Learning cancer grade in an automated manner

Abstract:

Owing to the molecular heterogeneity of bladder cancers in general, and urothelial carcinoma in particular, it often manifests differently in different patients based on the underlying genetic mutations. And this manifestation is often variable across stages and grades of the disease. The treatment strategies for early-stage tumors are often very different from late-stage ones; likewise, those of metastasized growths are different from localized ones. Muscle invasive tumors often require chemotherapy, whereas for non-muscle invasive ones the preferred course of treatment is surgical intervention, specifically resection. In this project, we employ a genetic algorithm-based approach to synthetically mimic tumor regions of interest from healthy tissue segments, in the process learning characteristic features pertinent with specific stages as they manifest on the CT scans. The proposed method detects cancer stage from images based on cancer and healthy segments. The results are <describe results>.

Introduction: