Applications of Texture in Digital Pathology

With the advent of new slide scanning technology, it is now possible to collect large datasets of pathological images. This revolution in medical data storage has opened up the opportunity to computationally analyze pathology similarly to what has been done previously with radiological data. However, many of techniques that have been developed in radiology are not easily transferable to pathology due to fundamental differences in the structure of the data (ex. scale, dimensionality, color-space). Viewing a pathological slide as a series of objects (cells) on a field (tissue), texture is likely candidate to capture many of the complex features. The texture features from the Riesz wavelet transform as well as other cell based features were collected from lung cancer tissue micro array samples. Using these features, a model was constructed which allowed for the prediction clinical features such as disease subtype and tumor metastasis.