The HeartFlow Process

The HeartFlow Analysis starts when a patient undergoes a standard coronary Computed Tomography (CT) scan at a hospital or imaging center. The CT images are securely uploaded to our cloud. Next, we use advanced algorithms incorporating artificial intelligence to build a personalized, digital model of that patient’s coronary arteries. Our team of highly trained analysts then inspects this model, making any needed edits. Once this patient-specific model is completed, the HeartFlow process applies physiologic principles and computational fluid dynamics to compute the blood flow and $\text{FFR}_{\text{CT}}$ values at every point in the model. Throughout the process, we follow rigorous and well-established protocols to ensure consistent processing for every patient – no matter which site the data comes from.

The completed HeartFlow Analysis is a color-coded, digital 3D-model of the heart, reflecting the impact that blockages have on blood flow. This model can be viewed both on web browser and on mobile. The entire process for receiving a HeartFlow Analysis is conducted non-invasively, fits in with your current workflow and leverages the convenience of cloud computing for easy, and secure, data exchange.

Our Application of Artificial Intelligence

At HeartFlow, we apply the latest in artificial intelligence (AI). One of the most exciting areas in the field of artificial intelligence is image analysis, with major advances in recent years in areas such as facial recognition and image

Hear about HeartFlow in the ED

Dr. Robert Safian
Interventional Cardiologist, Beaumont Health, Heart & Vascular

“We’ve been working with HeartFlow for a number of years, and it’s incredible how quickly the product turnaround times have improved. Coronary CTA is our default test for patients who come to the emergency room with chest pain where time is critical; the turnaround time is so fast for getting a HeartFlow Analysis now, that we’re piloting using CT and $\text{FFR}_{\text{CT}}$ together for clinically stable patients that present in the ED. The technology is sophisticated and precise, because they’ve incorporated artificial intelligence with machine learning. Without a doubt, HeartFlow is our gold standard.”
HeartFlow uses this same technology – an advanced form of AI called deep learning – to analyze CT images and help create a personalized digital model for each patient.

What makes deep learning so powerful is the fact that as the algorithms are trained on more data, the performance of future product improves. Today, our deep learning algorithms have been trained using tens of thousands of CT images, and our data set is growing rapidly. We also use the input of our expert analysts, as well as data obtained from invasive methods, to further train the algorithms. This leads to powerful population-based insights. And with an intelligent system doing the legwork, physicians have more time to focus on providing optimal care for each patient.

The Impact

Our technology arms clinicians with actionable, highly-accurate information to aid in ensuring that each patient gets the treatment that is right for them.

Benefits of HeartFlow’s technology include:

- **Convenient**: More than 50% of analyses are completed and returned within 5 hours or less,* which allows the HeartFlow Analysis to fit into existing clinical pathways.

- **Accurate**: Data shows 86% accuracy vs. the gold standard of invasive FFR.

- **Consistent**: Our standardized processes maintain the same level of quality for each and every patient.

- **Enhanced**: Having a software-based product allows for rapid development cycles to respond to customer feedback regarding feature requests and defects.

Machines won’t replace physicians, but they absolutely can help. We think it’s time to take the best of technology and apply it to saving lives.

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* As of 31 March 2018. Subject to change.