

Bolus Tracking in Colon MRI

Project Kickoff Presentation

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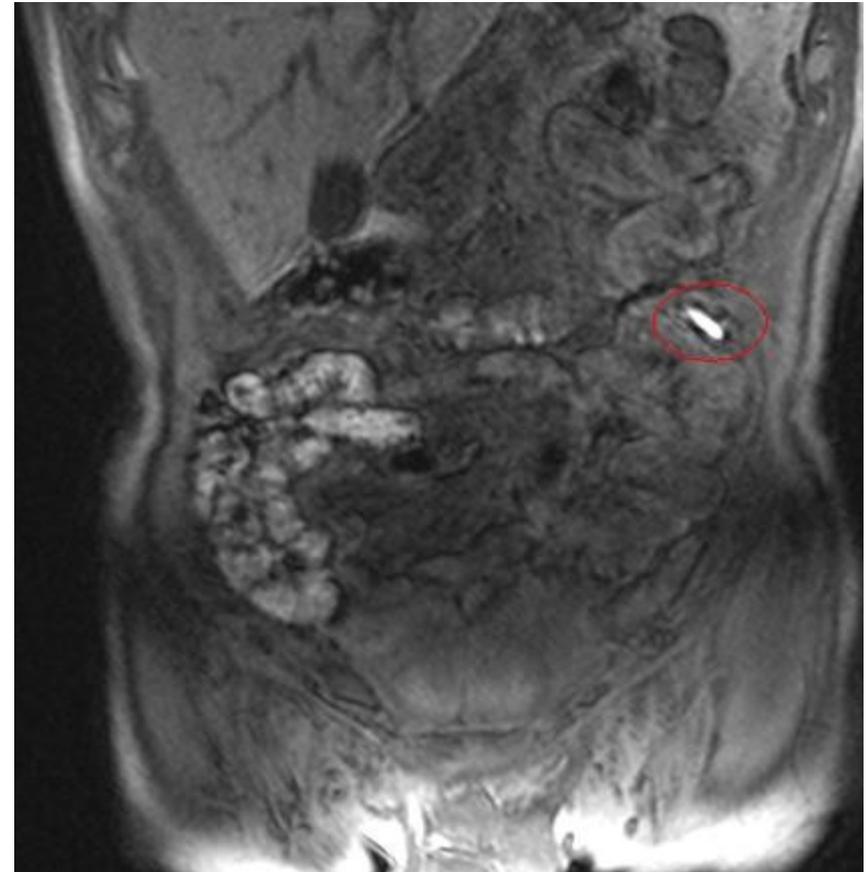
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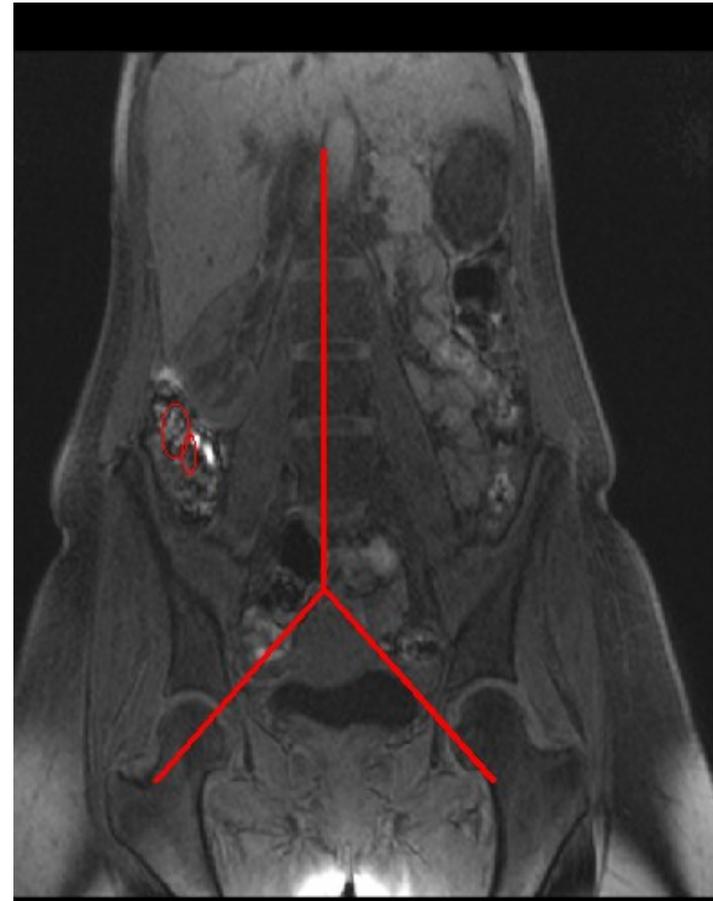
Detecting Colon Motility

- colon motility disorders (constipation, diarrhea) important issues in daily clinical work
- new non-invasive approach on detecting colon-transit-time
- ingestion of MR-visible markers
- acquire MR-images at different time intervals after ingestion



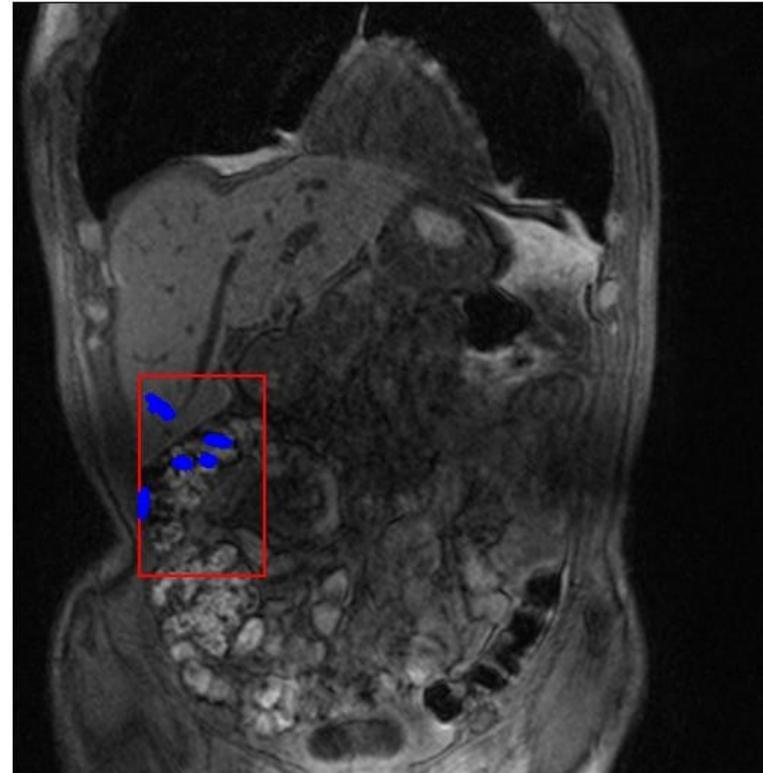
Tracking the Markers (current approach)

- draw three lines in each slice to partition the space
- scroll through slices
- segment markers manually
- time consuming, not very precise!



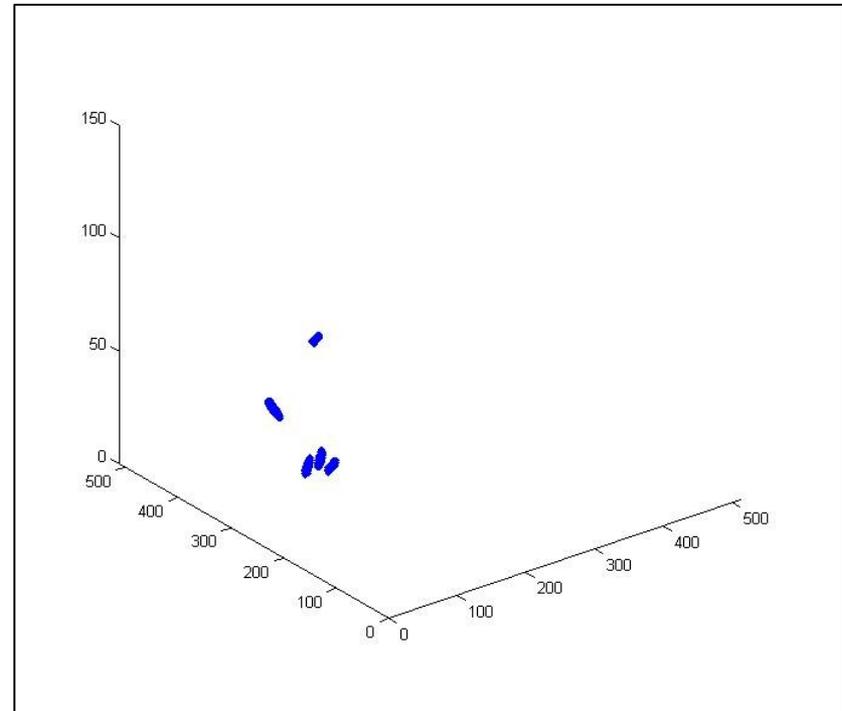
New Approach

- Segment and track the capsules automatically
- Use thresholding and connected-components analysis



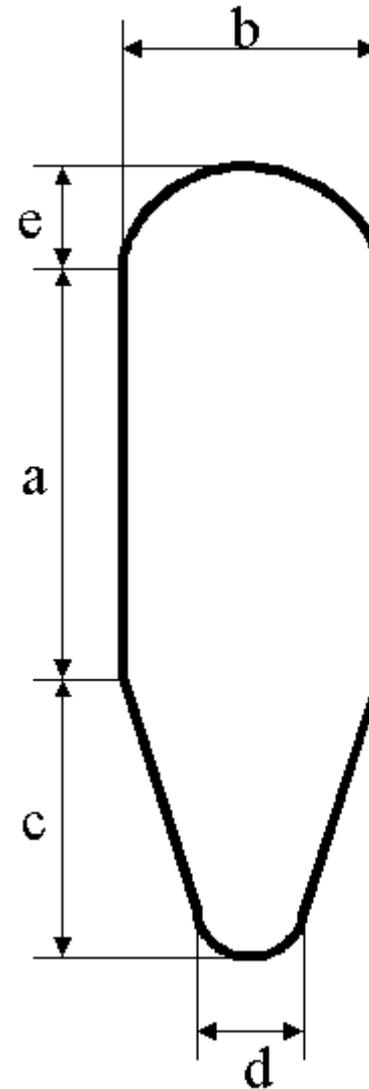
Initial Results

- Simple thresholding :
acceptable results in datasets
with good contrast
- Connected components
analysis to reject segmented
objects which are too big or
too small
- Region of interest (frame)
drawn by user



Challenges

- Find correct intensity values for threshold
- Find suitable size (in voxels) to describe a marker's volume
- Other criteria necessary in order to reject objects which have a wrong shape (PCA)



Questions?

- Literature:
 - Buhmann, S., Kirchhoff, C., Wielage, C., Mussack, T., Reiser, M.F., Lienemann, A. :
A new method for the measurement of colonic transit time using MRI – a feasibility study