



Case #404

## **Sound Processing Software for Improved Audibility of Music/Speech in MRI**

Noise produced by functional MRI machines impedes the audibility of music and speech while also causing distraction. This approach applies a parametric equalizer to increase frequency components in proportion to the acoustic power spectrum of the MRI equipment. Further real time processing attenuates the overall frequency level to prevent over modulation and dynamic range compression to improve audibility. Processing can be applied to both digitally recorded or live audio and improves communication between the patient and the MRI operator.

### **Applications:**

- MRI equipment.

### **Advantages:**

- Improves audibility of music and speech.
- Simple software plug-in solution.
- Can improve both pre-recorded and live audio.
- Improves communication with patient.

### **Intellectual Property and Development Status:**

US Patent Nos. 8,908,884 and 9,634,632

Licensing rights available.

### **References:**

This system was used as a part of the following study: Cognitive-behavioral therapy increases prefrontal cortex gray matter in patients with chronic pain. Seminowicz DA PM24135432

### **Inventors:**

John Mantegna

### **Contact Information:**

Kerry Elizabeth Swift  
Technology Licensing Officer  
Kerry.Swift@med.uvm.edu  
802-656-8780