

**Docket #:** S18-358

# **Contrast agent imaging with ultrasound using artificial intelligence**

Stanford researchers have developed a method that can leverage state-of-the-art techniques that are not clinically feasible to train a neural network to distinguish contrast agents versus background tissue in a way that is safe, real-time, and can expedite the translation of ultrasound molecular imaging for clinical use.

## **Stage of Research**

The researchers have demonstrated that a neural network is capable of learning to make contrast images based on dual frequency array signal inputs. The network was trained on contrast-enhanced ultrasound data acquired in tumors of mice, and was tested on new previously unseen data. The researchers are currently adding more data to the training dataset to improve the robustness of the neural network.

## **Applications**

- This method can be applied to contrast-enhanced ultrasound imaging, targeted microbubble imaging and ultrasound molecular imaging.

## **Advantages**

- This method does not need a destructive pulse and therefore can be applied in the clinical setting to real time contrast imaging.
- The neural network can be trained according to other state-of-the-art techniques, by utilizing array signals and two frequencies to perform imaging.

## **Publications**

- Provisional patent application is available under an NDA.

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