

# Applications of Image and Signal Processing to Medical Images

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## Abstract:

The use of medical imaging for diagnostic purposes as well as for evaluation of pharmaceutical trials has increased exponentially in recent years. Cross-sectional imaging techniques such as MRI and CT allow views of anatomical structures that are in many cases superior to those obtainable through exploratory surgery, while molecular and functional imaging allows the direct observation of oxygen metabolism, receptor binding, and blood flow *in vivo*. However, evaluation of these images is still largely qualitative. This talk will examine image and signal processing techniques that are currently being brought to bear to allow quantitative analysis of biological parameters from medical images in clinical trials, with an eye toward future applications in the diagnostic arena.

## Bio:

Edward Ashton specializes in algorithm development for oncology and neurology applications for VirtualScopics, LLC. He has extensive custom software development experience in both biomedical imaging and military surveillance and reconnaissance. Prior to VirtualScopics, Dr. Ashton was a lead signal processing engineer at The MITRE Corporation in McLean, VA. Earlier in his career, he spent three years as a research engineer with the Naval Research Laboratory, where he received the Alan Berman Research Publication Award and was nominated for the Edison Award for Applied Science. Dr. Ashton has produced numerous articles on target detection and image analysis with military applications, including a chapter on hyperspectral target identification in the recently published textbook *Information Processing for Remote Sensing*. He received both his Ph.D. and M.S. degrees in electrical engineering from the University of Rochester, and his B.S. degree in electrical engineering from Loyola College. Additionally, he was a National Science Foundation Graduate Fellow as well as a Sproul Fellow at the University of Rochester.