Abnormality Detection in Lumbar Discs in the Spine from various medical images

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Overview

* Segment Discs from MRI image
* Diagnose
  * Normal
  * Herniated
  * Degenerative
* All from T2-weighted MRI images
Why?

* 2nd neurological ailment in US.
* $50B / year
* 12M people
Disc Segmentation

Pixel Intensities  

Disc Labels

Fig. 1. Lumbar region.
Two-Level Model

Pixel Level

disc or not?
- Intensity
- Spatial Data

Object Level

which disc?
- Location
- Context
Diagnostic

Statistical model based on training data

Appearance → Pixel Intensities Distribution
Location   → (x,y) relative to expected
Context    → Distance between discs
Timeline