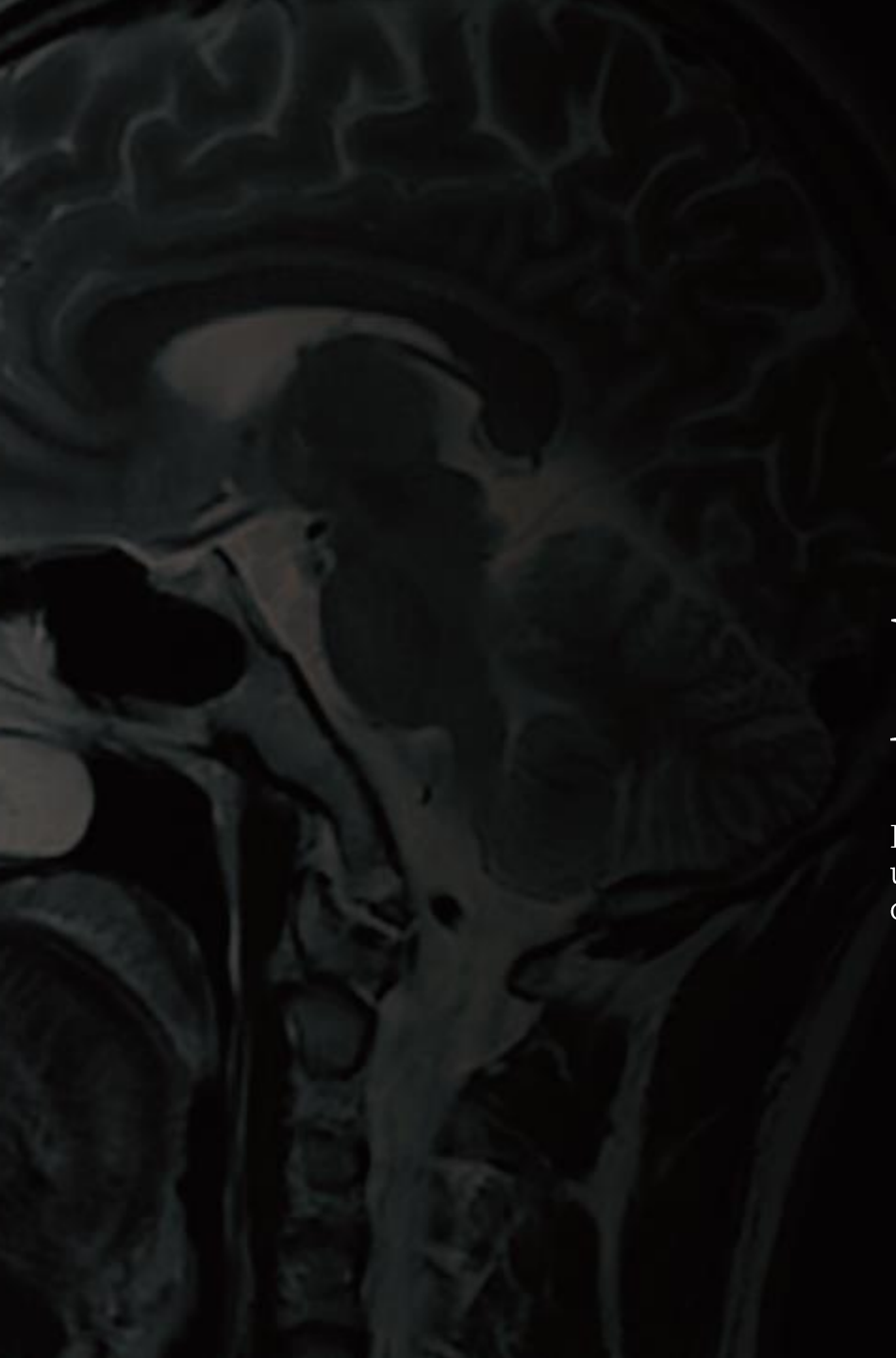
‘PET-like’ Whole-body DWI Imaging



DWI b800 with EasyPlan

T2 & b800 Fusion

STIR & b800 Fusion



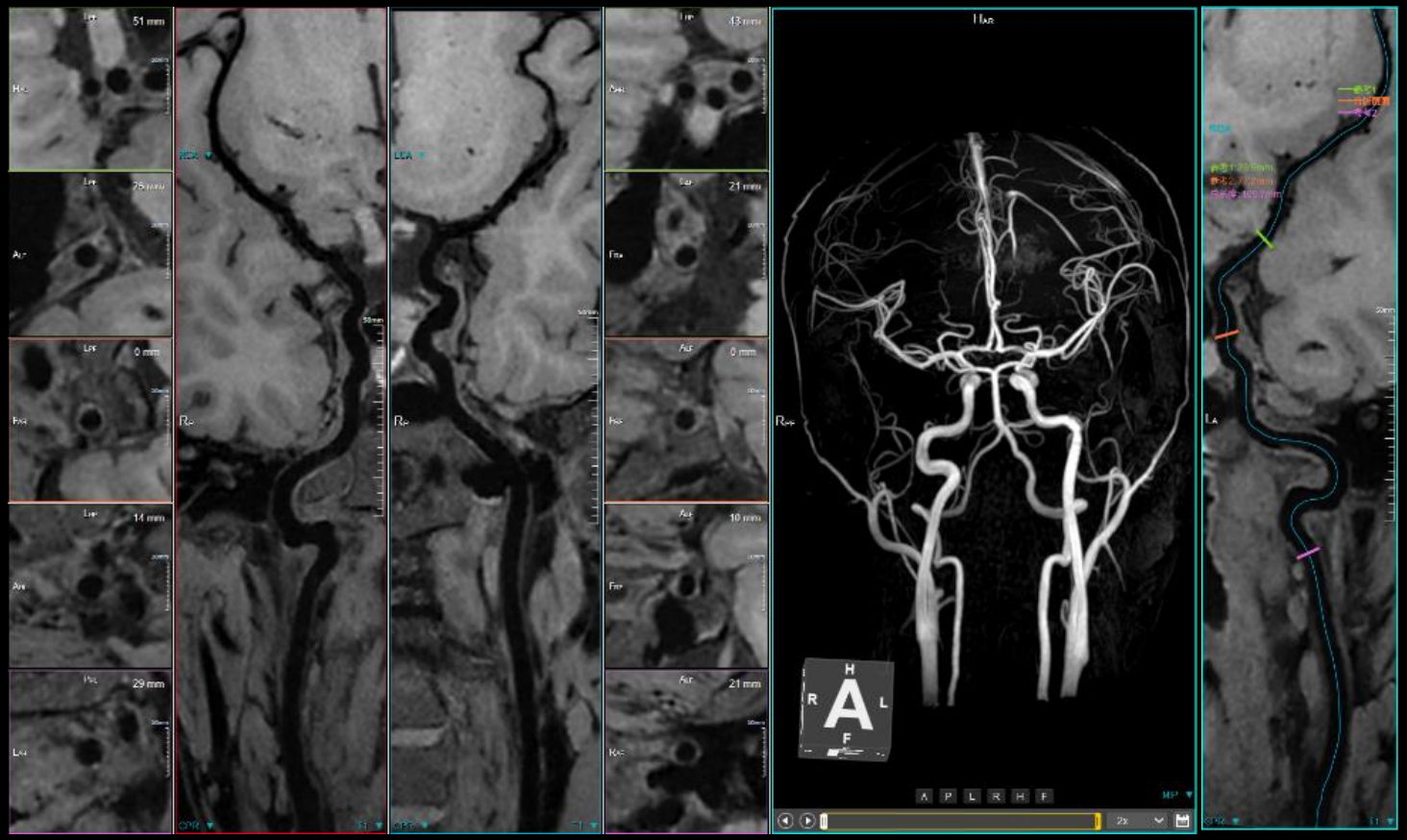
uMR 680 Advanced Clinical Application Solutions

Based on the ‘3.0T-like’ high-performance hardware system and uAIFI Technology, uMR 680 provides users with a series of high-end clinical application solutions

uMR 680

Intracranial High-resolution 3D Isotropic Imaging of Vascular Plaque

High resolution, SNR, and imaging speed contributes greater clinical value in the prevention, diagnosis, and prognosis evaluation of cerebrovascular disease.



uCS 2.0

T1W MATRIX 3D

0.7×0.7×0.7 mm³

AD: 7:32 min

Head Coil - 24*

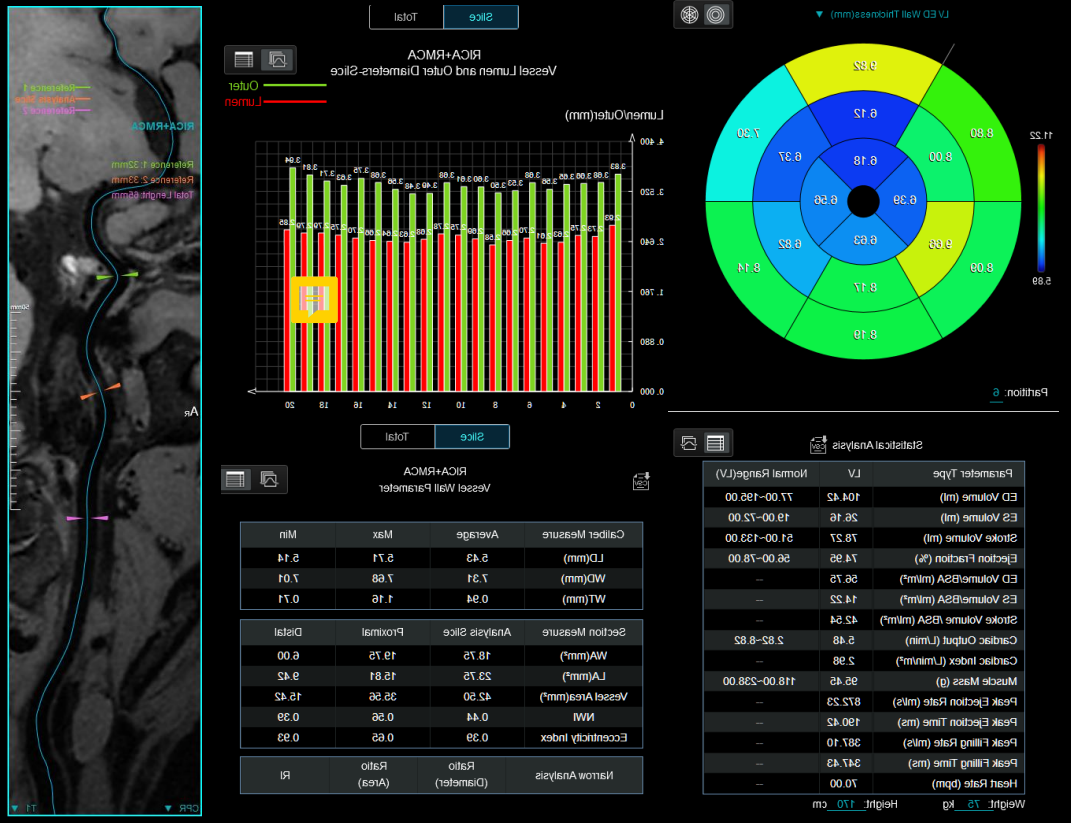
*WIP

uMR 680

Intelligent Post-processing Analysis of Vascular Plaque*

Supports automatic extraction of blood vessel centerline, automatic vessel wall analysis, quantitative measurement of plaque size, plaque load, and lumen stenosis rate, realizes intelligent plaque composition analysis and 3D Mesh fusion rendering, and supports sending, editing and printing of structured reports .

- Automatic centerline extraction
- Vascular inner and outer diameter change & trend graph
- Pipe Wall Thickness Analysis
- Plaque composition analysis tools and delineation
- Plaque Qualitative & Quantitative Analysis
- 3D Fusion Rendering



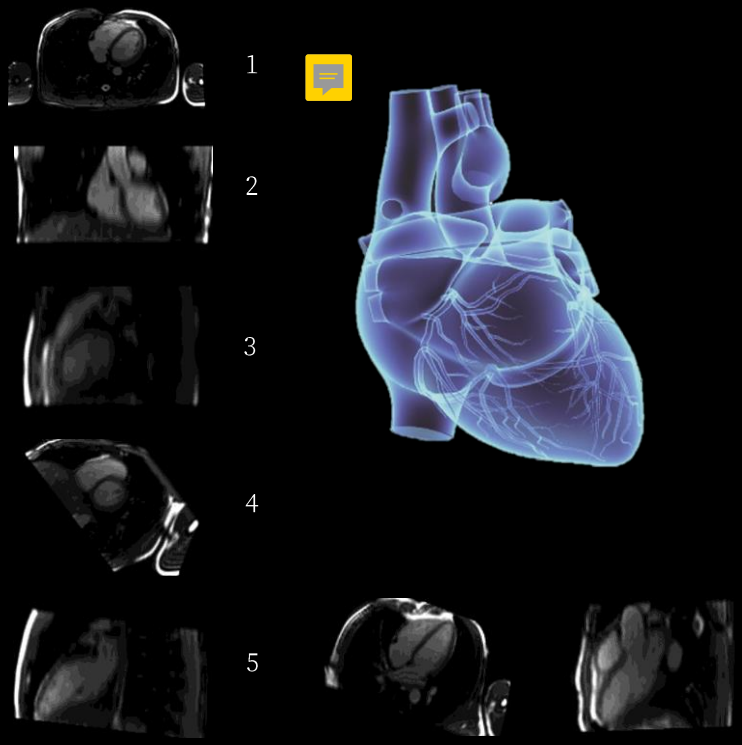
*WIP

uMR 680

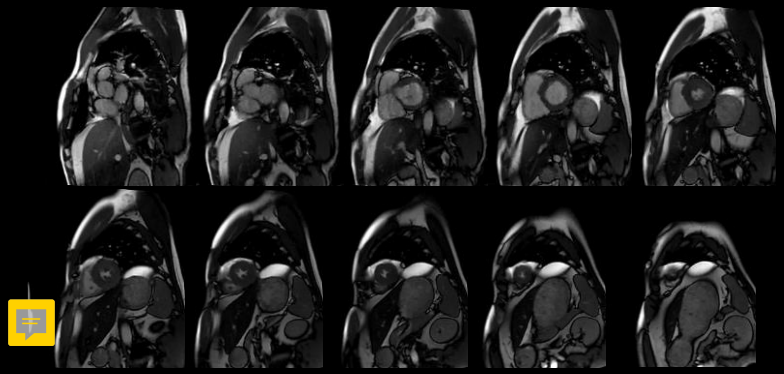
Advanced Cardiac Imaging Solutions

Smarter and faster cardiac imaging workflow, which can automatically calculate 7 standard planes including "short axis", "two chambers", "three chambers" and "four chambers", greatly reducing the cardiac positioning work. At the same time, the traditional 10 breath-holds are changed to 1 breath-hold, which greatly shortens the time of cardiac cine imaging, significantly improves the examination success rate of patients who cannot hold breath or cannot tolerate long-term examinations, and is more conducive to accurate cardiac function analysis.

uAIFI EasyScan Cardiac



uCS Cine
single breath-hold whole heart cardiac cine imaging



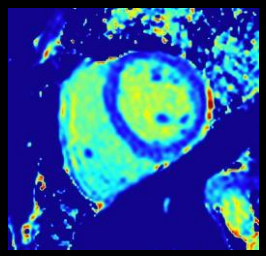
uCS Cine SAX AD: 16.7s

uMR 680

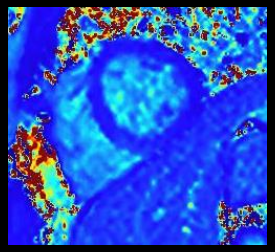
Advanced Cardiac Imaging Solutions

It supports comprehensive and rich advanced cardiac imaging applications and post-processing, including Mapping parameter quantification, flow quantification, coronary imaging and intelligent post-processing for cardiac function analysis.

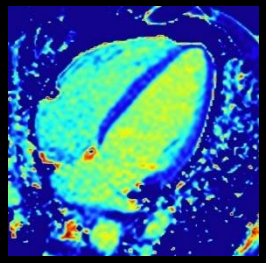
Mapping



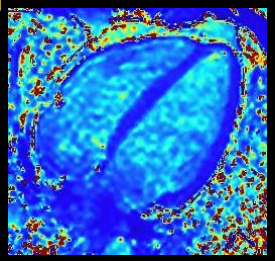
T1 Mapping SAX



T2 Mapping SAX

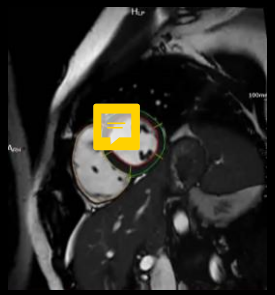


T1 Mapping 4ch

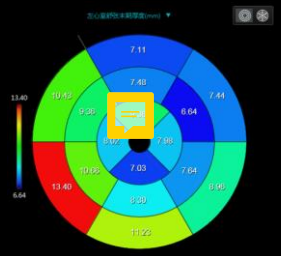


T2 Mapping 4ch

Cardiac function analysis

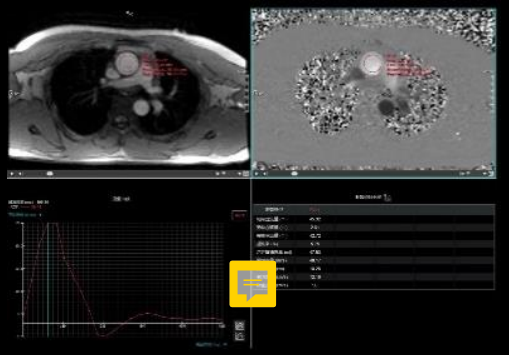


Fully automatic extraction of left and right ventricular contours



Fully automated bull's-eye map for assessing myocardial thickness

Cardiac Flow Quant

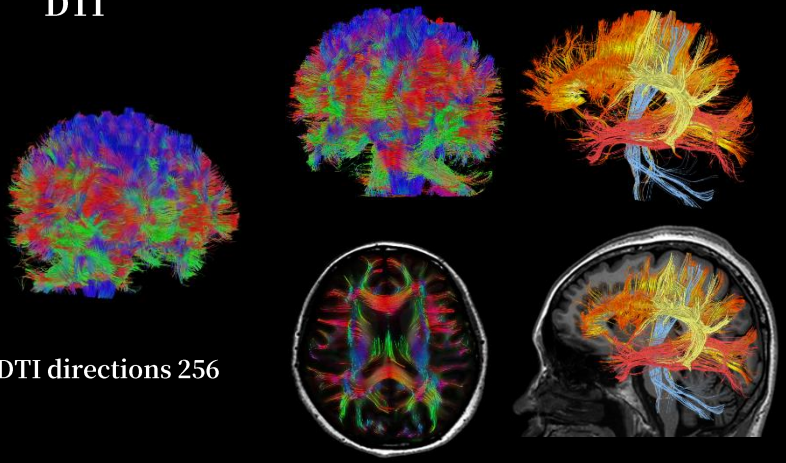


uMR 680

Advanced Applications for Scientific Research

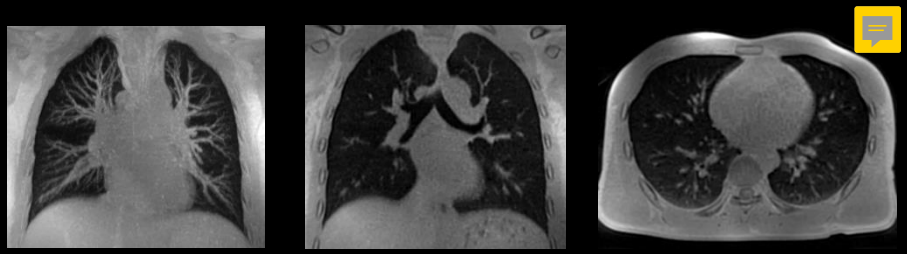
It supports comprehensive and rich scientific research applications, including DTI, DKI, UTE, Multiband, etc.

DTI

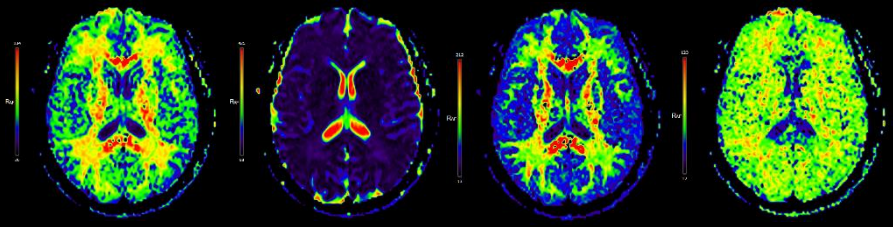


DTI directions 256

UTE

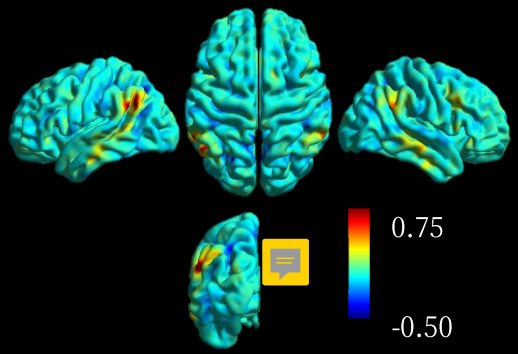


DKI



MK MD RK AK

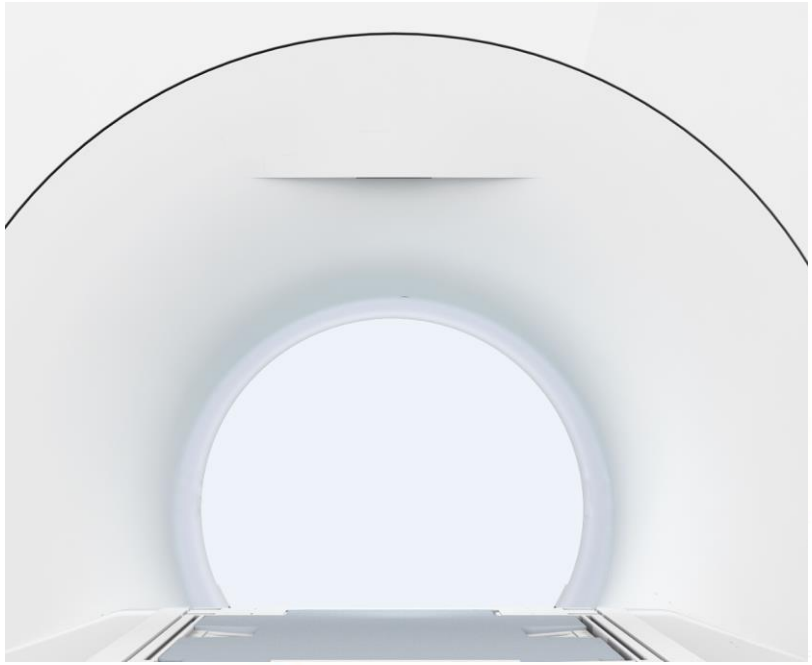
MultiBand



DMN（Default mode network）
Functional connectivity
MultiBand Factor：8

Human-Centered Design

Focusing on user experience, uMR Omega combines accurate operation with a lightweight and artistic design. We bring aesthetic enjoyment and ease of use to the technology, delivering care, trust and respect through our design.



Pleasing Aesthetics

Our design scheme integrates oriental aesthetics with minimalism, presenting a seamless fusion of traditional and modern styling.

User-Friendly Design

The product design delivers comfort, safety, efficiency and ease-of-use. By applying ergonomic principles the uMR Omega combines innovative design with optimal functionality in order to provide a better possible user experience, optimizing patient comfort during the examination.

Sophisticated Craftsmanship

Driven by the tenets of precision design, we fine-tune every technological detail to embody the spirit of craftsmanship in every product.