Overview

While early detection of prostate cancer offers the best chance for an effective therapy, there are no existing image-based screening protocols to enable early detection. Recently, high-resolution magnetic resonance imaging (MRI) has been shown to be highly effective in visualizing prostatic structures. However, interpretation of MRI for prostate cancer diagnosis is subject to inter-observer variability, and the human eye is simply unable to combine the different MRI parameters for adequate reading. Thus, ProstaCAD™ was developed as a suite of computerized image registration, segmentation, and diagnosis tools for detecting prostate cancer using multi-parametric MRI.

Technology

Through advanced pattern recognition, the ProstaCAD™ image analysis will produce a tumor probability map that can be used to detect cancerous masses as well as determine if treatment was affective. The core technology includes patented machine learning algorithms through which various MRI parameters are combined in order to identify locations which are highly suspicious for cancer. ProstaCAD™ finds utility in: 1) the diagnostic realm, by offering accurate, targeted biopsies; 2) the prognosis realm, by being able to distinguish indolent (in which active surveillance is a viable choice) versus aggressive cancer (in which treatment is necessary); and 3) the treatment realm, by offering targeted treatment for radiation and focal therapy.

Currently, Dr. Anant Madabhushi and his team from Rutgers University (now at Case Western Reserve University) are further validating and refining ProstaCAD™ with additional clinical studies. Next, they will develop a graphical user-interface for accommodating the ProstaCAD™ algorithms and enabling use of this tool by appropriate clinicians.

References