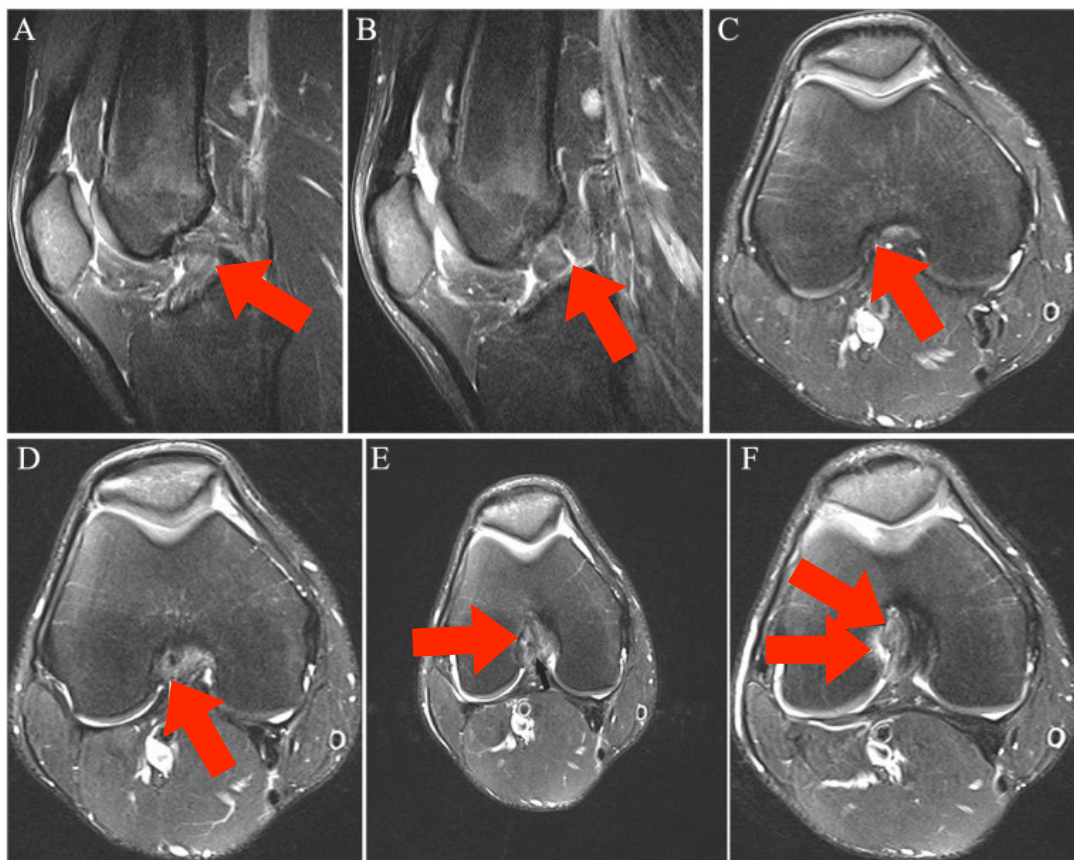
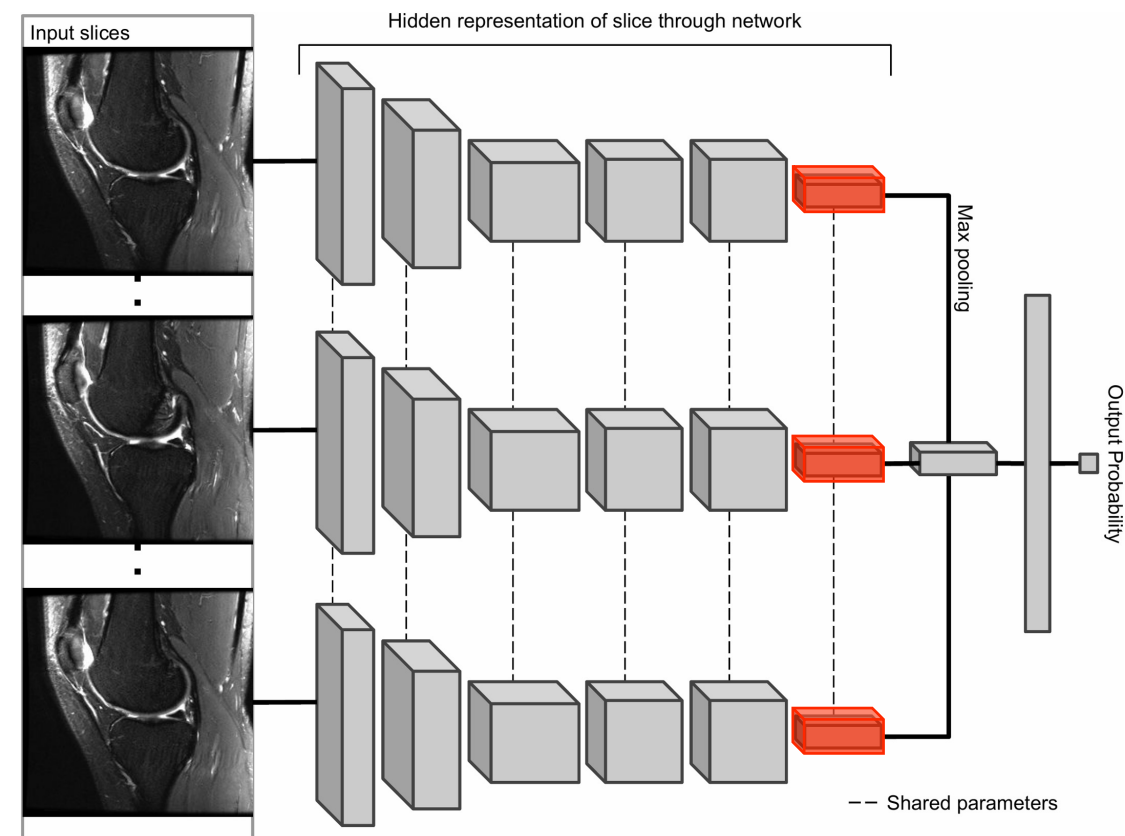


## Problem

Visual signs of knee abnormalities (ACL and meniscus tears) appear very small and localized in particular areas of MRI slices.

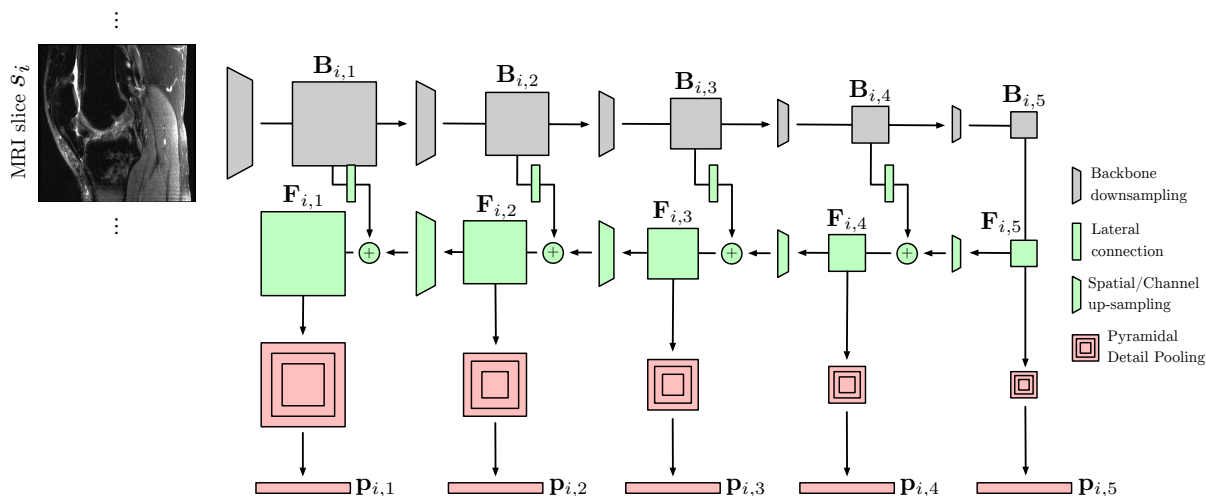


## Motivation



Current SOTA convolutional networks (MRNet, ELNet) for the recognition of such anomalies ignore their anatomy.

## MRPyrNet



New convolutional architecture composed of:

- Feature Pyramid Network (FPN), to enhance small appearing features;
- Pyramid Detail Pooling modules, to extract detailed information about the slice.

General enough structure to be applied to any backbone convolutional network.

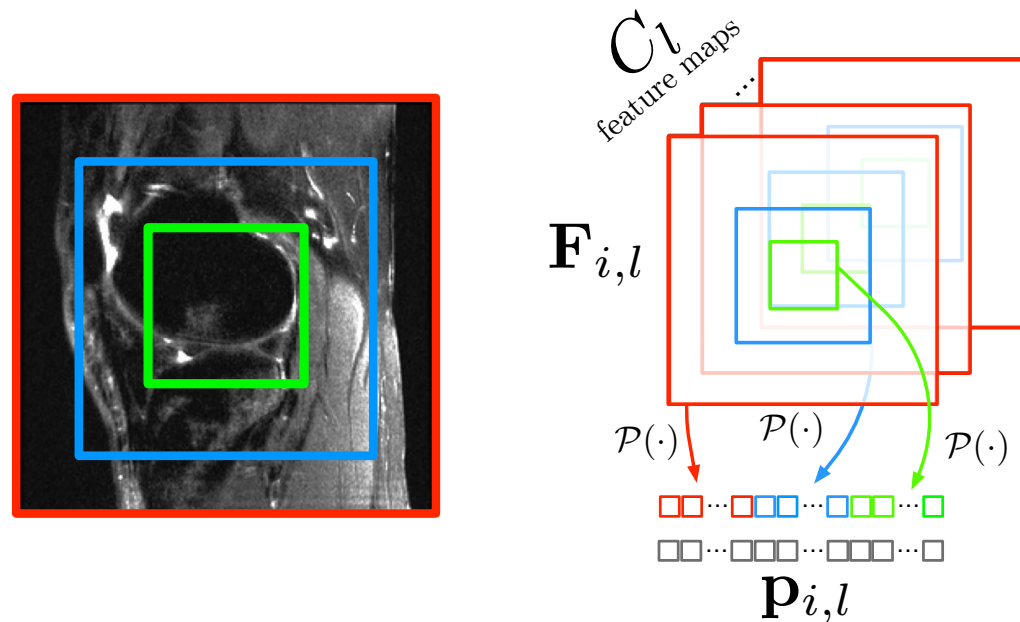
It does not require additional annotation for learning, if not a label expressing the presence/absence of the anomaly.

## Pyramid Detail Pooling

Key module to extract information from the MRI slices at multiple levels of detail.

At the slice-level, a set of sub-regions is defined to increasingly focus on the center of the slices.

The sub-regions are then used to pool the FPN's feature maps to construct representations that include both general and detailed information.



## Results

