Concepts of medical image post-processing

WORK & DISCUSSION

RESULTS

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To discuss and work: RESULTS

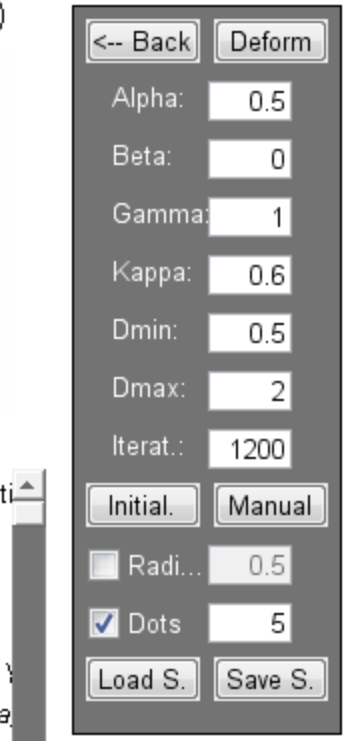
- IMAGE: U64

Original image

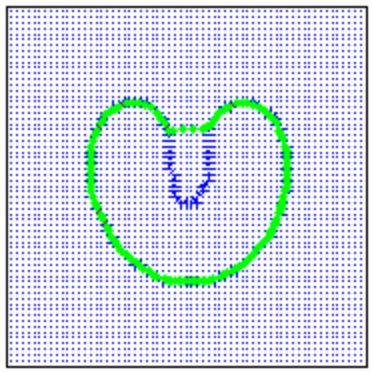
Blured image (sigma=0)

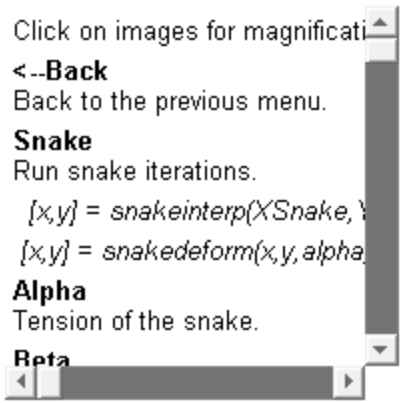
Original image

Blured image (sigma=0)

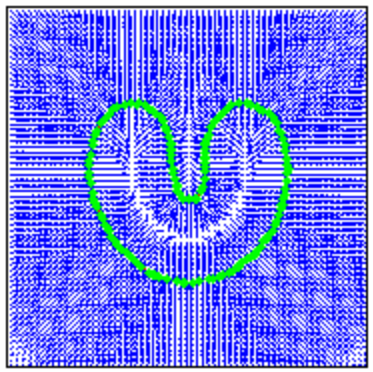


Standard potencial field





GVF (mu=0.1 iterations=80)



Standard

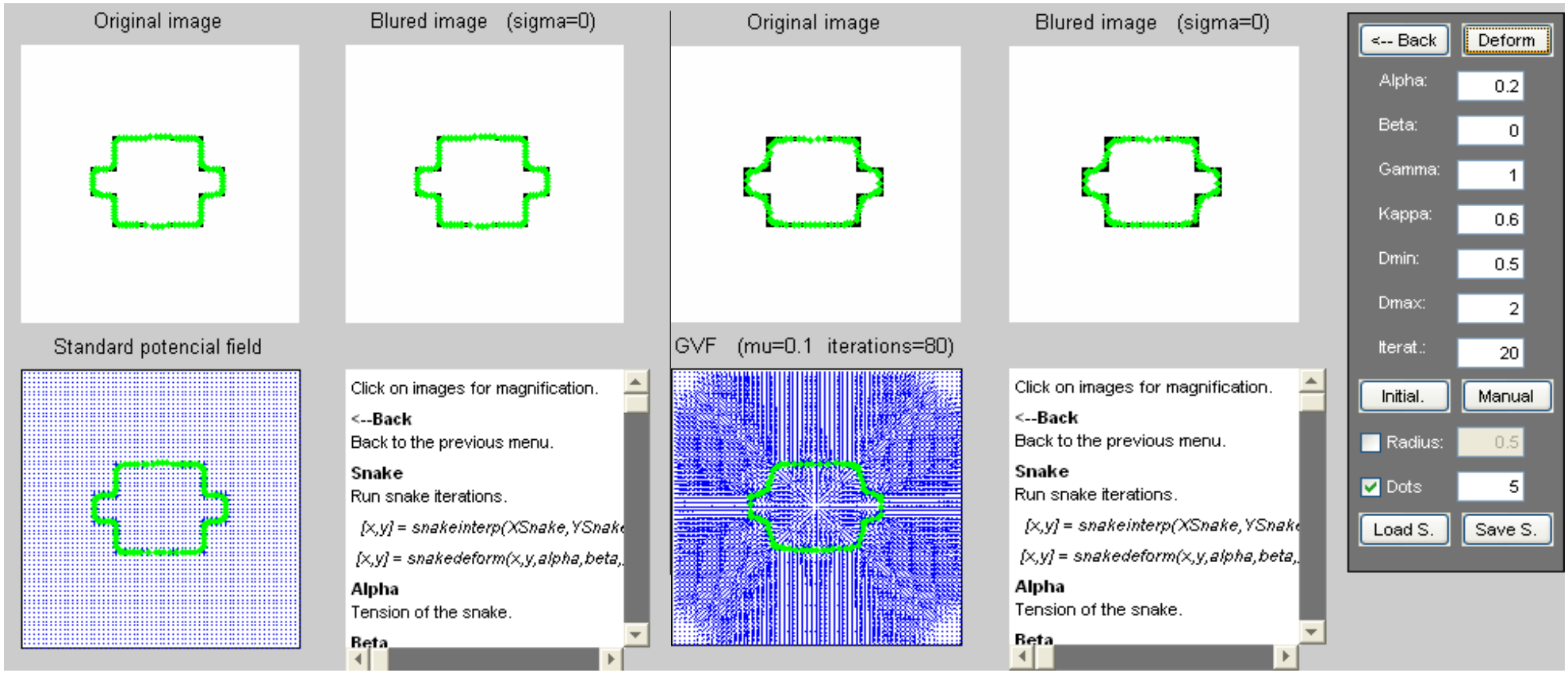
GVF

Shape Modelling: approaches

- IMAGE: U64
  - **Standard**
    - Doing many iterations is better? → No, It is not a perfect segmentation
    - Good initialization
    - Modifying Alpha is faster but be careful because should be used just for details
  - **GVF**
    - It is good for "Segment hole, corners…"
    - Less iterations VS Standard
  - **Conclusion**
    - GVF is better than standard in this case
    - It is the "TRUE" example to use GVF

To discuss and work: RESULTS

- IMAGE: Room



Standard

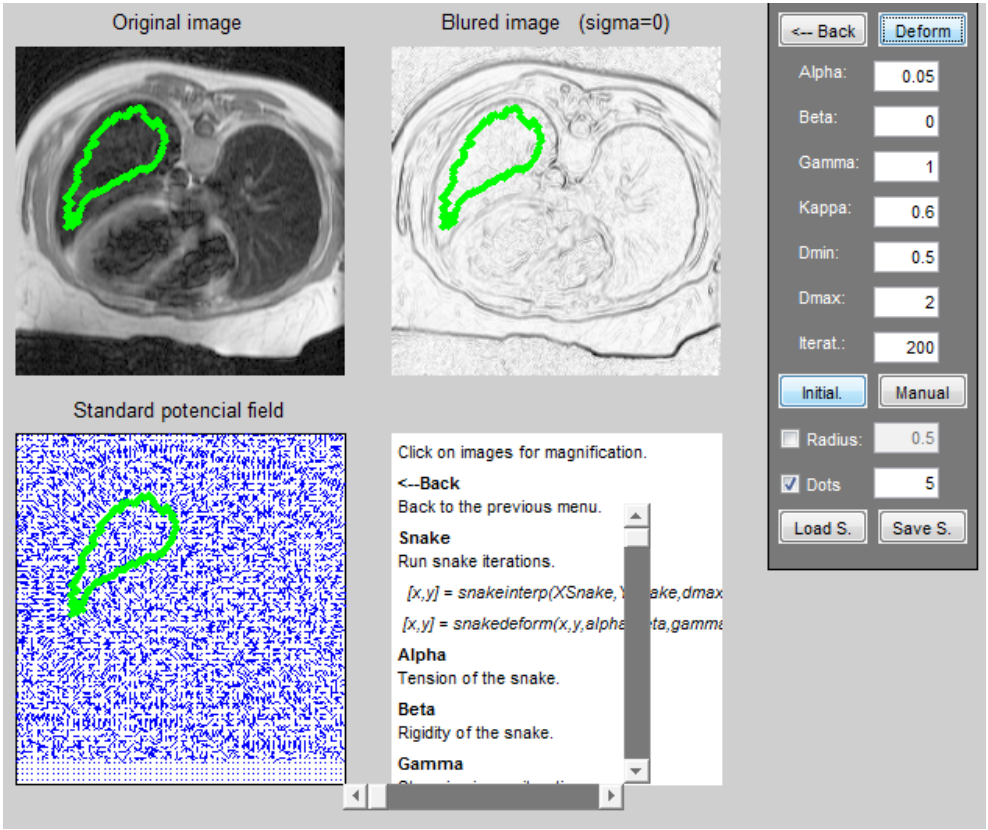
GVF

Shape Modelling: approaches

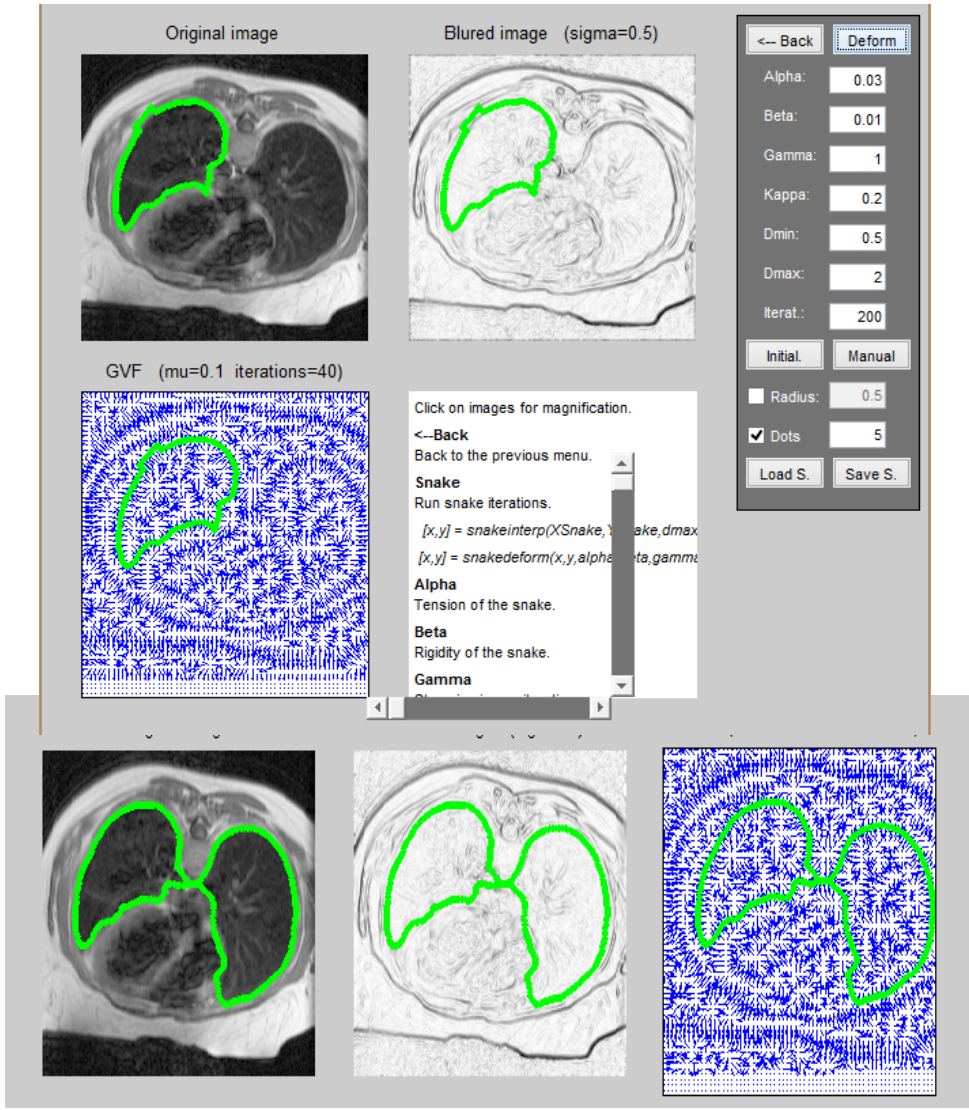
- IMAGE: Room
  - **Standard**
    - Good segmentation for a one object!!
    - Doing many iterations is better? → > 400 iterations is obtained the same result
    - Good initialization? The result is quite similar
  - **GVF**
    - The same than the standard deviation.
    - The forces are pushing for the corners!
  - **Conclusion**
    - Standard and GVF are the same in this case just for one object.
    - Shows that the Snake algorithm has imperfections.

To discuss and work: RESULTS

- IMAGE: Chest



Standard



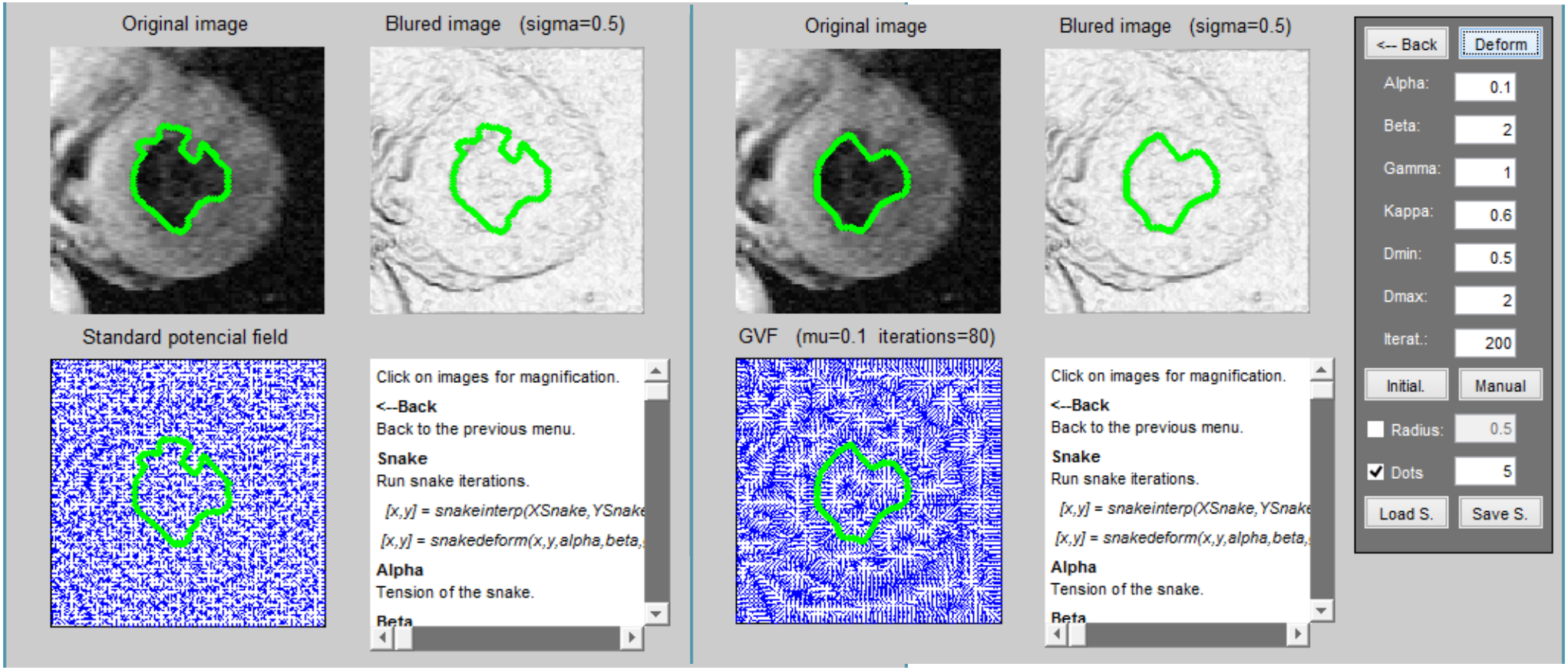
GVF

Shape Modelling: approaches

- IMAGE: Chest
  - **Standard**
    - Automatic trace is not good, why? → Many regions and the algorithm cannot detect.
    - Manual trace? → Can detect areas but is not also good.
    - Forces cannot visualize all the regions and it is a big problem…
  - **GVF**
    - Using a manual trace can obtain better results in GVF.
    - Forces can detect the regions compared with standard.
  - **Conclusion**
    - GVF is good when an image contains many regions and using a manual initialization.

To discuss and work: RESULTS

- IMAGE: Heart



Standard

GVF

Shape Modelling: approaches

- IMAGE: Heart
  - **Standard**
    - Doing a lot of iterations the result is not improved.
    - Forces cannot detect the middle part.
    - The segmentation is not perfect, not bad
  - **GVF**
    - It is obtained a better results using GVF.
    - Forces can detect the main regions.
  - **Conclusion**
    - The manual initialization is important.
    - GVF better than standard.