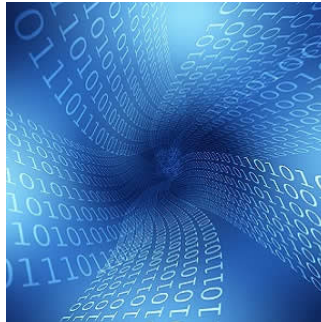# Machine learning predicts which patients benefit from prostate mpMRI

Multiparametric MRI (mpMRI) is a novel imaging tool that is increasingly used for prostate cancer detection. Key obstacles to routine use of prostate MRI include quality control, cost and access. To optimise resource utilisation and reduce unnecessary costs, a new machine learning model has been developed for identifying which patients could benefit from prostate mpMRI.

The machine learning model showed 73% accuracy for predicting PI-RADS category 4 or 5 lesions on the basis of 10-fold cross validation, according to the study to be presented at the ARRS 2018 Annual Meeting, set for 22-27 April in Washington, DC.

Researchers led by Dr. Zachary Nuffer, a radiologist with the University of Rochester Medical Center, developed a support vector machine model for predicting PI-RADS category 4 or 5 lesions on the basis of patient age, prostate specific antigen, and prostate volume. Data sets were sourced from 811 prostate mpMRI examinations performed at four tertiary care centres with mpMRI expertise. Patients either had no prior prostate biopsy or had a negative prior prostate biopsy.

The model was developed on the Microsoft Azure Machine Learning platform and can be accessed at birch.azurewebsites.net. The model was then tested prospectively on 42 patients. According to the researchers, prospective validation of their model demonstrates a sensitivity of 75% and specificity of 82% for a cutoff threshold of 43% for predicting PI-RADS category 4 or 5 lesions.

Dr. Nuffer will present the study findings at the ARRS 2018 Annual Meeting, which has lined up educational activities representing the entire spectrum of radiology. Leading radiologists from around the world are expected to take part in the meeting.

Source: [American Roentgen Ray Society](#)
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