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New York University Startup MICSI is Transforming MRI with Higher-Resolution, More Efficient Imaging

MICSI (Microstructure Imaging, INC) is a spin-off company from New York University (NYU) that is developing technology to improve the quality of medical images. The company was founded in 2018 by Gregory Lemberskiy, who earned his PhD in biomedical imaging from the NYU Grossman School of Medicine, and Dr. Benjamin Ades-Aron, who earned his PhD in electrical engineering from NYU Tandon School of Engineering. Dr. Lembersky serves as the company's CEO and Dr. Ades-Aron serves as CTO.

MICSI recently announced FDA 510k clearance for its MICSI-RMT software suite, an advanced denoising solution that enables higher image resolution, shorter MRI scan times, and new diagnostic capabilities for low-field MRI systems, without compromising image quality. The FDA clearance marks a significant milestone in the company's journey to enhance and elevate the standard of medical imaging and move it in the direction of objective, high-quality imaging biomarkers.

An MRI scan can generate a range of images, revealing details about inflammation, tissue density, and even activity related to neuronal processes. Image quality depends on the strength of the scanner's magnetic field, measured in Teslas (T); most scanners operate at 1.5 T and cost around $1.5 million. MICSI's software enhances images from a 1.5 T machine to a quality comparable to a 3 T scanner, which typically costs closer to $3 million. This upgrade not only reduces upfront equipment costs but also shortens scan times, allowing more patients to be served, potentially saving lives and generating an additional $2 million in revenue per scanner each year.

MICSI-RMT is especially transformative for neuroimaging applications that demand precision, such as stroke management. Enhanced imaging enables timely, targeted interventions in critical brain regions, supporting better patient outcomes. The clarity provided by MICSI-RMT is also invaluable for complex procedures like awake craniotomies, where neurosurgeons map functional brain areas in real-time. This technology holds the potential to make such invasive procedures obsolete by delivering essential pre-surgical insights, reducing the need for direct intervention, and improving overall surgical planning.

Beyond operational and clinical efficiencies, MICSI is setting new standards in MRI diagnostics by addressing a long-standing challenge in MRI technology: reducing image noise without sacrificing detail. With its ability to enhance image quality across functional and diffusion MRI scans, MICSI-RMT is reshaping MRI into a precise, quantitative tool, promising better diagnostic accuracy and patient outcomes.

MICSI envisions a future where high-quality, quantitative MRI imaging becomes the standard, accessible across healthcare settings, and capable of providing clinicians with clear, actionable insights.