

Tissue Characterization and Border Detection using Intravascular Ultrasound

Published date: Feb. 17, 2012

Technology description

Problem or Unmet Need:

The clinical use of intravascular ultrasound (IVUS) has recently grown since it provides clinically relevant data that angiography cannot. Whereas angiography depicts blood within vessels, IVUS allows for the analysis of the arterial wall structure as well as the detection of atherosclerotic plaques. However, the full capabilities of IVUS technology has yet to be reached and new systems are being introduced that have greater image contrast, better spatial resolutions, and new abilities.

The latest IVUS technologies offer two distinct features: (1) quantitative tissue characterization and (2) automatic border detection. These technologies attempt not only to provide a standard for comparing patient data, but also to assist physicians with additional information. However, there have been concerns with the reliability of these methods. Their performance is dependent on the specifications of the IVUS probe, so any alteration to the probe requires a remodeling of the tissue characterization and border detection algorithms. As a result, these methods are restricted to outdated IVUS probes and, as clinicians migrate to newer technologies, they become obsolete.

Details of the Invention:

This technology introduces automatic and semi-automatic systems and methods of characterizing tissue and detecting borders that are applicable to the latest IVUS probes (i.e., 40 MHz). Tissues were characterized and borders were delineated by first extracting textures using wavelet packet analysis algorithms and then classifying them in accordance to distinct signatures.

Application area

Quantitatively characterize blood and tissue

Advantages

Utilizes the increasingly popular higher frequency probes (i.e., 40 MHz).

Improves the quality of tissue characterization and border detection by using the latest IVUS probes and advanced texture extraction and classification algorithms.

Institution

[Columbia University](#)

Inventors

[Andrew F. Laine](#)

[Amin Katouzian](#)

[Elisa E. Konofagou](#)

联系我们



叶先生

电话 : 021-65679356

手机 : 13414935137

邮箱 : yeyingsheng@zf-ym.com