ABSTRACT: Magnetic resonance imaging (MRI) is considered the most reliable and most widely used imaging method for spine diseases. MRI can be helpful in classifying the nature of vertebral compression fractures (VCFs) as benign (secondary to osteoporosis) or malignant (caused by bone metastasis). Images of malignant VCFs typically exhibit low signal intensity throughout the vertebral body involved in T1-weighted MRI. Osteoporotic fractures characteristically demonstrate partial preservation of the normal fatty bone marrow signal in the vertebral body. The normally compact, convex, and nearly rectangular shapes of vertebrae degenerate into concave and rough shapes with indentations in benign VCFs. Malignant VCFs could result in a posterior bulge or convexity without substantial concavities. This seminar will present a set of image processing and pattern analysis techniques based on shape and texture features. Results of characterization and pattern classification of VCFs will be presented.

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