



THE UNIVERSITY OF
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Department of Statistics

MASTER'S THESIS PRESENTATION

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Multimodal MRI Risk Maps for Prostate Cancer Diagnosis Using
Nonparametric Local Risk Classification

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ABSTRACT

Data from MRI-guided biopsies for prostate cancer diagnosis can be used to parametrically classify radiologist-defined regions of interest (ROIs) within the prostate as cancer tissue or normal tissue. However, clinically viable models for prostate cancer diagnosis cannot rely on radiologist-defined ROIs, since they are not generalizable to new patients. At the same time, the ground truth of whether an MRI voxel contains cancer can only be obtained from biopsy results. In this paper, we develop a model to generalize the classification of cancer tissue in ROIs to arbitrary local regions within prostate MRI data, utilizing multiple MRI modalities to determine the risk of cancer in localized regions of the prostate, independent of ROI voxel distributions or ROI geometries. This can serve as a diagnostic tool prototype, identifying local regions of high cancer risk in new patients.