

William Meadus

Master's

Department of Biomedical
Engineering,
Faculty of Engineering

Image created from an MRI
scan of my own lungs

MRI Lung Water

Semi-finalist

Our lungs are incredible organs, but their complex sponge like structure can be somewhat fragile. Particularly, an increase in pressure or change of permeability to our capillaries quickly leads to excess fluid leakage. This is known as pulmonary edema, or elevated lung water, and is a common symptom heart disease and lung injury. In the case of acute heart failure, the presence of pulmonary edema can be used as an important prognostic sign. However current methods for precisely measuring the level of fluid are lacking.

My research aims to use magnetic resonance imaging to provide an accurate quantitative tool in measuring lung water. This image shows 9 slices taken from a 3D lung scan obtained with our MRI sequence, and is actually of my own lungs. Water level is shown on a color gradient, a patient with pulmonary edema would have many more bright blue regions. We aim to develop a consistent system that generate scans like these for all patient types and can provide an exact volume of lung water. This can hopefully fill the current gap in accurate technology surrounding pulmonary edema.