Docket #: S21-150

Low-cost, portable, and high-resolution pediatric volumetric ultrasound scanner for real-time imaging with anesthesia or radiation

Ultrasound technology is a safe, high-resolution, and cost-efficient tool for imaging. Other modalities, such as MRI or CT, may require the use of anesthesia. This makes it difficult to image pediatric patients and patients sensitive to anesthesia. Due to its real-time imaging capabilities and lack of ionizing radiation, ultrasound imaging is a promising alternative to traditional diagnostic tools. The Ferrara lab at Stanford invented a low-cost, non-ionizing volumetric ultrasound imaging system that can achieve high-resolution comparable to those obtained from CT or MRI modalities. The invention leverages modular arrays of ultrasonic transducers to create large semi-cylindrical arrays seen in larger and more complex imaging systems. The 3D design enables the acquisition of MR and CT-format multi-slice images. In addition to its use for general screening and diagnosis, the invention is a highly portable technology that does not require patients to be anesthetized and does not expose subjects to ionizing radiation. This is the first volumetric imaging system that can be used for pediatric patients under 3 years old and eliminates claustrophobia induced from other imaging technologies, making the invention a valuable tool for research and clinical use.

Applications

- -Pediatric diagnostics and imaging
- -Research tool for clinical human and pre-clinical small animal studies

Advantages

- -There are no comparable devices currently on the market
- -High resolution and very fast image acquisition
- -No anesthesia or radiation is needed

Patents

- Published Application: WO2022241308
- Published Application: 20240225601
- Issued: 12,714,398 (USA)

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