Sparse Features and MRI With and Without Images
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In the first part of the talk I will summarize some work on problem solving in 3D medical images using, essentially, 3D SIFT features; this is to demonstrate that compact image features can be effective for problem solving on large scale data.

Next I will provide an overview of MRI imaging, including the basics of how it works (it is a pretty strange, but very interesting camera). I will mention what computational folks have been up to (compressive sensing, "MR fingerprinting", deep learning).

Finally I will describe a provocative proposal. Most MRI development has been focused on putting high resolution images in front of radiologists for interpretation. However, as seen above, compact features can be effective for problem solving, so why not skip making the images for human consumption, and just acquire sparse features that would be effective for problem solving, potentially enabling much faster acquisitions.